Initial Environmental Examination

May 2014

KGZ: Emergency Assistance for Recovery and Reconstruction

Prepared under the Emergency Assistance for Recovery and Reconstruction Project for the Rehabilitation and Improvement of the Water Supply and Sewerage Systems for Bazar-Korgon Village financed by the Asian Development Bank.

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ABBREVIATIONS

A/O	Ayil Okmotu
ADB	Asian Development Bank
CAP	Corrective Action Plan
COD	Chemical Oxygen Demand
DCA	Deputy Chief Architect
DEAP	Disaster and Emergency Policy
DO	Dissolved Oxygen
DSC	Design and Supervision Consultant
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EARR	Emergency Assistance for Recovery and Reconstruction
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
FSR	Feasibility Study Report
GRG	Grievance Redress Group
GRM	Grievance Redress Mechanism
HSE	Health, Safety and Environment
IA	Implementing Agency
ICRC	International Committee of the Red Cross
IEE	Initial Environmental Examination
km	Kilometer
KR	Kyrgyz Republic
LPC	Local Point of Contact
m^3 / s	Cubic meters per second
masl	Meter above sea level
MoF	Ministry of Finance
MPC	Maximum Permissible Concentration
ND	Nominal Diameter
NES	National Environmental Specialist
NGOs	Nongovernment Organizations
O&M	Operations and Maintenance
OD	Outside Diameter
OVOS	Procedure for Environmental Impact Assessment
PER	Public Environmental Review
PMC	Project Management Consultant
REA	Rapid Environmental Assessment
RP	Resettlement Plan
SAACCS	State Agency for Architecture, Construction, and Communal Services
SAACCS SU	State Agency for Architecture, Construction, and Communal Services Safeguards Unit
SAEPF	State Agency on Environmental Protection and Forestry
SanPin	Sanitary and epidemiologic rules and regulations
SDRD	State Directorate for Reconstruction and Development for Osh and Jalal-Abad cities
SER	State Environmental Review
SIETS	State Inspectorate on Environmental and Technical Safety
SPS	Safeguard Policy Statement
SPZ	Sanitary Protection Zone
SS	Suspended Solid
UNECE	United Nations Economic Commission for Europe
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

Introduction

1. This is the Initial Environmental Examination (IEE) for the proposed "Rehabilitation and Improvement of the Water Supply and Sewerage Systems for Bazar-Korgon Village" subproject, being prepared under the Emergency Assistance for Recovery and Reconstruction (EARR) Project financed by the Asian Development Bank (ADB). The purpose of the subproject is to improve the water supply and sewerage infrastructure of Bazar-Korgon Village, located in Jalal-Abad Oblast (province) in the Kyrgyz Republic (KR).

2. In accordance with the EARR environmental assessment and review framework (EARF), the proposed subproject has been classified as Environment Category B, requiring the preparation of an IEE. The IEE has been prepared in accordance with requirements of the Natural Environment Conservation law of the KR, the EARF, and ADB's Safeguard Policy Statement (SPS).

Subproject Description

3. The subproject includes expansion of the "Karacha" well field, rehabilitation of the water supply distribution network, and rehabilitation and improvement of the water supply and sewerage system for multi-story buildings in Enesai District.

Expansion of the "Karacha" Well Field

4. The water supply system in Bazar-Korgon Village was constructed in the 1970s and includes three deep-tubewells, a 1,000 m^3 reservoir, a chlorination facility, a 200 mm diameter transmission line, and a 76 km long distribution network. The system has not functioned properly since 1992 due to collapse of the maintenance and operation systems and damage to the facilities.

5. Improvements of the Bazar-Korgon Village's water supply system were initiated with assistance of the International Committee of the Red Cross (ICRC) in 2010. Two out of four planned boreholes for a new water intake have been installed, a transmission line from the water intake to the existing reservoir was installed, and the reservoir was rehabilitated. At the time of report preparation the ICRC facilities had very recently been put into operation. However, due to problems with the distribution system, only limited supplies are now provided. The subproject will ensure a firm water supply to Bazar-Korgon village which will help utilize the earlier investment through ICRC most effectively.

6. The works include the following main components:

- Construction of a drilled well including supply and installation of submersible pumps and construction of well head chambers and manholes, and supply and installation of valves and fittings, manometers, flow meters and control panels.
- Supply and installation of a chlorination plant (container type, including tanks, mixers and dozing pumps).
- Construction of two reinforced 1,000 m^3 concrete reservoirs.
- Construction of a booster pumping station for providing sufficient pressure in the distribution network in case of fire. The pumping station will consist of 4 pumps, each equipped with a check valve and two sets of stop valves. A pressure sensor with a pressure gauge will be installed in the pumping main. The booster pumping station will be complete with all cabling, piping, wiring and controls.
- Construction of the complete water supply system for the operation of the wells, reservoirs and the chlorination plant.

- Electrical power supply system (0.4 kV) for uninterrupted power supply of all objects.
- Construction of a guard house, fence and gate.
- Construction of unpaved maintenance roads.
- Construction of the river bank protection.

7. In addition to these works, Sanitary Protection Zones (SPZs) will be established to protect the water intake.

Rehabilitation of water supply distribution network

8. The existing water supply distribution network was constructed more than 40 years ago and is currently mostly out of operation. It is expected that a significant number of pipe sections are damaged and need to be replaced. In order to improve current distribution network, the works will include the following main components:

- Execution of pressure tests and leak detection measures for the water supply trunk mains (ring system) to identify damaged pipe sections and leakages.
- Replacement and repair of pipe sections where leakage occurred during testing (assessed as 4 km).
- Construction of 3 new sections with total length of up to 1.1 km to provide for looping of the main ring system.
- Partial reinstatement of macadam and asphalt road pavement.

Rehabilitation and improvement of the water supply and sewerage system in Enesai District

9. The water supply and sewerage systems serving eight multi-story apartment buildings and associated public social infrastructure buildings in Enesai District will be rehabilitated and improved. The works include following main components:

Sewerage

- Rehabilitation of 1,799 m of the existing sewerage system connecting eight multi-story apartment buildings, two kindergartens and a public school. The sewers are designed to convey wastewater under gravity flow.
- Construction of approximately 500 m of PVC-U sewer pipes (Outside Diameter (OD) of 200 mm).
- Installation of a 10 kV power supply line and installation of a 100 kVA 10/04 kV transformer substation and 0.4 kV cable network.
- Construction of a “modular” pre-fabricated wastewater treatment plant (WWTP) with a capacity of 250 m^3/day, including operation for 6 months and training of the local staff in Operation and Maintenance (O&M).
- Partial reinstatement of macadam and asphalt road pavement.

Water Supply

- The network will consist of 2,762 m of polyethylene pipes, OD 110 mm, including 18 manholes and fire hydrants and a booster pumping station. In addition, 600 m of existing in-house water pipes will be replaced.
- Rehabilitation/reconstruction of 1.1 km internal network with HDPE pipe nominal diameter (ND) =100 mm.
- Construction of 100 m electrical power transmission line 0.4 kV to supply electricity to water and sewerage facilities of the eight multi-story apartment buildings.
- Partial reinstatement of macadam and asphalt road pavement.

10. The subproject cost is estimated at $3.2 million. The construction period will be 15 months, with construction commencement tentatively scheduled for March 2014. The subproject expected lifetime is 25 years.

Environmental, Legal and Administrative Framework

11. The subproject has been classified by ADB as environment category B, requiring the preparation of an IEE (this report) including an environmental management plan (EMP) which will ensure (i) implementation of identified mitigation and management measures for anticipated adverse environment impacts; (ii) implementation of monitoring and reporting; and (iii) subproject compliance with the KR's relevant environmental laws, standards and regulations and ADB's Safeguard Policy Statement (SPS).

Environmental Baseline of Subproject

Geo-Physical Profile

12. Bazar-Korgon district is located in the south of the Jalal-Abad Oblast's central region within the Kara-Unkyur Valley. The subproject area is located at an elevation of 813-815 meters above sea level (masl) and has a continental climate with hot arid summers, humid spring and autumn periods and relatively cold winters. The average annual precipitation is 200-600 mm in the valley area and reaches 800-1000 mm at higher elevations. The average temperature is 4°C in January and 28°C in July

13. Soil and vegetation cover is diverse and characterized by both horizontal and vertical zonation. The Kara-Unkyur River flows through the area and has a length of 69 km and a catchment area of 572 km^2. Groundwater is found within an unconfined aquifer, and meets the relevant KR water quality requirements.

Ecological Profile

14. There is no natural vegetation at the water intake site, and the site is dominated by grass species typically found in disturbed areas. There are no rare and endangered flora species. There is no fauna at the intake site, except for several synanthropic species of insects and birds. There are no rare and endangered fauna species.

15. The site for the modular WWTP is unused barren land behind a football stadium. It has some grass cover and has also been used for spoil disposal. There are no rare and endangered flora or fauna at the site.

16. The main distribution network lies along the main road leading northeast from Bazar-Korgon Village. It has typical roadside vegetation. There are no rare and endangered fauna species.

17. There are no known historical archaeological resources within or adjacent to the subproject sites.

Socio-Economic and Cultural Environment

18. Jalal-Abad Oblast's population is just above one million. Bazar-Korgon District covers an area of 2,021 km^2, and has a population of 138,721 people. The administrative center of the District is Bazar-Korgon Village. The district economy, and that of the subproject area, is predominately agricultural.

19. Jalal-Abad Oblast is characterized by high levels of waterborne diseases, the most common being those in the general intestinal group (including acute intestinal infections), typhoid fever, dysentery, parasitological helminthiasis, and viral hepatitis A and E. In

comparison with other oblasts, the level of infection and parasitological illnesses in Jalal Abad Oblast is higher.

Analysis of Alternatives

20. An analysis of subproject alternatives was undertaken during the subproject design to determine the best way of achieving the subproject objectives while minimizing environmental and social impacts. The design takes into account the recent investment of ICRC in the construction of new intake and transmission pipeline.

21. The following alternatives were considered:

- **Gravity flow water supply** - this is the preferred water supply system design. However, due to topography and required pressure for firefighting, the system was designed as partly gravity and party pumping.
- **Rehabilitation of the existing WWTP** - rehabilitating the dysfunctional sewerage main and the existing WWTP in Enesai for disposal of sewage from multi-story buildings was rejected as it requires substantial additional investment and a long implementation period.
- **Gravity flow sewerage system** - sewerage systems based on gravity flow are preferred over systems with pumping of sewage. The proposed gravity system is simple in operation and requires less manpower and, importantly, does not require energy. This option was incorporated into the design.

22. In addition, not undertaking the subproject - the “No Action Alternative” - was also considered. However, this would not realize the objective of improving municipal services through the provision of a more reliable and higher quality water supply and a safer sewerage system, and the “No Action Alternative” was deemed neither a reasonable nor prudent course of action.

Environmental Impacts and Mitigation Measures

23. The subproject will generate environmental impacts during the preconstruction, construction and operation phases. Preconstruction phase impacts are low and are related to project siting. The subproject siting will require cancellation of four public land leases; however, appropriate compensation in accordance with KR and ADB requirements will be provided to the owners.

24. Construction phase impacts are low to moderate in magnitude and are typically temporary and localized in nature. There are no high magnitude construction phase impacts. All impacts can be adequately addressed through typical mitigation measures including good construction and health and safety practices.

25. The operation phase is expected to have limited negative impacts. Potential threats to drinking water quality will be addressed through the delineation of SPZ zones I to III and though chlorination and ongoing drinking water quality laboratory analysis. Worker health will be protected through appropriate health and safety practices. On the other hand, subproject operation will create high positive impacts on public health and hygiene. Provision of good quality water and safe sewerage facilities is expected to significantly enhance the quality of life of affected peoples, and reduce contamination of soil and surface and groundwater.

Environmental Management Plan

26. A comprehensive EMP was developed to ensure (i) implementation of identified mitigation and management measures to avoid, reduce, mitigate, and compensate for anticipated adverse environment impacts; (ii) implementation of monitoring and reporting against the performance indicators; and (iii) subproject compliance with the KR's relevant environmental laws, standards and regulations and ADB's SPS.

27. The EMP includes an environment monitoring plan (EMoP) to monitor the environmental impacts of the subproject and assess the effectiveness of mitigation measures, and a worker training program. Organizational responsibilities and budgets are clearly identified for execution, monitoring and reporting.

Information, Disclosure, Consultation and Participation

28. ADB's SPS has specific requirements for information disclosure and public consultation. Information disclosure involves delivering information about a proposed project to the general public and to affected communities and other stakeholders, beginning early in the project cycle and continuing throughout the life of the project. Information disclosure is intended to facilitate constructive engagement with affected communities and stakeholders over the life of the project.

29. In this regard, a public consultation hearing was held on 6 June 2013 and a summary of the proceedings is presented in Appendix 2.

Grievance Redress Mechanism

30. A subproject-level grievance redress mechanism (GRM) will build on the GRM earlier established for the EARR to receive and facilitate resolution of complaints about the subproject's environmental performance during construction and operation phase. The GRM includes procedures for receiving grievances, recording/ documenting key information, and evaluating and responding to the complainants in a reasonable period of time. Any concerns raised through the GRM will need to be addressed quickly and transparently, and without retribution to the affected person.

Conclusion

31. Based on the analysis undertaken in this report, it is concluded that

i) the proposed subproject will have no significant adverse impacts, and will result in significant positive socioeconomic and environmental benefits. Any minimal adverse environmental impacts associated with the subproject can be addressed through the application of appropriate mitigation measures;

ii) the subproject's categorization as ADB environment category B is confirmed; and

iii) this IEE is considered sufficient to meet ADB's environmental safeguard requirements for the subproject, and no additional studies are required.

I. INTRODUCTION

A. Project Background

1. This is the Initial Environmental Examination (IEE) for the "Rehabilitation and Improvement of the Water Supply and Sewerage Systems for Bazar-Korgon Village" subproject, prepared under the Emergency Assistance for Recovery and Reconstruction (EARR) Project financed by the Asian Development Bank (ADB).

2. The Kyrgyz Republic (KR) has received a Loan and a Grant through Financing Agreement LPS: KGZ 44236 for the EARR Project, signed between the KR and ADB on 27 September 2010.[1]

3. The EARR is in response to the Government's call for assistance to mitigate the adverse effects of the June 2010 ethnic conflicts. The EARR Project is based on ADB's Disaster and Emergency Policy (DEAP), which offers a framework to promptly respond to emergency needs, and provides rapid funding to help rebuild high priority assets and restore economic, social, and governance activities after emergencies.

4. The EARR Project includes:

- uninterrupted provision of education, health, social assistance, transport and urban services (Component 1: Fiscal Support);
- damaged houses repaired and/or reconstructed and rehabilitated (Component 2: Housing Reconstruction);
- critical public infrastructure improved (Component 3), including improved water supply and sewerage (Component 3A) and other community and public infrastructure improvement and an education and awareness program (Component 3B); and
- implementation assistance through consulting services (Component 4).

5. The Ministry of Finance (MoF) is EARR's Executing Agency (EA). It also implemented the fiscal support component. The State Directorate for Reconstruction and Development of Osh and Jalal-Abad (SDRD) was Implementing Agency (IA) until 15 January 2013 successfully implemented the housing component. The State Agency for Architecture, Construction, and Communal Services (SAACCS), the successor agency to SDRD, is implementing the water supply and sewerage and community infrastructure improvement component under the overall guidance by and direction from its Director, with the Deputy Chief Architect of Osh City responsible for technical project implementation aspects.

6. This "Improvements of Water Supply System in Bazar Korgon Village", is one of the three subprojects included under Component 3A of the EARR. The overall objective of component 3A is to improve water supply and sewerage infrastructure in the cities of Osh and Jalal-Abad, and in Bazar-Korgon Village. With respect to water supply system infrastructure, Component 3A is expected to rehabilitate water supply intake works, and rehabilitate or construct new transmission pipelines from intakes to treatment plants and reservoirs. With respect to sewerage infrastructure, Component 3A is expected to rehabilitate or construct new sewerage treatment plants and main sewer lines.

7. The Environmental Assessment and Review Framework (EARF) adopted for the EARR requires that component 3A subprojects are screened to determine their environmental category utilizing ADB's Rapid Environmental Assessment (REA) Checklists

[1] Loan No. 2668-KGZ(SF) and Grant No. 0217-KGZ(SF).

(Appendix 1). On the basis of the screening the Jalal-Abad subproject has been classified as Environment Category B, requiring the preparation of this IEE.

B. Approach to IEE Preparation

8. This IEE report has been prepared based on a subproject Feasibility Study Report (FSR) and data collection, surveys, site visits and consultations undertaken by national and international environmental consultants.[2]

C. Structure of the Report

9. The IEE has been prepared in accordance with requirements of the Natural Environmental Conservation Law of the KR, the EARF, and ADB's Safeguard Policy Statement (SPS). The IEE Report describes the baseline environmental conditions, including physical, biological, and socio-economic conditions, and physical cultural resources; assesses potential subproject environmental impacts; and provides mitigation measures. It includes an Environmental Management Plan (EMP) and an Environmental Monitoring Plan (EMoP) to ensure that the mitigation measures are appropriately implemented and are effective.

10. The IEE report is organized as follows:

- Executive Summary. Summarizes critical facts, significant findings, and recommended actions.
- Introduction. Introduces the proposed subproject, report purpose, and IEE structure.
- Description of the Subproject. Provides a detailed description of the subproject scope, components, location, layout, budget and implementation schedule.
- Environmental Legal and Administrative Framework. Discusses KR and ADB environmental assessment legal and institutional frameworks.
- Environmental Baseline. Provides a description of the relevant physical, biological, and socioeconomic conditions within the area potentially affected by the subproject. The description is based on reviews of available documentation, statistical data and field surveys and investigations.
- Analysis of Alternatives. Provides and considers possible subproject alternatives.
- Assessment of Anticipated Environmental Impacts and Mitigation Measures. Describes impacts predicted to occur as a result of the subproject, and identifies suitable mitigation measures.
- Environmental Management Plan. Presents the EMP, including required construction and operation phase environmental mitigation measures, an EMoP, reporting requirements, and capacity building.
- Information, Disclosure, Consultation and Participation. Describes the process undertaken for engaging stakeholders and carrying out IEE disclosure and public consultation.
- Conclusion. Presents conclusions drawn from the assessment and recommendations.
- Annexes. Presents additional supporting information.

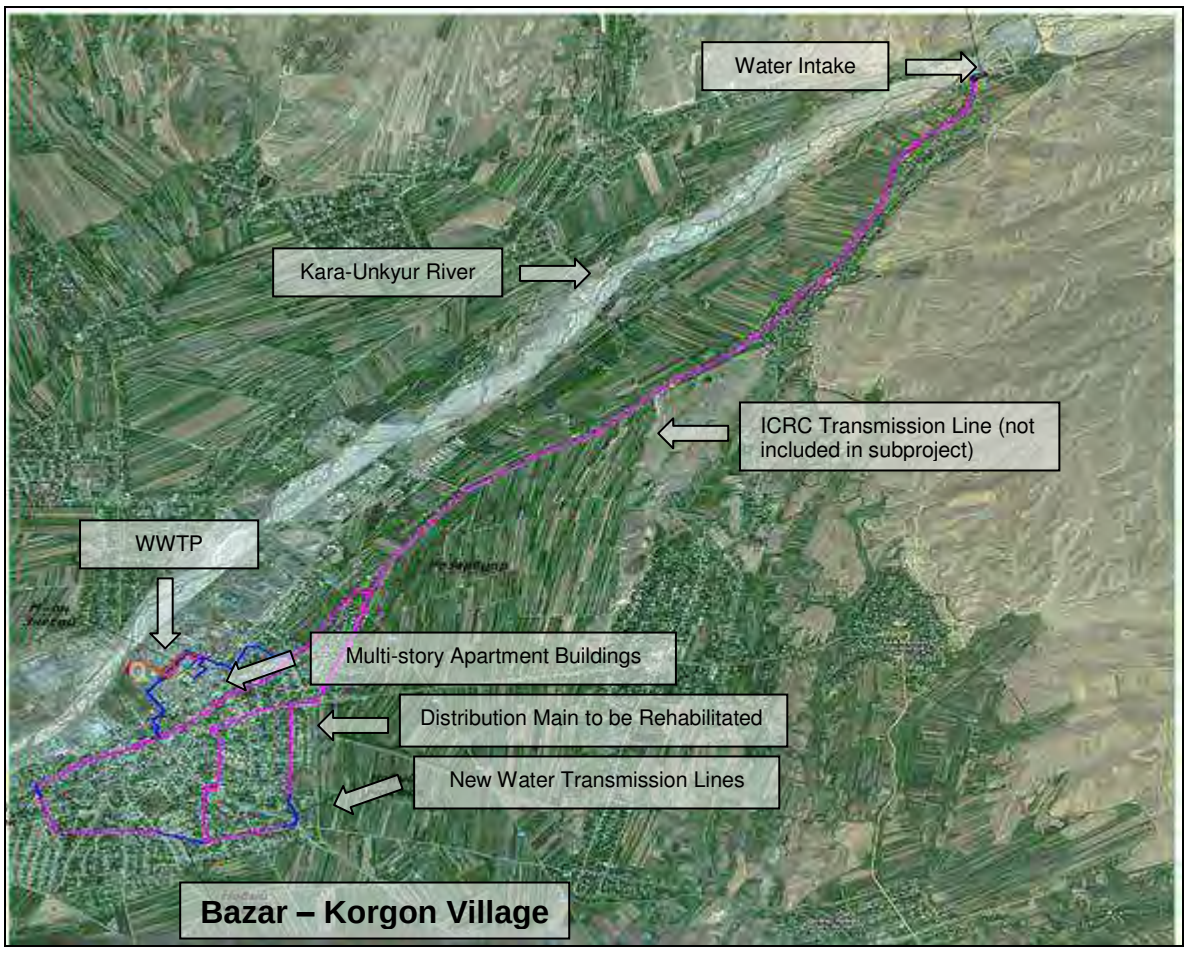
[2] International and national environmental specialist site visits and data collection missions were undertaken in June 2012, October 2012, 5 May to 9 July 2013, and 06-14 November 2013.

II. DESCRIPTION OF THE SUBPROJECT

A. Location

11. The subproject will be implemented in Bazar-Korgon Village, located in central Bazar-Korgon District, Jalal-Abad Oblast (province). The subproject's water intake is located on the left bank of the Kara-Unkyur River, 8 km to the northeast of Bazar-Korgon Village outskirts, 10-25 m from the first terrace above the flood plain, 1.3 – 1.5 km southwest of the Kara-Unkyur weir, and 0.5 km west of Karacha village. The site for the modular WWTP is unused barren land behind a football stadium, and the main distribution network lies along the main road leading northeast from Bazar-Korgon Village.

Figure 1: General location of subproject activities



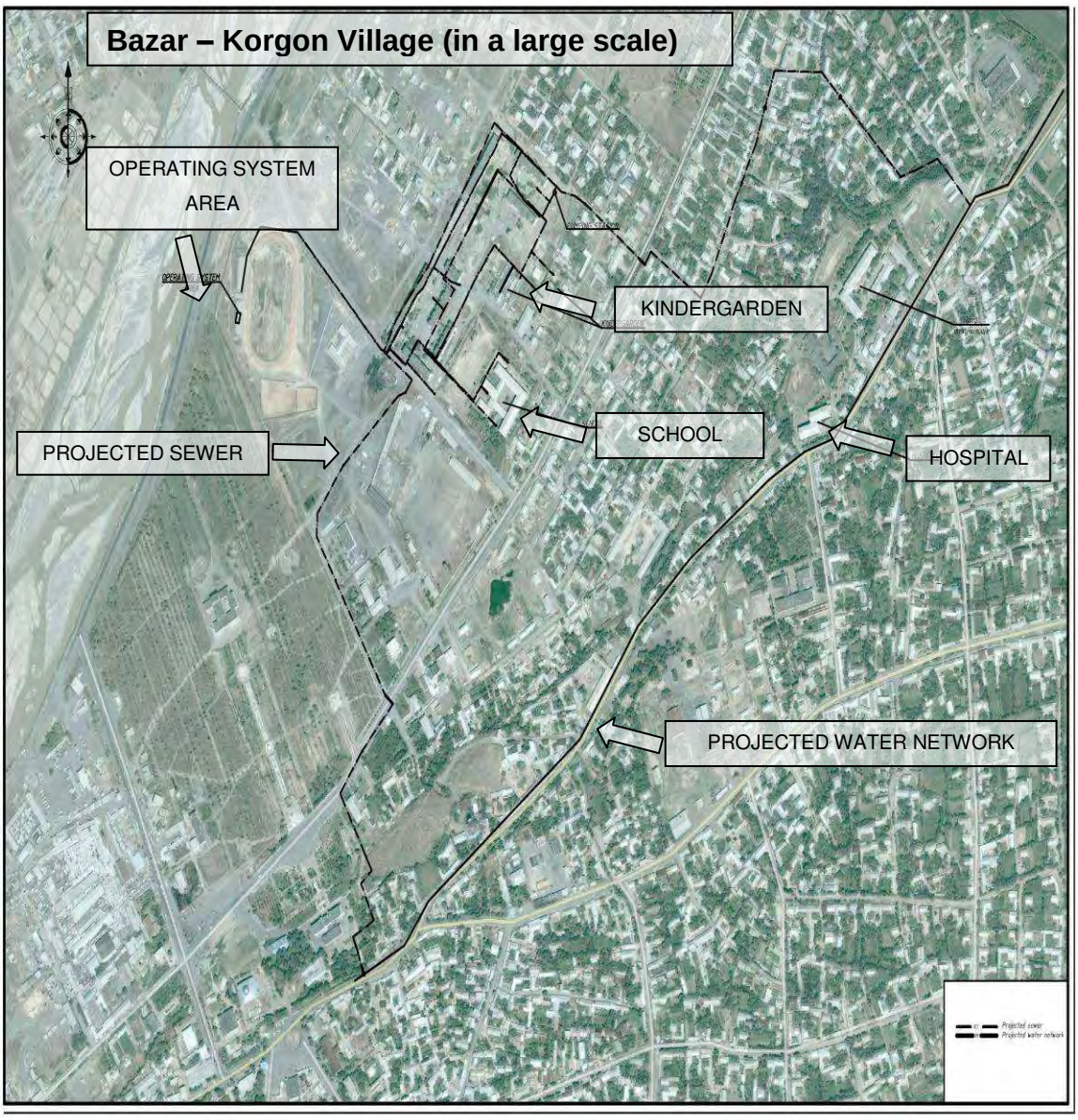
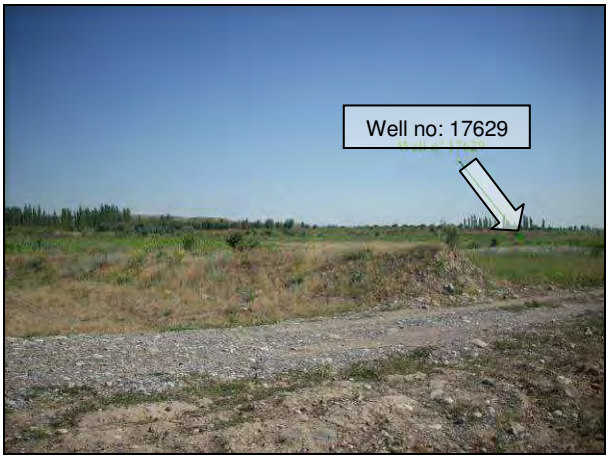


Figure 2: The water intake area



B. Subproject Works

12. The subproject includes the following improvement works:

- expansion of the "Karacha" well field;
- rehabilitation of water supply distribution network; and
- rehabilitation and improvement of the water supply and sewerage system for multi-story buildings in Enesai district.

1. Expansion of the "Karacha" Well Field

13. The existing well field near Karacha village was constructed in 2010-2013 with the assistance of the International Committee of the Red Cross (ICRC), and consists of two drilled wells, a guard building and the electrical power supply system. At the time of report preparation the ICRC facilities had very recently been put into operation. However, due to problems with the distribution system, only limited supplies can be provided even with the ICRC system in operation. This subproject will ensure a firm water supply to Bazar-Korgon village as envisaged under the ICRC project, which will help utilize the earlier investment made by ICRC most effectively.

14. The works include the following main components:

- Construction of 1 drilled well including supply and installation of submersible pumps (capacity of Q = 125 m^3/h, h=65 m) and construction of well head chambers and manholes including supply and installation of valves and fittings, manometers, flow meters and control panels.
- Supply and installation of a chlorination plant (container type, including tanks, mixers and dozing pumps).
- Construction of two reinforced concrete reservoirs with a storage volume of 1,000 m^3 each.
- Construction of a booster pumping station for providing sufficient pressure in the distribution network in case of fire. The pumping station consists of 4 pumps (Q = 268 m^3/h at H = 49.9 m). Each pump will be equipped with a check valve and two sets of stop valves. A pressure sensor with a pressure gauge will be installed in the pumping main. The booster pumping station will be complete with all cabling, piping, wiring and controls.
- Construction of the complete water supply system for the operation of the wells, reservoirs and the chlorination plant.
- Electrical power supply system for uninterrupted power supply of all objects (voltage of 0.4 kV) including:
  - A single-circuit dead-end line 10 kV.
  - Installation of two 160 kVA transformer substations (each substation works for 2 wells).
  - Installation of 0.4 kV cable networks supplying electric power to the wells.
  - Construction of an independent system of electrical lighting along the perimeter of the water intake.
  - Installation of the system of control cables providing control over wells operation depending on reservoirs filling and level of water consumption. Control cables are mounted in air version on 10 kV poles.
- Construction of a guard house, fence and gate.
- Construction of unpaved maintenance roads.
- Construction of the river bank protection.

15. In addition to these works, Sanitary Protection Zones (SPZs) will be established to protect the water intake.

2. Rehabilitation of water supply distribution network

16. The existing water supply distribution network is approximately 11 km long. It was constructed more than 40 years ago and is currently mostly out of operation. It is expected that a significant number of pipe sections are damaged and need to be replaced.

17. In order to improve current distribution network, the works will include the following main components:

- Execution of pressure tests and leak detection measures for the water supply trunk mains (ring system) to identify damaged pipe sections and leakages.
- Replacement and repair of pipe sections where leakage occurred during testing (assessed as 4 km).
- Construction of 3 new sections with total length of up to 1.1 km to provide for looping of the main ring system.
- Partial reinstatement of macadam and asphalt road pavement.

3. Rehabilitation and improvement of the water supply and sewerage system in Enesai District

18. The water supply and sewerage systems serving eight multi-story apartment buildings and associated public social infrastructure buildings in Enesai District will be rehabilitated and improved. Currently there is no functional sewerage system, and raw sewage flows into the building basements or nearby non-functional manholes.

19. The works include following main components:

Sewerage

- Rehabilitation of the existing sewerage system connecting eight multi-story apartment buildings, two kindergartens and a public school. The sewers are designed to convey wastewater under gravity flow. The length of the pipe by diameter is 493 m (outside diameter (OD) 160 mm); 903 m (OD 200 mm); and 403 m (OD 315 mm). The total length of the network amounts to 1,799 m.
- Construction of approximately 500 m of PVC-U sewer pipes (OD 200 mm).
- Installation of 10 kV power supply line and installation of the transformer substation 100 kVA 10/04 kV and 0.4 kV cable network.
- Construction of a “modular” pre-fabricated wastewater treatment plant (WWTP) with a capacity of 250 m^3/day, including operation for 6 months and training of the local staff in Operation and Maintenance (O&M) (see Appendix 3 for additional information).
- Partial reinstatement of macadam and asphalt road pavement.

Water Supply

- The designed network will consist of 2,762 m of polyethylene pipes, OD 110 mm, including 18 manholes and fire hydrants. In order to supply the existing apartment buildings, two kindergartens and schools with sufficient pressure the subproject includes construction of a booster pumping station with Q = 14.4 m^3/h at H = 20.0 m, N = 2.2 kW. In addition, 600 m of existing in-house water pipes will be replaced with PE 100, SDR 17, OD 63 mm pipes.
- Rehabilitation/reconstruction of 1.1 km internal network with HDPE pipe nominal diameter (ND)=100 mm.
- Construction of 100 m electrical power transmission line 0.4 kV to supply electricity to water and sewerage facilities of the eight multi-story apartment buildings.

- Partial reinstatement of macadam and asphalt road pavement.

C. Subproject Budget and Time Schedule

20. The subproject cost is estimated at $3.2 million. The construction period will be 15 months, with construction commencement tentatively scheduled for March 2014. The subproject expected lifetime is 25 years.

III. ENVIRONMENTAL LEGAL AND ADMINISTRATIVE FRAMEWORK

A. Legal Framework of Environmental Assessment in Kyrgyz Republic

1. General Provisions

21. The KR is divided administratively into seven oblasts (provinces) plus the metropolitan region of Bishkek, the country's capital. An oblast usually comprises several rayons (districts) and towns. Each oblast has a provincial council while the main executive authority is represented by the head of the oblast administration (Governor) who is appointed by the central government.

22. The executive arm of the central government is headed by the Prime Minister and the First Vice-Prime Minister who are responsible for the economy, industry, and environmental protection, and the supervision of the respective ministries and national agencies. There are also two additional Vice-Prime Ministers responsible for other sectors: one is responsible for social policy, employment, science, cultural development, and mass media while the other is in charge of defense, public security, anti-corruption, emergencies, etc.

23. The legal basis for environmental assessments in KR is formed by the Law on Environmental Protection (1999), the Law on Ecological Expertise (State Environmental Review (1999)), the Instruction on Procedures of State Environmental Expertise for Pre-Project, Project and other Materials in Kyrgyz Republic (1997), and the Instruction on Environmental Impact Assessment Performance Procedures in the Kyrgyz Republic (1997). These legal documents are supported by normative documents. The KR acceded to the *Aarhus Convention on Public Participation in Decision-making and Access to Justice in Environmental Matters* and *Espoo (EIA) Convention* for projects that are likely to have significant adverse environmental impacts across boundaries.

2. Institutional Framework for Environmental Assessment

24. At the highest level of government, the Jogorku Kenesh (Parliament) - through the Commission on land and agricultural issues, water resources, ecology and regional development - is responsible for:

- defining the overall framework for nature protection policy;
- developing and approving laws and regulations; and
- approving government proposals on resource charges and taxes.

25. A number of environmental responsibilities are delegated to the President's office. The President has the authority to:

- establish specific rules and decide on the use of natural resources;
- define and announce the boundaries and the status of environmental emergencies and environmental disaster zones; and
- approve procedures for the collection and use of environmental protection funds.

26. According to Clause 64 of the 2010 Constitution of the KR, the President is responsible for signing all laws adopted by the Jogorku Kenesh, conducting international negotiations, and signing international conventions and treaties with the approval of the Prime Minister. In doing so, the President has the right to transfer the named powers of signing treaties and conventions to the Prime Minister, and members of the Government while keeping the powers for signing the ratification and accession instruments.

27. The key government institution responsible for the establishment and implementation of environmental policy and management in the KR is the State Agency on Environmental Protection and Forestry (SAEPF). According to legal provisions, the SAEPF is the

governmental body for environmental protection and ecology, and industrial safety. Its major mandate is to:

- exercise state control over environment protection, development and implementation of a common policy in the field of environment protection and nature management; and
- control and provide licenses in the field of industrial safety, economic activities and mining.

28. Another recently (2011) established environment-related body under the Government is the State Inspectorate on Environmental and Technical Safety (SIETS). It exercises state control in terms of requirements and norms related to life and health safety provisions for human beings, animals and plants, and environment. Specifically, the SIETS, amongst others, carries out:

- state oversight and control over the legislation, technical regulations on mechanical, seismic, fire, environmental, industrial, energy, biological, chemical, and radioactive safety and/or associated with it processes of production, construction, mounting, setting-up, operation, preservation, transportation, application, implementation, burying, disposal and recycling;
- making provisions for the implementation of commitments regarding international agreements within the limits of its competence; and
- other relevant tasks.

29. The IEE has been carried out in compliance with the following legal documents of the KR: "Overall technical regulations related to ensuring environmental safety in the KR" №151 of 08.05.2009 (as revised of the Law of the KR on 1 March 2012 №11)" and "Instruction about procedure of conducting assessment of environmental impacts in the KR" approved by Minister for Environmental Protection of the KR on 27.06.1997.

3. Application of the Legislation on Environmental Assessment

30. The system for environment assessment in the KR is based on two subsystems: OVOS (the Russian acronym for "Environmental Impact Assessment"), and Ecological Expertise (State Environmental Review, SER). A procedure based on screening lists identifies whether a project is the subject for an environmental assessment. In case this is required, an OVOS is conducted by an OVOS Developer hired by a Project Proponent. After presentation of an Environmental Impact Statement (EIS) for public consultations, and its improvement as a result of the feedback from the public, the OVOS report and a Statement of Environmental Consequences along with other supporting documentation is submitted to a state expert commission for the SER. The project may be approved, rejected or send for re-examination.

31. Public consultation should occur during the conduct of the OVOS and may also be initiated in parallel to the SER as Public Environmental Review (PER). The implementation of any project is permitted only following approval by the SER. The PER is a supplement to the SER and is of a recommendatory nature. The SER duration depends on the complexity of the project, but should not exceed 3 months after submission of all OVOS documents.

4. Other Governmental Bodies with Environment-related Responsibilities

32. Other government institutions with a responsibility related to environmental matters are:

- State Agency for Hydrometeorology ("Hydromet") under the Ministry of Emergencies;
- National Statistics Committee;

- State Sanitary-Epidemiological Department of the Ministry of Health;
- State Agency for Geology and Mineral Resources;
- Water Industry and Melioration Department under the Ministry of Agriculture and Melioration; and
- Kyrgyz State Design Institute “Giprozem” (responsible for elaboration on land use design documents).

5. Sanitary Protection Zones (SPZ)

33. According to the Sanitary Rules and Norms No. 2.1.4.1110-02 "Zones of sanitary protection of water sources and potable water supply" developed during the time of the Russian Federation, normally adopted in the KR through Sanitation Norms and Standard 2.1.4.015-03, all water intake facilities shall have sanitary protection zones (SPZs). These zones provide protection from pollution to both ground and underground water sources. Water intakes shall have three protection zones:

- SPZ I – the area of high security;
- SPZ II – the area to be protected from bacterial contamination; and
- SPZ III – the area to be protected from chemical pollution.

34. SPZ I has strict conditions for the protection of underground water sources; it extends normally 30 m from the outer well. The zone is designed to provide maximum protection from intentional or accidental contamination. Within this zone, the following is strictly prohibited:

- human habitation, and the construction and placement of any structures and buildings that have no direct relation to the operation of the water intake; and
- the presence of unauthorized people, pets and farm animals; the use of pesticides and organic fertilizers for crops and plantations.

35. The territory of SPZ I must be fenced off. This land is strictly protected and improved by placing an artificial surface such as asphalt, gravel, pebbles etc. To ensure pollution prevention to the high security zone, necessary measures should be taken to protect the territory, especially for the areas located near residential and industrial facilities.

36. The purpose of SPZ II is to protect a groundwater source from bacterial contamination. The boundaries of this zone are determined by hydrodynamic and pollutants migration parameters. They are calculated based on the survival period of various pathogens in the groundwater. The estimated survival period (100, 200, 400 days) is dependent on the degree of bacterial contamination and the local climate. Within the SPZ II:

- construction of all types of buildings leading to the disturbance of the soil formation and/or rocks that overlay the aquifers is strictly forbidden;
- the area is to be strictly protected from effluents, sewage, pesticides and fertilizers; and
- cemeteries, burial grounds, warehouses, fuel depots, landfills, livestock and poultry farms, etc. are strictly prohibited.

37. The purpose of the SPZ III is to protect a groundwater source from chemical pollution. To calculate the boundaries of this zone, the rate of migration of chemical contaminants is to be determined. The design life-cycle is at least 25 years. Within the SPZ III:

- it is strictly prohibited to place objects that can cause chemical contamination such as storage facilities for fertilizers, pesticides and fuel; sludge ponds, etc.

6. Environmental Standards

38. Relevant KR environmental standards and procedures include:

Air Quality, Sampling and Analysis

- GN 2.1.6.695-98 “Maximum Permissible Concentrations (MPC) of polluting substances in the atmospheric air of the populated areas”.
- GOST17.2.1.03-84. Environmental Protection. Terms and definitions of pollution control.
- GOST 17.2.4.02-81. Environmental Protection. General requirements for polluting substance detecting methods.
- GOST17.2.3.01-86 Environmental Protection. Atmosphere. Rules to control quality of the air in populated areas.
- GOST17.2.6.01-85. Environmental Protection. Atmosphere. Instruments for air sampling in the populated areas.
- GOST17.2.6.02-85 Environmental Protection. Atmosphere. Automated gas analyzers to control atmospheric pollution.
- RD 52.04.186-89 “Guidelines to control atmospheric pollution”.

Water Quality and Sampling

- SanPiN 2.1.4.002-03. "Drinking water. Hygienic requirements for water quality of the centralized drinking water supply. Quality control ".
- SanPiN 2.1.4.002-03. Regulations on monitoring at a water intake structure.
- SanPiN 2.1.4.002-03. Regulations on frequency of water sampling at water intakes.

Noise Levels, Measurement and Protection

- MSN 2.04-03-2005 "Noise protection"
- SN 2.2.4/2.1.8.562-96 "Noise in the workplace, in residential and public buildings and in the residential area";
- GOST 23337-78 * "Methods of noise measurement in the residential area and in residential and public buildings";
- MUK 4.3.2194-07 "Control of noise level in residential areas, residential and public buildings and premises»
- SNIP 23-03-2003 "Noise protection ".

B. ADB Requirements

39. The major applicable ADB policies, regulations, requirements and procedures for EIA are the Environmental Safeguards – A Good Practice Sourcebook (2012), and the Safeguard Policy Statement (SPS 2009), which provides the basis for this IEE. The SPS promotes good international practice as reflected in internationally recognized standards such as the World Bank Group’s EHS Guidelines. The policy is underpinned by the ADB Operations Manual for the SPS (Section F1, 2010).

40. All projects funded by ADB must comply with the SPS, which establishes an environmental review process to ensure that projects undertaken as part of programs funded through ADB loans are environmentally sound, are designed to operate in line with applicable

regulatory requirements, and are not likely to cause significant environment, health, social, or safety hazards.

41. At an early stage in the project cycle, typically the project identification stage, ADB screens and categorizes proposed projects based on the significance of potential project impacts and risks. A project's environment category is determined by the category of its most environmentally sensitive component, including direct, indirect, induced, and cumulative impacts. Project screening and categorization are undertaken to:

i. reflect the significance of the project's potential environmental impacts;

ii. identify the type and level of environmental assessment and institutional resources required for the safeguard measures proportionate to the nature, scale, magnitude and sensitivity of the proposed project's potential impacts; and

iii. determine consultation and disclosure requirements.

42. ADB assigns a proposed project to one of the following categories:

i. **Category A.** Proposed project is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented; impacts may affect an area larger than the sites or facilities subject to physical works. A full-scale environmental impact assessment (EIA) including an EMP is required.

ii. **Category B**. Proposed project's potential environmental impacts are less adverse and fewer in number than those of category A projects; impacts are site-specific, few if any of them are irreversible, and impacts can be readily addressed through mitigation measures. An IEE including an EMP is required.

iii. **Category C**. Proposed project is likely to have minimal or no adverse environmental impacts. No EIA or IEE is required although environmental implications need to be reviewed.

iv. **Category FI**. Proposed project involves the investment of ADB funds to, or through, a financial intermediary.

43. The subproject has been classified by ADB as environment category B, requiring the preparation of an IEE (this report) including an EMP which will ensure (i) implementation of identified mitigation and management measures for anticipated adverse environment impacts; (ii) implementation of monitoring and reporting; and (iii) subproject compliance with the KR's relevant environmental laws, standards and regulations and ADB's SPS.

C. International Agreements

44. The KR has signed or ratified the following international agreements and protocols:

- UN (Rio) Treaty on Biological Diversity;
- RAMSAR Convention 'Protection of Wetlands';
- The Convention on Environmental Impact Assessment in a Transboundary Context (Espoo);
- The Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention);

- Aarhus Convention on Access to Information and Public Participation in Decision-Making and Access to Justice in Environmental Matters;
- UN Framework Convention on Climate Change; and
- The Kyoto Protocol – UN framework convention on climate change.

45. Of the above protocols, only the RAMSAR and the Aarhus Convention may have to be considered in the context of the Component 3A subprojects.

IV. ENVIRONMENTAL BASELINE OF THE SUBPROJECT

A. General

46. The KR is a land-locked country with an area of approximately 200,000 square kilometers (km^2) surrounded by the People's Republic of China, Kazakhstan, Tajikistan, and Uzbekistan. A large portion of the country is mountainous (94% of the country's area is occupied by mountains, average elevation is 2,750 masl), and it composes a part of the Tien Shan Mountains. Lenin Peak rises to 7,134 m and Pobeda Peak is the highest mountain in the Tian Shan Mountains at 7,439 m. The country is rich in hydropower resources with most of its hydropower plants situated on the Naryn River, the biggest tributary of the Syr Darya River. The population of the country was 5.5 million at the end of 2012.

47. The subproject is located in the Bazar-Korgon Village, which is part of Bazar-Korgon District, located in south central Jalal-Abad Oblast (Figure 3). Bazar-Korgon District has an area of 2,021 km^2, 6.03% of the total Oblast area.

Figure 3: General location of the KR and its bordering countries

48. Jalal-Abad Oblast has an area of 33,500 km^2, about 17 % of the whole area of KR. More than 70 % of its area is covered by the sparsely populated highlands of the Western Tien Shan. The remaining 30 % represent lands along the boundary between KR and Uzbekistan and the Naryn River basin that are the densely populated foothills and plain areas of the Fergana Valley.

B. Geo-Physical Profile

49. Environmental constraints and potential impacts in the subproject area were studied through field surveys, complemented by secondary information from reports and interviews with representatives of the local bodies.

1. Topography

50. Bazar-Korgon district is located in the south of the Jalal-Abad Oblast's central region within the boundaries of the Kara-Unkyur Valley with the adjacent mountain ridges of the Fergana Range in the north-east and Babash-Ata on the north-west. The valley part includes river terraces and the elevation ranges from 600 to 1500 meters above sea level (masl).

51. The subproject area is located approximately at an elevation of 813-815 masl.

2. Climate and Rainfall

52. The country's climate is influenced chiefly by the mountains, KR's position near the middle of the Eurasian landmass, and the absence of large enough water bodies to influence weather patterns. Those factors create a distinctly continental climate that has significant local variations such as fluctuations in the air temperature, precipitation, hours of sunshine, solar radiance and cloudiness. Frosty weather persists until the end of February and intrusions of cyclones from the south-west during the cold period of the year bring humid, tropical air of the Mediterranean and the Arabian seas, with heavy precipitation in Fergana Valley and on the slopes around it.

53. Jalal-Abad Oblast lies southward of the climate divide that passes along the Tales and Kyrgyz mountain ranges. Cold air masses from the south and northeast are hindered in their intrusion into Jalal-Abad Oblast area by these mountain ranges. Remoteness from significant water bodies causes the climate to be continental with hot arid summers, humid spring and autumn periods and relatively cold winters.

54. The average annual precipitation is 200-600 mm in the valley area and reaches 800-1000 mm at higher elevations, in the mountains. The average temperature is 4°C in January and 28°C in July. Maximum wind speed in the valley area is 28 meter per second (m/s) and in the mountains reaches 40 m/s.

3. Geology

55. Structurally and tectonically, Kara-Unkyur Valley is a part of the Fergana Valley that deeply protrudes north-east to the Fergana range piedmonts and is a gradient of northeast strike, filled with a thick layer of quaternary, underlying neogene and older rocks.

56. Quaternary alluvial-prolluvial deposits are represented by boulder-gravels and gravels. Thickness of deposit in the central part of the valley is more than 600 m, and in the area of the proposed water intake is 75 m. Quaternary unconsolidated deposits are underlain with thick conglomerates and neogene clay. The thickness of the Neogene deposits is 500 m.

4. Soil, land resources and use

57. Soil and vegetation cover is diverse and characterized by both horizontal and vertical zonation. The valley area has horizontal zonation from east to west, and the mountainous area has vertical zonation along the slopes from bottom to top. The soils in this area generally belong to two groups: mountain-valley and mountain. The former is eroded to a low to moderate extent, the latter to moderate to high extent.

58. The lowest vertical zonation unit, mountain-valley, has light-brown soils common in the desert-steppes at an altitude of 2220-2500 masl. They are shaped by sagebrush vegetation (semi-bush wormwood) on proluvial-alluvial loam, underlain at varying depths by stone-pebble deposits.

59. At the height of 2500 masl on the northern slopes and 2700-2800 masl on the south, high-mountain (alpine) areas have peaty forest soils. They have a high humus content (to a depth of 70 cm) and dark color.

60. Above 2600-3000 masl and up to the timber, in the subalpine there are alpine meadow forests, and on ridges and southern slopes forest-meadow-steppe soils.

61. In addition, rocky-gravelly alluvial soils are located at the floodplains, poorly differentiated into horizons. They usually contain a significant amount of nutrients, despite the large numbers of coarsely fragmented materials.

62. Bazar-Korgon District is covered by lands which are predominantly arable with appropriate irrigation, and soils are low and moderately eroded. The northwestern part of the area has moderately to severely eroded soils, and is not suitable for agriculture.

5. Hydrology

a. Lakes and Rivers

63. The KR is rich in water resources. There are some 2,000 lakes in the country with a total area of 6,836.2 km^2. The largest of them is the Issyk-Kul Lake, covering 91.2 % of the country's lake area.

64. KR is a part of the Central Asian closed inland basin located at the heart of the continent. Most part of the river network belongs to the Aral Sea basin and the hydrographic systems of the biggest rivers of Central Asian, namely Syr Darya, Amu Darya, Chu and Talas. Additionally one can include the rivers flowing into the closed Issyk-Kul Lake. The river network of the south-eastern part of the country belongs to the Tarim River basin. At the eastern border of the country, the river Karkyra forms part of the Lake Balkhash basin.

b. Lakes and Rivers in Bazar-Korgon

65. The Kara-Unkyur River flows through the area and has a length of 69 km and a catchment area of 572 km^2. It belongs to the Naryn river basin and is a tributary of the Kara Dayra. The Naryn River rises in the Tian Shan mountains and flows west through the Fergana Valley into Uzbekistan. Here it merges with the Kara Darya River to form the Syr Darya. The Kara Dayra River is considered the second most important in terms of water resources in the KR, after the Naryn River.

66. According to the Charvak gauging-station, the average flow of the river Kara-Unkyur ranges from 16.6 to 60.6 m^3/s with an annual average flow of about 30 m^3/s. The maximum flood discharges is about 100 m^3/s (in May), while the minimum flow is 6.5-7 m^3/s (in January-February). Such wide fluctuations in the river flow cause high amplitude oscillations in the groundwater level.

67. The water intake is located on the left bank of Kara-Unkyur River, 400 m to the south-west of Kara-Unkyur diversion dam (Figures 4 and 5).

Figure 4: Kara-Unkyur river in the subproject area

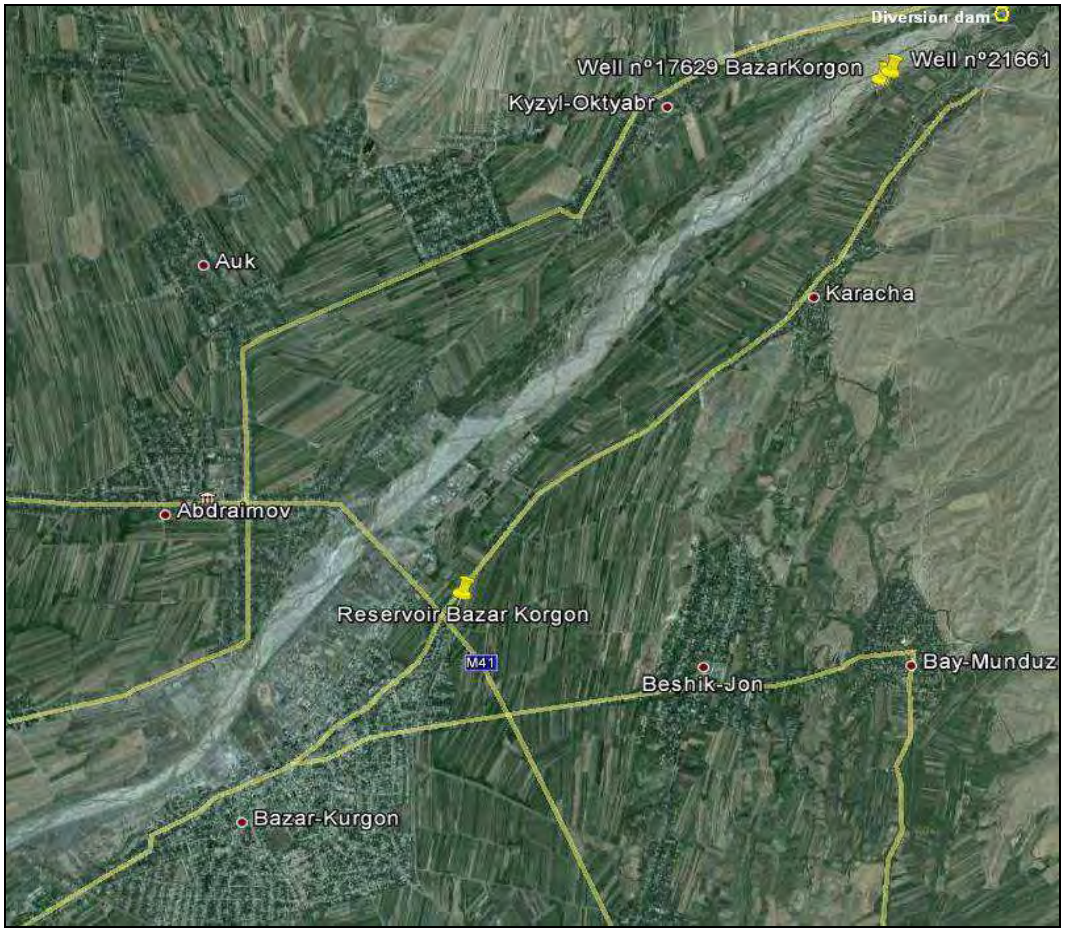


Figure 5: Left bank of Kara-Unkyur River at the water intake site

6. Hydrogeology

68. The groundwater aquifer in the area is within alluvial-prolluvial Quaternary deposits. This aquifer is the first from the surface, has unconfined hydraulic conditions, and is present along the entire Kara-Unkyur Valley.

69. Recharge of the aquifer is mostly through filtration of river and irrigation water and to a lesser degree through filtration of precipitation. There are significant variations in the river water flow, which result in variations of the groundwater level.

70. The structural characteristics of existing wells on or near the intake site are summarized in the Table IV.1.

Table IV.1: Characteristics of Existing Drilled Wells

Well №	Year of drilling	Well testing (proofing)		
		Static level (m)	Yield, (l/s)	*Specific Yield, (l/s)
Wells, near the site				
889	1970	260	40.0	14.8
1301	1974	37.4	33.0	33.0
2494	1985	8.60	28.3	28.3
2959	1988	12.0	37.2	3.4
Wells on the site				
17629	2011	22.2	10.0	25.0
21661	2011	23.8	34.0	21.2

* Specific yield: yield with 1 m reduction

71. Accessible groundwater resources in the Kara-Unkyur valley are estimated at 6,944 l/s, while accessible ground water resources at the intake site are estimated at 700-800 l/s.

72. Table IV.2 shows the results of chemical analyses of water samples from the Kara-Unkyur River and the wells as in the water intake site:

Table IV.2: Results of the Water Quality Test by Chemical Analysis (mg/l)

Indices/Parameters	MPC*	Kara-Unkyur river	Well № 889	Well № 2959	Well № 21661
Sample		**112**	**139**	**417**	**542**
Date		**18.04.1988**	**27.04.1988**	**11.06.2010**	**24.02.2011**
Solid residue (dry particles)	1000	196	198	245	208
Total hardness	7.0	3.5	2.8	3.7	1.3
pH value (hydrogen ion exponent)	6-9	7.2	7.9	6.8	6.8
Oxidability	5.0	0.2	0.5	1.1	0.5
Sodium	200.0	15.4	12.9	15.9	48.0
Calcium	-	48.1	36.1	48.1	26.1
Magnesium	-	13.4	12.2	15.8	0.1
Iron	0.3	no	No	no	no
Ammonia	2.0	no	No	no	no
Sulfates	250.0	25.5	36.6	44.0	53.9
Hydrocarbonates	400.0	201.4	122.0	189.2	112.9
Chlorides	250.0	7.1	10.6	9.9	11.8
Nitrites	0.5	no	No	no	no
Nitrates	45.0	8.5	6.0	5.3	5.8

*Maximum Permissible Concentration Law of the Kyrgyz Republic, from 21.04.2011 *"Technical regulations on the safety of potable water"*

73. The quality of the groundwater meets the requirements of KR Law dated 21.04.2011: Technical Regulations (Specifications) on Safety of Potable Water with respect to all parameters.

Figure 6: Existing well No 21661

C. Ecological Resources

74. The KR is a country that contains biological resources, ecosystems and landscapes, resulting in high biological diversity. Despite the country's small surface area, elevations and current geology give rise to a large number of biomes, including highly elevated areas, fertile valleys and larger freshwater bodies, and the KR is characterized by a higher species concentration per land unit than other Central Asian countries.

75. Only 7% of the total territory is occupied by anthropogenic ecosystems. The remaining part represents undisturbed or partially disturbed natural ecosystems. 23% of the territory is located higher than 3,500 masl characterized by lifeless glaciers and rocks. Some 15% consists of stony, shale, clay surfaces with almost no life.

76. There are 22 classes of ecosystems[3] (see Table IV.3). The presence of deserts (more than 13,200 km^2, or 6.8% of the territory) together with extremely poor ecosystems of nival – subnival belt (11,500 km^2, or 5.8% of the territory) creates rather hard living conditions in the larger part of the country (12.6%). The highest diversity is located at mid-elevation areas at 2,000-3,000 masl, where 14 of the 22 classes of ecosystems can be found, or 63 % of the total diversity. However, the mid-elevation area occupies just 30.8% of the country territory.

77. The ecosystem diversity is unevenly spread. It is the richest in the Western Tien-Shan and Central Tien-Shan bio-geographical regions, where 16 of 22 ecosystem classes can be found, or 72.7% of the total diversity. The poorest regions are Fergana and South-Kazakhstan provinces where only 3-5 classes of ecosystem can be found, or 22.7%.

[3] Shukurov E.D. Issues of Biodiversity in the Kyrgyz Republic. Proceedings of the Nat. Ac. Of Sci. Echo of Science. Bishkek. 1997. - №2-3; Project on biodiversity preservation action plan and strategy. Ministry of Environmental Protection KR. Bishkek. 1998.

Table IV.3: Ecosystems of the Kyrgyz Republic

Ecosystem name	Area (km^2)	% of the country area
Spruce forests	2,722	1.39
Juniper forests	2,680	1.35
Broad-leaved forests	464	0.23
Tugays	226	0.14
Small-leaved forests	711	0.36
Mid-mountain deciduous forests	970	0.48
Mid-mountain petrophilousbushes	2,317	1.17
Savannoids	6,081	3.06
Almonds and pistachios	182	0.09
Nival and sub-nival belt	11,527	5.81
Cryphilic forests	27,242	13.72
Criophilic steppes	21,413	10.79
Criophilic deserts	1,911	0.96
Mid-mountain meadows	8,764	4.42
Mid-mountain steppes	17,643	8.89
Mid-mountain deserts	2,543	1.28
Mountain boghara	2,791	1.41
Piedmont steppes	823	0.41
Piedmont deserts	8,768	4.42
Petrophilic low-mountain bushes	181	0.09
Lakes and swamps	393	3.57
Cultivated lands	12,475	6.28

78. Significant part of types and sub-types of animals and plants are endemic and cannot be found anywhere else in the world.

79. Natural grassy ecosystems are used as pastures and meadows, and occupy the second important place after the anthropogenic systems (settlements and grazing lands), which replaced natural step ecosystems at the elevation of 500-2,000 masl. These ecosystems were subjected to human activity and eroded up to 70%. Decrease of grazing in certain pastures positively affects restoration of eroded ecosystems. However, it happens mainly because of growth of weed grass in such areas. Pastures dominate on the slopes and are also important for slope protection.

1. Jalal-Abad Oblast Ecology

80. The world largest walnuts and fruit forests are located in the KR covering 70,000 hectares. They represent a unique natural formation and primarily grow in Ferghana and Chatkal ranges at the elevation of 1,000-2,200 masl. In the Oblast clusters of walnut, archa (juniper), fir trees, fruit trees dominate: 5,012 ha of fir trees, 4,287 ha of walnut forests and fruit trees, and 38,859 ha of archa. The walnut forests are located at the southwestern slopes of Fergana and Chatkal ranges between 800-1,200 masl. In these forests, about 130 species of trees and bushes can be found, among them walnut, pistachio, almond, pear, alycha, black current and apple trees. The productivity of walnut forests is high with some trees producing a harvest of up to 200-400 kg per year.

2. Fauna

81. Jalal-Abad City is located in the steppe and desert zone with arable lands. Turkestani rat and redtail sandpiper inhabit in this zone. Eastward of the town and Kugart River, desert and semi-desert species can be found such as reptiles – Grey naked-toed gecko (Cyrtodactylus), Turkestani agama, takyr toad agama (Phrynocephalus), and Grey monitor (Varanidae), and mammals - (Rhinolophus) horseshoe(-nosed) bats, Asian barbastelle, and white-bellied long-eared bat (Otonycteris). Other mammals include synanthropic species like dogs, cats, sparrows, black birds, etc.

3. Flora

82. The lowest areas (500 to 900 masl) in the Oblast are covered by desert and/or semi-desert sagebrush and associated vegetation, on light grey soils. Typical plants for this zone are spring sedge and white wormwood. Belts of steppe vegetation and xerophytic woodlands cover large areas, occupying high altitude adyrs and some lowlands within an altitude of 900-1,300 masl. The forest-steppe zone is located at altitudes between 1,000-2,200 masl, with walnut forests alternating with steppe meadows, bushes and sparsely distributed apple trees.

83. Forest vegetation is located on slopes of all exposures, except for the southern and eastern part. The greatest part of the forest area is covered by forests of walnut, maple and apple trees. The southern and eastern slopes are partially open covered with steppe zone ephemeroid meadows and steppes dominated by bulbous barley, wheat grass other common grasses.

84. Subalpine meadows and forest vegetation consist of fir, juniper, maple and birch, which are widespread. Most of the alpine zone is occupied by rocks and debris, devoid of vegetation, though there are also alpine meadows.

4. Protected Areas

85. There are 17 State Reserves and Natural Parks that represent the national system of Specially Protected Areas in the KR (Table IV.4).

5. Special Protected areas in Jalal-Abad Oblast

86. As it is seen from the Table below, there are three State Reserves (Zapovedniks) in Jalal-Abad Oblast, namely Besh-Aral, Sary-Chelek and Padysha-Ata. In addition, there is one National Natural Park in the Oblast - Saimaluu-Tash that also represents cultural and historical heritage site with ancient petroglyphs.

87. Sary-Chelek Biosphere reserve is located in the branches of Chatkal range. It was established to protect walnut forests in 1959. Its lower point lies at the altitude of 1,200 masl, the highest point is located at the altitude of 4,247 masl (Mustor mountain). In the Reserve, more than 1,000 plant species grow; up to the altitude of 2,100 masl, forests of walnut and apple prevail. Higher, at the altitude of between 2,100-3,000 m, there is a sub-alpine belt that covers fir and spruce forests, and grass-graminoid meadows. Some areas of walnut forests are like geobotanic museums, in which tree species typical for Siberia and various places of Tien Shan can be found. Many species of waterfowl can be found in spring and autumn around the lakes.

88. All four protected areas are located far enough from the subproject location not to cause an impact by the subproject works. No Ramsar sites (wetlands) are located within or close to the subproject area.

6. Jalal-Abad Oblast Red Data Book Species

89. The first edition of the KR Red Data Book was published in 1985, and included a limited number of endangered species of plants, animals, insects, and amphibians. In May 2005, a new red list of species was approved by the special Governmental Decree. According to the most recent Red Data Book of the KR, Jalal-Abad Oblast has a high number of plants, amphibian, reptiles, and arthropod species included into the Red Book. However, there are no rare and endangered species included in the Red Data Book found in the subproject sites and surrounding areas.

Table IV.4: List of Natural Specially Protected Areas

#	Name of Protected Area	Square (ha)	Year of Establishment	Province/ Oblast	Distance from Subproject Area
State Reserves					
1	**Besh-Aral**	**81,600**	**1979**	**Jalal-Abad**	**227 km**
2	**Sary-Chelek**	**23,868**	**1959**	**Jalal-Abad**	**100 km**
3	**Padysha-Ata**	**15,846**	**2003**	**Jalal-Abad**	**80 km**
4	Karatal-Japyryk	21,264	1994	Naryn	
5	Naryn	36,969	1983	Naryn	
6	Sarychat-Ertash	72,080	1995	Issyk-Kul	
7	Issyk-Kul	19,086	1948	Issyk-Kul	
8	Kulun-Ata	24,000	2004	Osh	
9	Kara-Buura	68,495	2006	Talas	
National Natural Parks					
1	Besh-Tash	32,411	1997	Talas	
2	**Saimaluu-Tash**	**32,000**	**2002**	**Jalal-Abad**	**48 km**
3	Ala-Archa	4,000	1976	Chui	
4	Chong-Kemin	126,514	1997	Chui	
5	Salkyn-Tor	10,000	2001	Naryn	
6	Kara-Kol	38,256	1997	Issyk-Kul	
7	Kara-Shoro	8,450	1996	Osh	
8	Kyrgyz-Ata	11,172	1992	Osh	

Sources: State Agency on Environmental Protection and Forestry, 2006; The Kyrgyz Republic: Environment and Natural Resources for Sustainable Development. Bishkek. 2007.

D. Local Environment at Intake Site

1. General Description

90. The water intake of Bazar-Korgon Village is located in the region of Karacha Village on the Kara-Unkyur River. The water intake was constructed in 2010-2013 with the assistance of the ICRC. At the water intake 2 wells were drilled, power supply system was installed and a guards' building was constructed. Expansion of Bazar-Korgon Village water intake aims to increase the capacity of the water intake, regulate of water consumption with the help of reservoirs, and provide the population with pure water which has undergone disinfection.

91. Water is conveyed from the water intake to an existing 1,000 m^3 reservoir near the village through a newly built water conduit constructed with ICRC assistance. The territory of the water intake is fenced.

92. As noted above, at the time of report preparation the ICRC facilities had just been put into operation. However, due to problems with the distribution system, only limited supplies can be provided even with the ICRC system in operation.

2. Flora and Fauna

93. There is no natural vegetation at the water intake site, and the site is dominated by grass species typically found in disturbed areas. There are no rare and endangered flora species. There is no fauna at the intake site, except for several synanthropic species of insects and birds. There are no rare and endangered fauna species.

94. The site for the modular WWTP is unused barren land behind a football stadium. It has some grass cover and has also been used for spoil disposal. There are no rare and endangered flora or fauna at the site.

95. The main distribution network lies along the main road leading northeast from Bazar-Korgon Village. It has typical roadside vegetation. There are no rare and endangered fauna species.

Figure 7: Vegetation and soil at the water intake location

Figure 8: Herbaceous vegetation at the water intake in the vicinities of Karacha village

Figure 9. Water tower and two wells, power supply line, and the Kara-Unkyur river in the distance

Figure 10. A path and fence within the territory of the water intake

3. Soils

96. The soils at the water intake site belong to the piedmont-valley landscape and are mostly light and typical sierozems characterized by gravelly and clayey structure. The soils contain relatively small level of humus and high content of mineral nutrient substances and good for cultivation of different agricultural crops.

Figure 11: Intake location

Figure 12: Vegetation in the left bank at the water intake

Figure 13: Vegetation in the WWTP location

4. Infrastructure

97. Infrastructure within the existing territory of the water intake includes:

- Two existing wells with a capacity of up to 33 l/s;
- A collection chamber with a volume of 10 m^3;
- A recently erected water tower;
- Guard's house;
- A 250 kVA transformer substation and a system of cable networks to supply electric power to the wells;
- Site fence (due to gaps, the current fence does not meet the SPZ I standards).

5. Potential Pollution Sources

98. There is only one potential pollution source, agricultural land located nearby the water intake. However, this does not appear to be causing groundwater contamination, and the water analysis shows that the groundwater quality meets MPC standards.

E. Social, Cultural and Economic Resources

1. Demography and Ethnic Groups

a. Population in the Republic

99. The population of the KR was 5.5 million at the end of 2012. One third of the population lives in towns; the rest lives in rural areas. There are about 90 ethnic groups, with the largest being Kyrgyz (68 %), Uzbeks (14 %), and Russians (10 %). Other communities are Dungan (Chinese Muslim), Tajik, Korean, Ukraine, Uygur, Tatar, Kazakh and Turkish. Demographically the population of the country is young. At the end of 2012, 32.45 % of the total population was comprised of children and adolescents, about 60.95 % of the population was of an employable age, and elderly (retired) people comprised approximately 6.6 %.[4]

a. Population in Bazar Korgon

100. As shown in the table below, Jalal-Abad Oblast's population is just above one million. Bazar-Korgon District covers an area of 2,021 km^2, and has a population of 138,721 people, 13.4% of the Oblast's population. The district has 56 villages belonging to 9 aiyl kenesh (village councils, or self-governments): Akman (6 settlements), Bazar-Korgon (3), Beshik Djon (4), Kirov (5), Kyzyl-Unkyur (4), Mogul (6), Saydykum (12), Soviet (8), Talduu-Bulak (8). The administrative center of the District is Bazar-Korgon Village.

Table IV.5: Jalal-Abad Oblast Population by District

No.	District	Population
1	Suzak	237,472
2	Bazar – Korgonskii	138,721
3	Nookenskii	119,735
4	Aksyiskii	114,361
5	Ala-Bukinskii	91,553
6	Chatkalskii	22,841
7	Toktogulskii	94,780
8	Toguz-Torouzskii	22,720
9	Jalal-Abad city	98,472
10	Kok - Jangak town	10,407
11	Mailusuu town	22,901
12	Tash-Komur town	36,673
13	Kara-Kul town	22,954
	Total	**1,033,590**

101. According to the 2009 census, in Bazar-Korgon District the Kyrgyz ethnic group makes up 55.6%, of the population, Uzbeks 43.2%, the Uighurs 0.5%, Turks 0.2%, Russian 0.2% and others 0.3%.

2. Economics

a. Jalal-Abad Oblast Economy

102. Jalal-Abad Oblast is one of the most industrially developed oblasts in the country, and is home to more than 100 industrial enterprises representing a wide range of industries including electric power generation, electronics, coal, sewing and shoemaking industry,

[4] Source: Kyrgyz Republic National Statistical Committee

exploration and excavation of minerals (gold, oil, coal, gas), metal processing, food industry (processing agricultural production.

b. Bazar-Korgon District Economy

103. The district economy, including the subproject area, is predominately agricultural. Bazar-Korgon possesses significant irrigated agricultural low lands, complemented by extensive rain-fed areas on adjacent slopes. Key crops include rice, cotton, wheat, corn, barley, tobacco, nuts, other fruits and vegetables, and silk-worm cocoons. These sustain and support a modest layer of agro-industries, including processing and sale of raw cotton, production of cottonseed oil, and seed farming. The district center hosts a large number of small enterprises and commercial operations including rice-hulling mills, machine shops, and creameries.

c. Employment

104. The working-age population is growing rapidly, and the unemployment level is high. Since 2000 unemployment grew from 7.5 % to 9.9 % in 2011. The average age of unemployed people is 31 years, while 50.7 % of them are below the age of 29.

105. Migration is a notable phenomenon for the Kyrgyz population. During 2001-2008, migration outflow was on average more than 29,000 people per year. According to the World Bank, 2010 year-end, the KR was among the top ten developing countries in terms of receiving money remittances, and remittances in are estimated at 28 % of GDP.

106. Table IV.6 shows poverty levels in Bazar-Korgon District. The KR poverty line is calculated based on earned income from all activities, converted into monetary terms. Families with incomes less than 1,744.8 Soms per person per month are classified as poor.

Table IV.6: Poverty Level in Bazar-Korgon District

No.	Ayil Okmotu	Number of Households	Household Income Levels (Soms/person/month)				
			0-370	371-1050,70	1051 – 1744,80	Total 0-1744.80	% Poor
1	Bazar-Korgon	6161	1871	47	52	1970	32,0
2	Akman	2533	1019	271	168	1458	57,6
3	Beshik-Jon	2550	962	96	100	1158	45,4
4	Mogol	2942	1325	366	87	1778	60,4
5	Kenesh	5297	1724	605	318	2647	50,0
6	Saidikum	3044	630	452	384	1466	48,2
7	Kyzyl-Unkur	930	345	183	10	538	50,2
8	Arstanbap	3897	1467	600	400	2467	63,3
9	Taldy-Bulak	2239	920	179	130	1229	54,9
		29593	10263	2799	1649	14711	49.7

Source: Ministry of Social Development of the Kyrgyz Republic, November 2012.

3. Health and Hygiene

107. Jalal-Abad Oblast is characterized with a high percentage of the recorded waterborne diseases, see Table IV.7[5]. The most common include those in the general intestinal group

[5] According to the Department of Sanitary and Epidemiological Surveillance, Ministry of Heath, KR, does not have any medical statistics disaggregated only to the water borne diseases. The disaggregated data on water borne diseases are planned to be included into the medical statistical data base during next two-three years. This causes some ambiguity, for example: the statistical breakdown of the diseases mentioned in the Table IV.7 consist of both water borne and viral included, thus the numbers cannot be attributed only to water borne diseases.

(including acute intestinal infections), typhoid fever, dysentery, parasitological helmintosus, and viral hepatitis A and E. Normally, waterborne diseases are caused by pathogenic microorganisms that most commonly are transmitted in contaminated fresh water. Infection commonly results from bathing, washing, drinking, the preparation of food or the consumption of infected food.

108. In comparison with other oblasts the level of infection and parasitological illnesses in Jalal Abad Oblast is higher. This tendency has been stable for many years. According to the National Report of the Kyrgyz Republic on the State of Environment (2006-2011), morbidity in typhoid fever in Jalal Abad Oblast has a "character of endemicity" and is registered annually in sporadic and local outbreaks. From Table IV.7 it can be seen that among adults and adolescents the morbidity level in intestinal and water borne diseases is high but rather stable during last several years, while the level of morbidity among children up to 14 years old represents a growing trend. In the age group of patients, 81,6% are children up to 14 years old, including 40,6% of children up to 1 year old. The level of intestinal morbidity has exceeded the overall index of the country by 1.8 times. This is associated with poor provision of safe drinking water. The child mortality rate in general intestinal infections (diarrhea) remains high at 132 in 2005 and 106 in 2010, including 84 (77,4%) among the children aged under one year old.

4. Current Water Supply System Situation

109. The water supply system in Bazar-Korgon Village was constructed in the 1970s and includes three deep-tubewells, a 1,000 m^3 reservoir, a chlorination facility, a 200 mm diameter transmission line, and a 11 km long distribution network. The system has not functioned properly since 1992 due to collapse of the maintenance and operation systems and damage to the facilities. Similarly, with the breakdown of water supply system the sewerage system has also been non-functional

110. Improvements of the Bazar-Korgon Village's water supply system were initiated with assistance of the ICRC in 2010. Two out of four planned boreholes for a new water intake have been installed, a transmission line from the water intake to the existing reservoir was installed, and the reservoir was rehabilitated.

Table IV.7: Registered number of patients in Jalal-Abad Oblast

Types of diseases	Registered patients TOTAL			
	Adults and adolescents		Children ≤ 14 years old	
	Total	Rate per 100,000	Total	Rate per 100,000
Total for 2011	**316,619**	**45,079.9**	**106,112**	**30,928.9**
Some infection and parasitological illnesses in 2011	**13,067**	**1,860.5**	**14,974**	**4,364.5**
Intestinal diseases in 2011	2,396	341.1	6,622	1,930.1
Acute intestinal disease in 2011	1,815	258.4	5,857	1,707.2
Viral hepatitis (A,B,C,D,E)	655	93,3	2515,0	733,1
Total for 2010	**317,161**	**45,854.8**	**101,114**	**29,895.6**
Some infection and parasitological illnesses in 2010	**12,444**	**1,799.1**	**14,883**	**4,400.3**
Intestinal diseases in 2010	2,917	421.7	6,038	1,785.2
Acute intestinal disease in 2010	2,249	325.2	4,729	1,398.2
Viral hepatitis (A,B,C,D,E)	476	68,8	2478	732,7
Total for 2009	**295,397**	**43,474.9**	**14,688**	**4,378.1**
Some infection and parasitological illnesses in 2009	**13,923**	**2,049.1**	**14,688**	**4,378.1**
Intestinal diseases in 2009	2,443	359.5	4,948	1,474.9
Acute intestinal disease in 2009	1,353	199.1	3,550	1,058.2
Viral hepatitis (A,B,C,D,E)	No data	No data	No data	No data

Source: Ministry of Health in the KR

5. Infrastructure and Transportation

111. The geographical location of the KR in Central Asia provides favorable conditions to develop the country's existing transport networks as transit corridors. The road network in KR comprises 34,000 km roads of which 18,000 km are commonly used motorable roads. In terms of the highway network, arterial highways are of special importance for the national economy. One of the most strategically important arterial roads is the Bishkek-Osh highway with a length of about 678 km. It connects the North and South of the country and supports common economic and political activities.

112. Road, rail, and air transport are well developed in Jalal-Abad Oblast. In addition to the earlier mentioned Bishkek-Osh road, there are several other important road connections such as Jalal-Abad - Kazarman and Uch-Korgon - Kerby - Ala-Buka - Kanysh-Kiya.

113. The KR has an extensive network of electricity transmission lines with a length of 6,600 km and 190 substations. The National transmission company "JSC National Electric Grid of Kyrgyzstan" provides electric supply generated by the internal hydropower generating plants to four national distribution companies and 68 direct consumers. The company also imports and exports electricity through various cross-border transmission lines to the neighboring countries of Kazakhstan, Uzbekistan and Tajikistan.

6. Historical and archaeological sites

114. The KR from the earliest times was a part of the Central Asian civilization. Being located right along the Silk Road, it took in cultural achievements of different ancient civilizations. Numerous archaeological objects in the KR form an integral part of the World's cultural heritage. In Jalal-Abad Oblast, there are several important places of worship and historical monuments dating back to the XI-XII and XVII centuries. Rock paintings

(petroglyphs) in “Saimaluu-Tash” represent a large concentration of petroglyphs of the Bronze, Sak, Hun and Sarmat epochs (II-I millennium B.C.). However, there are no known historical archaeological resources within or adjacent to the subproject sites.

V. ANALYSIS OF ALTERNATIVES

115. An analysis of subproject alternatives was undertaken during the subproject design to determine the best way of achieving the subproject objectives while minimizing environmental and social impacts. The design takes into account the recent investment of ICRC in the construction of new intake and transmission pipeline.

116. The following alternatives were considered:

- **Gravity flow water supply** - this is the preferred water supply system design. However, due to topography and required pressure for firefighting, the system was designed as partly gravity and party pumping.
- **Rehabilitation of the existing WWTP** - rehabilitating the dysfunctional sewerage main and the existing WWTP in Enesai for disposal of sewage from multi-story buildings was rejected as it requires substantial additional investment and a long implementation period.
- **Gravity flow sewerage system** - sewerage systems based on gravity flow are preferred over systems with pumping of sewage. The proposed gravity system is simple in operation and requires less man power and, importantly, does not require energy. This option was incorporated into the design.

117. In addition, not undertaking the subproject - the “No Action Alternative” - was also considered. However, this would not realize the objective of improving municipal services through the provision of a more reliable and higher quality water supply and a safer sewerage system, and the “No Action Alternative” was deemed neither a reasonable nor prudent course of action.

VI. ASSESSMENT OF ANTICIPATED ENVIRONMENTAL IMPACTS ASSESSMENT AND MITIGATION MEASURES

A. Methodology

118. A subproject environmental impact is any change in physical, biological, and socio-economic conditions, and physical cultural resources resulting from subproject activities. The methodology for identifying potential subproject impacts and associated mitigation measures has included the following steps:

- collection of subproject information and screening of subproject preconstruction, construction and operational stage activities to identify those with the highest potential for environmental impacts;
- characterization of potential environmental impacts based on information on the proposed subproject and on available environmental data, surveys and site visits undertaken by national and international environmental specialists; and
- identification of appropriate mitigation measures based on experiences in similar subprojects in the region and the expertise of the national and international environmental and other specialists.

119. Potential impacts of the subproject have been assessed under the following categories:

Direction

- Positive impact: results in a positive effect on physical, biological, and socio-economic conditions, and physical cultural resources.
- Negative impact: results in a negative effect on physical, biological, and socio-economic conditions, and physical cultural resources.

Type

- Direct: impacts which occur through direct interaction of a project activity on physical, biological, and socio-economic conditions, and physical cultural resources.
- Indirect: environmental impacts that cannot be immediately traced to a project activity but can be causally linked.

Duration

- Short term: impact does not result in a permanent alteration in conditions. In general the impact is short-lived (less than a year).
- Long term: impact results in a permanent alteration, or duration of impact is more than one year.

Accumulation

- Simple: impacts that if occurring over a prolonged time period do not lead to worsening consequences.
- Accumulative: impacts that if prolonged over time increase in severity.

120. Based on an assessment of the above, the magnitude of subproject impacts on physical, biological, and socio-economic conditions and physical cultural resources have been classified as follows:

- **No Impact**: no adverse consequences.
- **Low Impact**: a minor impact from which recovery is immediate or short-term, and which requires either no or limited and typical mitigation measures.
- **Moderate Impact**: a moderate impact from which recovery to initial conditions will occur over time and which requires typical mitigation measures.
- **High Impact**: a significant impact from which recovery requires significant mitigation measures over a long period, and/or where there will likely be a failure to re-establish initial conditions.

B. Screening of Key Subproject Activities

121. A screening of subproject activities identified the key subproject activities most likely to result in potential impacts:

- Earthworks: refers to the earthworks needed for the construction of infrastructure, i.e. excavation, trench filling, constructing embankments, etc.
- Felling and clearing of vegetation: refers to all actions for the removal of existing vegetation by mechanical or manual means, including the fertile soil layer.
- Construction of new infrastructure: mainly wells, reservoirs and transmission pipelines; also included are other smaller civil works such as water measuring chambers, some buildings like chlorination plant, and works for power supply connection.
- Construction machinery and vehicles: includes actual operation of the machinery at the work sites and truck traffic on roads.
- Construction of temporary site facilities: temporary occupation of land next to the site; this includes the use of land for stock piling of materials, machinery park, offices and toilets.

C. Preconstruction Phase Potential Environmental Impacts

122. Preconstruction phase impacts are related to subproject siting and associated land acquisition and resettlement. All other impacts are addressed in the construction and operation phase impact assessment (sections VI.D and VI.E, respectively).

1. Subproject Siting

a. Land Acquisition and Resettlement

123. The physical works do not require any land acquisition or resettlement. The only impacts involve the cancellation of leases held by local farmers over 1.7 ha of public land required for improvements to the water supply intake area. Specifically, in Beshik-Jon A/O three leases belonging to three farmers were prematurely cancelled; and in Bazar-Korgon A/O one lease was prematurely non-renewed. All four leaseholders suffered inconvenience and temporary economic or tenure insecurity. Two of these displaced leaseholders are eligible for Vulnerable Households Allowances. No secondary displacements of other leaseholders or informal land users were identified.

124. Compensation for these impacts through the provision of replacement leases as well as compensation for lost income and Vulnerable Households Allowances has been addressed through a separate Resettlement Plan (RP) including a Corrective Action Plan.[6]

[6] Kyrgyz Republic: Emergency Assistance for Recovery and Reconstruction, Resettlement Plan, Component 3A Water Supply and Sanitation: Bazar-Korgon Subproject, Sept 2013.

125. Overall negative land acquisition and resettlement impacts from subproject siting are considered "**Low Impact"**, and are mitigated through the RP.

D. Construction Phase Potential Environmental Impacts

1. Impact on the Physical Environment

a. Climate

Potential Impacts

126. Construction phase activities under the subproject will not result in the release of greenhouse gases and are not predicted to have any negative impacts on climate or climate change. Therefore, in relation to climate, the subproject is expected to have "**No Impact**".

Mitigation Measures

- Not required.

b. Geology

Potential Impacts

127. Potential impacts on geology are most likely to occur during the construction stage due to subproject-induced demand for construction materials such as rock, sand and other building materials. Construction materials sourced from informal or illegal quarries can result in negative impacts including loss of vegetation and erosion and sedimentation of surface water resources.

128. Only existing permitted quarries will be used to source construction materials, and the material demand will be moderate; the risk is therefore considered to be "**Low Impact**".

Mitigation Measures

129. Contractors will be required to obtain basic construction materials from existing quarries which have official permits for their operation.

c. Topography

Potential Impacts

130. Potential impacts on area topography are most likely to occur during the construction phase due to earthworks and the construction of the reservoir, pipeline and other works.

131. The earthworks will only take place during the construction phase and once pipelines have been placed all trenches will be covered. Some new embankments (no more than 5 m in height) will be constructed, associated with the construction of reservoirs.

132. Overall it is expected that the topography will not change except for areas where the intake will be constructed, and with appropriate mitigations spoil disposal and erosion can be managed. Therefore, the risk is considered to be **"Low Impact".**

Mitigation Measures

- Final forming and replanting of earthworks in backfilled sections will be completed as soon as possible to facilitate the regeneration of a stabilizing ground cover.

- Reservoir, pipeline and other works will be re-vegetated to facilitate regeneration and slope stabilization.

d. Soil and land resources

Potential Impacts

133. Potential impacts on soil are most likely related to soil contamination during the construction stage caused by accidental spillages of petroleum products and other hazardous contaminants. This may also affect flora, fauna and human health, and be conducive for accumulation of heavy metals and toxic substances in the soil. However, this risk can be effectively mitigated through good materials handling and storage practices. Excavation can also lead to soil erosion and sedimentation, though this can be minimized through good management practices. Well drilling can also lead to contamination from sludge, though this can be addressed with a closed-loop system.[7]

134. It is expected that some soil and rock disposal will be required. If the disposal in not done properly, there will be a risk of unsightly spoil dumps, which can also lead to sedimentation and water pollution. However, most of the spoil material will be utilized in the works.

135. No loss of productive soil is expected as most of the land in the subproject area is urban land or wasteland with only limited productive capacity. Furthermore, no land acquisition will be undertaken. Overall soil and land resource impacts are considered to be **"Low Impact"**.

Mitigation Measures

Contamination from Spillage

- Good management practices will be adopted to prevent spills of fuels, oils and hazardous materials.
    - Fuels, oils and hazardous materials will be stored in a secure bunded area with impermeable floor and weatherproof roof.
    - Refueling of vehicles will be undertaken at existing stationary gas stations and maintenance, washing and repairs undertaken at existing repair stations.
    - Construction machinery will be maintained in good condition and any leaks will be quickly repaired.
    - Spill response equipment will be provided at construction sites, and all spills will be cleaned-up immediately.
- Soil contaminated by oily products and other substances will be removed for disposal at a permitted site agreed to by the Territorial Environmental Protection Department in Jalal-Abad City.

Contamination from Drilling

- A closed-loop system of sludge circulation will be used during drilling.
- Metal containers will be used for collection of sludge after drilling and transportation to a permitted site agreed with the Territorial Environmental Protection Department in Jalal-Abad City.

[7] A closed loop system is a mechanical and chemical system which allows an operator to drill a well without using a reserve pit, thereby reducing the likelihood soil and water contamination from drilling fluids.

Soil Loss, Erosion and Sedimentation, Spoil Disposal

- Soil clearance will be minimized to the extent possible.
- Topsoil will be separated from subsoil during excavation works, and topsoil will be reused as a top layer.
- Remaining excavated materials will be reused wherever possible, e.g. for backfilling.
- Spoil disposal sites, if required, should avoid sensitive locations such as water sources, wetlands, etc. Site should be selected in consultation with the Territorial Environmental Protection Department in Jalal-Abad City.
- Clearing and/or excavation activities will be scheduled taking weather conditions into account (e.g. minimize excavation activities during rainy weather).
- Embankments slopes will be stabilized to reduce slips or erosion.
- Completed earthwork areas will be replanted to facilitate the regeneration of flora and for stabilizing the ground cover.
- Low maintenance landscaping will be implemented along the roadside of the construction area.

e. Hydrology and Surface Water Quality

Potential Impacts

136. Potential impacts during the construction phase relate to surface water quality. Earthworks activities and the construction activities may increase soil erosion and some sediment may enter into the Kara-Unkyur River. Accidental spills could also occur and the Kara-Unkyur River and other watercourses could be contaminated.

137. Considering that (i) the river is highly regulated (weir upstream, river channeling, agriculture in the flood plain, etc.), (ii) the distance between the subproject and the river is relatively long, and (iii) preventive measures will be adopted to minimize sediment entry and other pollutants into the river, no substantial increase in contamination of the Kara-Unkyur River and other watercourses is anticipated. Furthermore, in case contamination does occur, it will be temporary. Therefore, the risk is considered **"Low Impact"**.

Mitigation Measures

- In addition to the measures below, see above for good management practices to be adopted to prevent spills of fuels, oils and hazardous materials.
- Construction work for the river bank protection will be implemented in the Kara-Unkyur River low-flow season.
- Where pumping of water is to be carried out, filters will be used at the intake points and the discharge will be through a sediment trap to avoid the entry of sediments in watercourses and the river.
- Water quality in the Kara-Unkyur River will be monitored by a qualified consultant or agency (DO, BOD_5, COD, SS, hydrocarbons, conductivity, turbidity, TDS, pH, temperature) if deemed necessary after visual inspection by the Engineer or DSC the National Environmental Specialist (NES).
- Appropriate material stockpiles storage management will be implemented to prevent sediment-laden storm run-off entering watercourses. This includes:
    - allowing the establishment of vegetation on the exposed soil;

- surrounding stockpiles with cut-off ditches to contain any run-off;
- not siting stockpiles within 50 m of any watercourse, and not siting stockpiles and other construction materials in flood prone areas.

- As noted above, fuels, oils and hazardous materials will be stored in a secure bunded area with impermeable floor and weatherproof roof, and good management practices will be adopted to prevent spills of fuels, oils and hazardous materials. In addition, waste water associated with concrete mixing and placement (including wash-down water) will be contained and treated in settling ponds so as to prevent pollution of watercourses.
- Perimeter drainage will be provided around construction sites and drainage will be directed to a settling pond.
- Construction camps will be properly sited and provided with drainage and wastewater facilities to collect run-off and, if necessary, treatment of the run-off. Wastewater will not be discharged into water bodies used for domestic or industrial water supply.

f. Hydrogeology

Potential Impacts

138. Potential impacts are most likely to occur in the construction stage on groundwater resources where water tables are high. According to information from existing wells in and close to the subproject area, the depth of the groundwater level is about 40 m. Because of the significant depth of groundwater no significant pollution is expected; therefore, the risk is considered to be **"Low Impact"**.

Mitigation Measures

- See construction phase mitigation actions "Hydrology and Water Quality Mitigation Measures".

g. Wastes

Potential Impacts

139. Wastes such as construction and domestic debris will be generated during the construction activities, and can cause water and soil contamination. There is also the potential for encountering asbestos during dismantling of existing pipes, and special care will need to be taken. Overall, this impact is temporary in duration and can be effectively mitigated, and is considered "**Low Impact"**.

Mitigation Measures

- The Contractor will prepare and implement a Waste Management Plan to be approved by the DSC, the SAACC SU, the Territorial Environmental Protection Department in Jalal-Abad City and the State Center for Sanitary and Epidemiological Surveillance. It will include:
  - Appropriate temporary waste storage containers will be provided at construction sites and worker camps.
  - All wastes will be reused or recycled to the maximum extent possible. Wastes will be regularly sorted into what can be reused or recycled. Waste which cannot be reused or recycled will be transported on a regular basis to approved landfill sites.
  - There should be no final waste disposal on site.

- Waste incineration at or near the site is strictly prohibited.
- Special care shall be to taken in the dismantling of pipes to avoid the creation of asbestos dust by cutting operations. Pipe should be disposed in accordance with the Technical Specifications and should be provided with adequate soil cover.

- The Contractor will be held responsible for proper removal and disposal of any significant residual materials, wastes, and contaminated soils that remain on the site after construction.

h. Air Quality

Potential Impacts

140. Anticipated sources of air pollution from construction activities include: (i) dust generated from earth excavation, filling, loading, hauling and unloading; (ii) dust generated from disturbed and uncovered construction areas, especially on windy days; (iii) dust generated by the movement of vehicles and heavy machinery on unpaved access and haul roads; (iv) dust from aggregate preparation and concrete-mixing; and (v) emissions from construction vehicles (gaseous CO and NO_2) and heavy diesel machinery and equipment.

141. Air pollution will affect the population near the water supply transmission pipelines and WWTP but this will be a temporary; it is considered a "**Moderate Impact"**.

Mitigation Measures

- During construction activities, dry soil surfaces should be watered to avoid dust generation. Watering activities should be performed regularly with due consideration to weather conditions.
- Transport vehicles should travel at low speeds in the construction site to reduce dust.
- Construction activities should be halted during high wind events if dust levels are high.
- All vehicles delivering dusty construction materials to the site or removing debris should have their loads covered.
- Exhaust systems of vehicles, trucks and machineries should be in good working order and well maintained to minimize noise and air pollution. Equipment should be placed as far as possible away from inhabited areas.
- Prefabricated structures will be used to the extent possible.
- Concrete mix should be delivered to the site in a truck mixer from a host plant, and with the help of concrete pump or auto-crane to the work places.
- Welding should be carried out with electric welding.
- Air quality (particulate matter) shall be monitored by a qualified consultant or agency before the construction starts, during the construction and after the construction is finished, as indicated in the Environmental Monitoring Plan (EMoP), see Chapter VII.

i. Noise

Potential Impacts

142. Noise will be generated from the movement of vehicles and trucks, physical works, and the transportation of construction materials. Noise pollution will affect the population near the water supply transmission pipelines and WWTP but this will be a temporary "**Moderate Impact"**, and can be minimized through good management practices.

Mitigation Measures

- Noisy construction activities will be limited to day time hours in the vicinity of houses and other sensitive sites in accordance with KR regulations.
- Equipment and high noise activities should be sited as far as possible away from inhabited areas.
- Exhaust systems of vehicles, trucks and machineries should be in good working order and well maintained to minimize noise pollution;
- Nearby community will be informed regarding schedule and duration of construction works.
- If required, noise barriers will be installed around high noise sources.
- Noise levels will be monitored by a qualified consultant or agency once before the start of works and then weekly during construction activities to ensure construction noise is less than 65 dB in the daytime for inhabited areas, and 55 dBA at schools and healthcare centers (see EMoP, Chapter VII).
- See Section VI.D.3 for measures to protect workers from high noise activities.

2. Impact on the Biological Environment

a. Flora

Potential Impacts

143. The area at the water intake is a heavily modified environment characterized by grasses with little natural remnant vegetation. There are no threatened or endangered plant species, and as no significant impacts are anticipated, the impact on flora is considered to be **"Low Impact"**.

Mitigation Measures

- Vegetation removal should be minimized to the extent practical.
- Cutting of trees that are not required to be cleared or removed will be forbidden. Sanctions will be imposed on any worker cutting down trees unnecessarily for the subproject works.
- Temporary use areas such as construction camps sites will be replanted utilizing appropriate native species. As noted above, topsoil will be separated from subsoil during excavation works, and topsoil will be reused as a top layer.

b. Fauna

Potential Impacts

144. The subproject is located in an area strongly impacted by anthropogenic factors. There are no wildlife reserves and/or sanctuaries nor significant animal habitat in the vicinity of the subproject sites. There are also no reports of rare or endangered fauna at the subproject sites. There is the potential for workers to engage in opportunistic hunting in the surrounding area. Overall however, the impact is considered to be **"Low Impact"** and readily mitigatable.

Mitigation Measures

- Hunting or poaching of fauna by workers will be forbidden, and sanctions will be imposed on any worker poaching fauna at or near the subproject sites.

c. Protected Areas and Nature Reserves

Potential Impacts

145. The subproject is not located near any specially protected area or nature reserve; impact on these resources is considered to be **"No Impact"**.

Mitigation Measures

- Not required.

3. Impact on the Socio-economic Conditions and Physical Cultural Resources

a. Community Health, Socio-cultural and Economic Impacts

Potential Impacts

146. Some adverse impacts on the population in the subproject area are expected during the construction phase (in some cases these impacts have been previously described):

- Dust will be generated by vehicles and trucks, mainly during execution of earthworks, reducing air quality. Vehicles and other machinery will also release exhaust gases.
- Noise will be generated from the movement of vehicles and trucks, physical works, and the transportation of construction materials.
- Four households will be affected by loss of land leases.
- Construction activities may disrupt public services.
- Construction activities, especially the excavation of trenches, will disrupt access to private properties and businesses.

147. Considering that there will be disturbance from dust, noise and disruption of access to public services and private properties and businesses (especially during the earthworks), but also considering that this disturbance will be temporary and limited to households along the water supply transmission pipelines and near the WWTP (the water intake site is not in residential area), the impact is considered as a "**Moderate Impact**".

Mitigation Measures

Dust

- See Section VI.D.1.

Noise

- See Section VI.D.1.

Access to Public Services, Private Properties and Businesses

- Local authorities will be consulted to minimize disruption of public services such as telephone, water, gas and power supply.
- The Contractor shall take measures to minimize disruption of access to private properties and businesses where possible.
- The local communities will be informed about the planned construction activities including schedule and duration of construction works, and expected disruptions.
- Temporary access to affected private properties, businesses and public service buildings will be provided including temporary crossings over pipeline trenches, and subsequently good quality permanent access will be provided.

- Road sections used for laying the water transmission pipelines and sewer collector will be resurfaced.

Public Safety and Traffic Management

- Warning signs, cones and signal lights will be installed along the road to protect workers and people in the neighborhood.
- As far as practical, movements of construction vehicles will be limited within peak hours of traffic.
- Public access to construction sites and other areas of danger will be restricted and temporary barriers installed.
- Employees will be trained on appropriate interactions with local community and awareness program about sanitation and communicable diseases will be instituted.
- A HIV awareness raising and prevention campaign (including HIV in the workplace) will be implemented.

Social Disruption from Construction Workers and Camps and Housing

- The location of construction camps and other worker housing will be agreed in consultation with local authorities. Camps will not be located near sensitive areas (schools, hospitals, etc.).
- Construction camps will be equipped with adequate water supply and sanitation facilities, and will be maintained in clean/hygienic conditions (see above for mitigations related to waste management plan and water quality).
- Employees will be trained on appropriate interactions with local community and awareness program about sanitation and communicable diseases will be instituted.
- A HIV awareness raising and prevention campaign (including HIV in the workplace) will be implemented.

Figure 14: Multi-story building at Enesai

Figure 15: School near the site

b. Worker Safety

Impacts

148. Use of heavy construction machinery, tools, and materials may cause physical hazards to workers, which could be caused by noise and vibration, dust, handling heavy

materials and equipment, falling objects, work on slippery surfaces, fire hazards, chemical hazards such as toxic fumes and vapors, and others. This poses a "**Moderate Impact**" to workers.

Mitigations

- The contactor is responsible for providing a safe construction site. To achieve this, the Contractor will prepare an environment, health and safety (EHS) plan for the construction works on the basis of the EMP and in compliance with relevant KR laws and regulations. The EHS Plan will be submitted to the Engineer for approval. The EHS plan will include the following:
    - An EHS officer will be appointed by the Contractor to implement and supervise the EHS management plan.
    - Workers will be training on occupational health and safety during construction, especially with respect to using potentially dangerous equipment, handling and disposal of hazardous materials including asbestos pipe, and use of personal protective equipment.
    - A first aid facility will be provided onsite.
    - Fire extinguishers and other safety response devices will be provided onsite.
    - All equipment will be maintained in a safe operating condition.
    - Material stockpiles or stacks, such as, pipes must be stable and well secured to avoid collapse and possible injury to site workers.
    - Appropriate personal protective equipment will be provided to workers to minimize risks, including ear protection, hard hats, dust masks, and safety boots.
    - Adequate signage in risk areas will be posted, and access to construction sites will be restricted.
    - Training will be provided to workers on the storage, handling and disposal of hazardous materials.

c. Physical Cultural Resource Impacts

Potential Impacts

149. There are no known physical cultural resources in the subproject area, and no impacts to physical cultural resources are anticipated; the risk is considered to be **"Low Impact"**.

Mitigation Measures

- If a previously unknown physical cultural resource is discovered the following chance find procedure will be implemented:
    - All works at the find site will be halted and the appropriate local authorities will be notified.
    - The find will be assessed by an archaeologist from the local authority.
    - Procedures to avoid, minimize or mitigate impacts to the physical cultural resources will be developed by the archaeologist.
    - Construction will resume only after permission from the appropriate local authority has been obtained.

E. Operation Phase Potential Environmental Impacts

1. Impact on the Physical Environment

a. Climate

Potential Impacts

150. The operation phase activities under the subproject will not result in the release of greenhouse gases and are not predicted to have any negative impacts on climate or climate change. Therefore, in relation to climate, the subproject is expected to have **"No impact".**

Mitigation Measures

- Not required.

b. Geology

Potential Impacts

151. There are no anticipated operation phase impacts on geology. Therefore, the subproject is expected to have **"No impact".**

Mitigation Measures

- Not required.

c. Topography

Potential Impacts

152. The presence of new infrastructure will cause some permanent but minor changes to the topography, primarily in relation to the reservoir, pipeline construction. As topography changes are minimal, the impact is considered to be **"No Impact"**.

Mitigation Measures

- None required.

d. Soil and Land Resources

Potential Impacts

153. Loss of soil is not expected during operational phase; therefore the impact is considered to be "**No impact**".

Mitigation measures

- Not required.

e. Hydrology and Surface Water Quality

Potential Impacts

154. Potential impacts are most likely to occur in the operation stage due to a decrease in the flow of the Kara-Unkyur River.

155. The proposed water intake site is located on the left bank of the Kara-Unkyur River, 8 km northeast of Bazar-Korgon Village outskirts. There are two existing wells, and the subproject will install an additional well and two reservoirs, 50-100 m away from the river. The maximum design yield of the new well will be 23.6 l/s. The maximum design yield of the three well operating simultaneously will be 70.8 l/sec (23.6 l/s per well).

156. According to the available data from the Charvak gauging station, the average annual flow of the Kara-Unkyur River is 30 m^3/s, the maximum flood discharge is about 100 m^3/s (in May), and the minimum flow during the low season (January-February) is 6.5 m^3/s.

157. Water extraction from the aquifer may decrease the river flow. Assuming a direct connection between the aquifer and the river, and considering an extraction from the new well of 23.6 l/s, it represents 0.078 % of the average annual flow and 0.36 % of the average flow during the low season/month. In the worst case situation, assuming all three wells are operating at maximum design yield (70.8 l/sec), this represents only 0.24 % of the average annual flow and 1.01 % of the average flow during the low season/month. Overall, even in the worst case situation operation of the subproject is not expected to have a significant impact on the Kara-Unkyur hydrology.

158. In summary, subproject operation is expected to have a "**Low Impact"** on hydrology.

Mitigation Measures

159. Mitigation actions to address the potential impacts are recommended to include the following:

- The water levels in the Kara-Unkyur River will be monitored.
- The water quality in the Kara-Unkyur River will be monitored.

f. Hydrogeology and Ground Water Quality

Potential Impacts

160. Potential impacts are most likely to occur in the operation stage due to the interception of groundwater resources. The maximum design yield of the new well is 23.6 l/s, which represents 0.3 % of the estimated accessible groundwater water resources (6,944 l/s) of the Kara-Unkyur valley, and 3.1 % of the groundwater resources at the intake site (700-800 l/s). In the worst case situation with all three wells working at maximum design capacity (70.8 l/s), this 9.4 % of the available resources at the site (700-800 l/s). Thus, it is concluded that operation of the subproject, even at maximum design yield, will not significantly affect the available groundwater resources at either the intake site or throughout the Kara-Unkyur valley. However, there could be some localized and short-term impacts on groundwater resources, especially during the dry season, and this could impact some nearby wells.

161. In the multi-story buildings in Enesai area, the construction of a new sewerage system and WWTP will mean that sanitary wastewater will no longer be discharged into building basements and adjacent areas, contaminating groundwater. The treated effluent, which will meet relevant Ministry of Health standards, will be partly discharged to an existing irrigation canal which irrigates around 18 ha of grassland and trees away from the stadium. The other part of the treated effluent, in particular during the winter, will be discharged to the existing sewage collector. In case a reduction in the quality of the irrigation canal is observed, more may be directed to existing sewage collector. The sewage collector discharges to an existing but not operational oxidation pond. The local government has provided a commitment that they will bring the sewage collector and the existing oxidation pond to an operational level to collect the discharge from the new WWTP, see Appendix 4.

162. Overall, it is expected that the groundwater abstraction resulting from the subproject will not have a significant impact because of the large aquifer capacity, but it may have localized and short-term impact on available groundwater resources in the intake area. With respect to water quality, the safe treatment and disposal of effluent at Enesai will eliminate inappropriate disposal of raw sewage and decrease groundwater contamination, and the SPZ will protect the water intake. In summary, subproject operation is expected to have a "**Moderate Impact"** on hydrogeology and groundwater quality.

Mitigation Measures

Establishment of Sanitary Protection Zones

- The following SPZs will be established in accordance with sanitary and epidemiologic rules and regulations (SanPin) 2.1. 4.015-03, based on sanitary and protection zone calculation for the water intake in Bazar-Korgon Village:[8]

SPZ I

- SPZ I has strict conditions for the protection of underground water sources. The belt is designed to provide maximum protection from intentional or accidental contamination. Within this zone, the following is strictly prohibited:
  - human habitation, and the construction and placement of any structures and buildings that have no direct relation to the operation of the water intake;
  - the presence of unauthorized people, pets and farm animals; the use of pesticides and organic fertilizers for crops and plantations.
- SPZ I will extends in a radius 25 m from the outer well and is to be fenced off (Figure 16).

SPZ II

- The purpose of the SPZ II is to protect a groundwater source from microbial contamination. Within this zone, the following is strictly prohibited:
  - to construct all types of buildings, to locate cemeteries, burial grounds, warehouses, fuel depots, landfills, livestock and poultry farms, etc.
- The proposed SPZ II boundary will be a zone encompassing 147 m upstream of the intake, 70 m downstream of the intake, and 90 m in width from the center of gravity of intake on both sides across groundwater flow (Figure 16).

SPZ III

- The purpose of the SPZ III is to protect a groundwater source from chemical pollution. It is strictly prohibited to place objects that can cause chemical contamination. These objects include storage facilities for fertilizers, pesticides, and fuel; sludge ponds, etc.
- The proposed SPZ II boundary will be a zone encompassing 1,200 m upstream of the intake, 110 m downstream of the intake, and 150 m in width from the center of gravity of intake on both sides across groundwater flow (Figure 16).

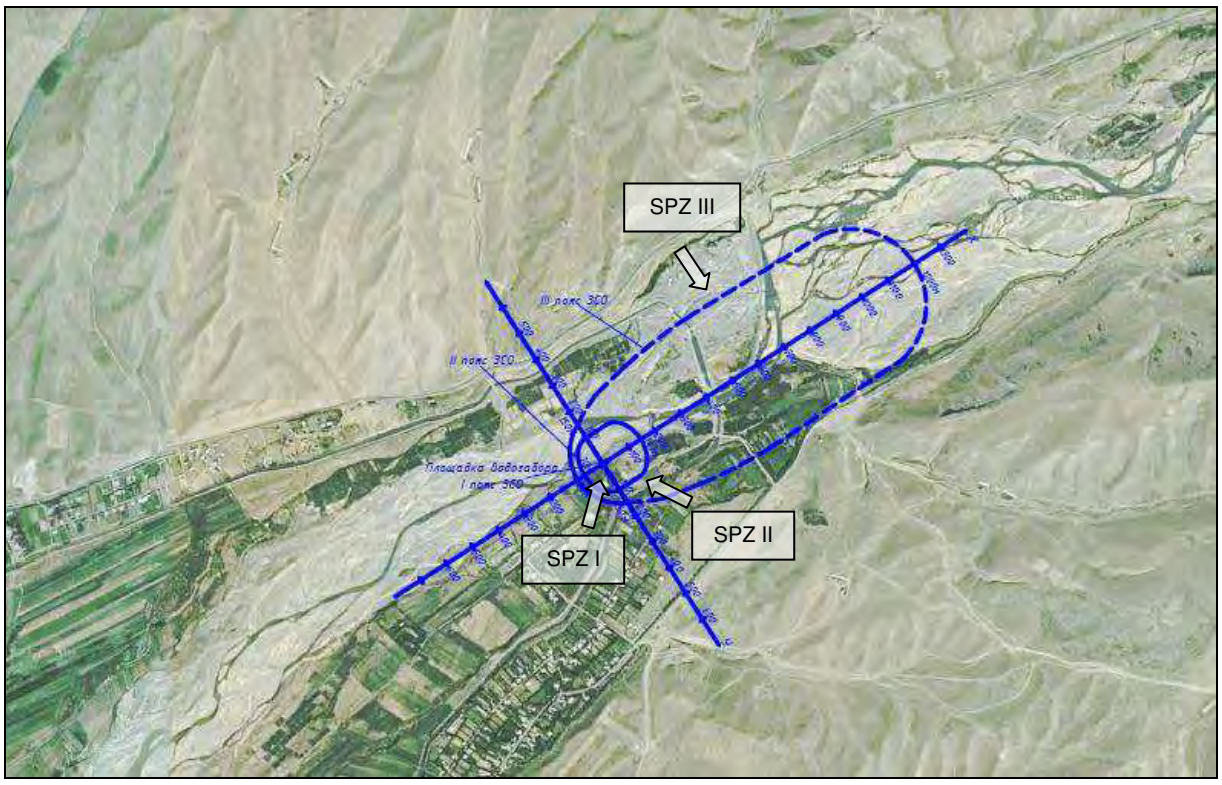
The local government has provided a commitment that they will establish the above SPZs, see Appendix 5.

- The water level in wells will be monitored, especially during low flow periods.
- The well water quality will be regularly tested by Bazar-Korgon water supply organization, the Rural Public Association of Drinking Water Consumers (SOOPV), and the drinking water will be chlorinated.
- Treated effluent from the WWTP will be monitored, and shall not exceed MPCs in accordance with the requirements of the Ministry of Health. The percentage of treatment efficiency shall be 90-95% in major parameters (BOD_5, and SS).

[8] Based on "Project of sanitary and protection zone calculation for water intake in Bazar-Korgon Village, Jalal-Abad Oblast (Karaungur Groundwater Deposit). Bishkek, 2013".

- If an unacceptable reduction in the quality of the water in the irrigation channel in which part of the effluent of the WWTP is to be discharged is observed, the effluent will be directed to the existing sewage collector.

Figure 16: Proposed Delineation of SPZ I, II and III



g. Wastes

Potential Impacts

163. During the operation, the water intake facilities will not generate effluent. Under normal operation the chlorination plant also does not generate wastes. Nonetheless a chlorine energy response plan will be developed.

164. Solid waste generated by the WWTP (sludge) may contaminate soil if not handled properly. The amount of sludge to be generated will be small, and with normal good practice should not result in any soil or water contamination.

165. These impacts are therefore considered as a "**Low Impact**" because they are temporary in duration and mitigatable with good management practices.

Mitigation Measures

- WWTP sludge will be dehydrated and reused as farm fertilizer if suitable, or landfilled.

h. Air Quality

Potential Impacts

166. Operation is not anticipated to result in air quality emissions, and is expected to have "**No Impact**" on air quality.

Mitigation Measures

- Not required.

j. Noise

Potential Impacts

167. Operation of the subproject facilities is not anticipated to result in significant noise levels and is expected to have "**Low Impact**" on local residents. The modular WWTP is expected to only generate 70 dBA at a distance of one meter from the plant and will therefore not result in disturbances to residents and spectators and players/ participants of occasional sporting events held at the stadium. In addition, the multi-storey buildings and most of the residential houses are more than 300 m far away from the WWTP site.

Mitigation Measures

- Routine monitoring of noise to ensure no community impacts.

2. Impact on the Biological Environment

a. Flora

Potential Impacts

168. Operational activities will not affect flora. The impact on flora is therefore considered to be **"No Impact"**.

Mitigation Measures

- Not required.

b. Fauna

Potential Impacts

169. Potential impacts are most likely to occur in the operation stage due to reductions in river flow. As no significant decrease in the river flow is expected and as there are no protected aquatic fauna in the river, the impact is considered as **"No Impact"**.

Mitigation Measures

- Not required.

c. Protected Areas

Potential Impacts

170. The subproject is not located near any protected areas or nature reserves, and operation is considered to have **"No Impact"**.

Mitigation Measures

- Not required.

3. Impact on the Socio-economic Conditions and Physical Cultural Resources

a. Community Health, Socio-cultural and Economic Impacts

Potential Impacts

171. Operation of the WWTP has the potential to cause odor which may negatively affect local residents and spectators and players/ participants of occasional sporting events held at the stadium. However, the modular WWTP is a covered plant and has a low capacity of approximately 250 m^3/day, and if operated and maintained properly, odor problems from the WWTP should be minimal. In addition, most of the residential houses are more than 300 m far away from the WWTP site, and plant operation should result in a distinct improvement compared to the existing situation.

172. Plant operation will also generate noise, primarily from blowers. However, noise is not expected to be a problem because the modular WWTP is expected to only generate 70 dBA at one meter from the plant, which means it will not produce any disturbance to residents and spectators and players/ participants of occasional sporting events held at the stadium. In addition, as noted above, multi-storey buildings and most of the residential houses are more than 300 m far away from the WWTP site.

173. The subproject aims to improve municipal services through more reliable water supply and safe sewerage disposal, and the affected population will gain important benefits from this. Noise and odor problems should be minimal, and the subproject impact in terms of health and population is considered to be positive and **"High Impact"**.

Mitigation Measures

- Routine monitoring of noise to ensure no community impacts.
- Consult regularly with neighbors and organizers of sporting events to determine if odor is a problem, and if it is, review WWTP operational procedures to address odor source.

b. Worker Safety

Potential Impacts

174. Operation will pose some occupational safety risks to workers; this is considered to be a "**Moderate Impact**"

Mitigation Measures

- An operational phase environment, health and safety (EHS) will be developed in compliance with relevant KR laws and regulations prior to the commencement of operation. The plan will include:
    - Chlorine storage and handling procedures.
    - Provision of adequate ventilation.
    - Chlorine emergency spill response procedures in case of accidental release.
    - Provision of appropriate personal protective equipment.
    - Regular worker training on EHS implementation, including safe chlorine storage and handling.

c. Cultural Heritage Impacts

Potential Impacts

175. No impacts to archaeological and historic resources are anticipated; the subproject's operational impact on these resources is considered to be **"No Impact"**.

Mitigation Measures

- None required.

F. Summary of Environmental Impacts

176. The subproject will generate environmental impacts during the preconstruction, construction and operation phases.

177. Preconstruction phase impacts are low and are related to project siting. The subproject will require cancellation of four public land leases; however, appropriate compensation in accordance with KR and ADB requirements will be provided to the owners.

178. Construction phase impacts are low to moderate in magnitude and are typically temporary and localized in nature. There are no high magnitude construction phase impacts. All impacts can be adequately addressed through typical mitigation measures including good construction and health and safety practices.

179. The operation phase is expected to have limited negative impacts. Potential threats to drinking water quality will be addressed through the delineation of SPZ zones I to III and though chlorination and ongoing drinking water quality laboratory analysis. Worker health will be protected through appropriate health and safety practices. On the other hand, subproject operation will create high positive impacts on public health and hygiene. Provision of good quality water and safe sewerage facilities is expected to significantly enhance the quality of life of affected peoples, and reduce contamination of soil and surface and groundwater.

Table VI.1: Impact Assessment Summary

PREDICTED IMPACTS		PRE-CONSTRUCTION PHASE	CONSTRUCTION PHASE	OPERATION PHASE
Physical	**Climate**	Not Applicable	No Impact	No impact
	Geology	Not Applicable	Low Impact	No impact
	Topography	Not Applicable	Low Impact	No Impact
	Soil	Not Applicable	Low Impact	No impact
	Hydrology and Surface Water Quality	Not Applicable	Low Impact	Low Impact
	Hydrogeology and Ground Water Quality	Not Applicable	Low Impact	Moderate Impact
	Wastes	Not Applicable	Low Impact	Low Impact
	Air Quality	Not Applicable	Moderate Impact	No Impact
	Noise	Not Applicable	Moderate Impact	Low Impact
Biological	**Flora**	Not Applicable	Low Impact	No Impact
	Fauna	Not Applicable	Low Impact	No Impact
	Protected Areas	Not Applicable	No impact	No impact
Socio-economic and Physical Cultural Resources	**Community Health, Socio-cultural and Economic**	Low Impact	Moderate Impact	High Positive Impact
	Worker Safety	Not Applicable	Moderate Impact	Moderate Impact
	Physical Cultural Resources	Not Applicable	Low Impact	No impact

VII. ENVIRONMENTAL MANAGEMENT PLAN

A. Objective

180. The objectives of the EMP are to ensure (i) implementation of identified mitigation and management measures for anticipated adverse environment impacts; (ii) implementation of monitoring and reporting; and (iii) subproject compliance with the KR's relevant environmental laws, standards and regulations and ADB's Safeguard Policy Statement (SPS). Organizational responsibilities and budgets are clearly identified for implementation, monitoring and reporting.

B. Implementation Arrangements

181. The Ministry of Finance (MoF) is the EARR executing agency (EA). The State Agency for Architecture, Construction, and Communal Services (SAACCS) is the subproject IA under the overall guidance of its Director, with the Deputy Chief Architect of Osh City responsible for technical aspects related to subproject implementation.

182. The responsibilities for environmental management and monitoring are based on Project Administration Manual September 2010 and its revisions (latest revision July 2012). These responsibilities are as follows.

- SAACCS through its EARR Safeguards Unit (SAACCS SU) has overall responsibility to ensure that Government and ADB environment related safeguard policies are adopted. The SAACCS SU is also responsible to ensure full implementation of the RP, and in conjunction with the National Environment Specialist (NES) of the Design and Supervision Consultant (DSC), for coordinating and supervising the mitigation compliance monitoring presented in the EMoP. The SAACCS also prepares quarterly environmental progress reports for submission to ADB, as it is mentioned in the Financing (Loan) Agreement.
- The PMC is responsible to ensure that the implementation of supervision, monitoring and reporting is undertaken according to the EARR guidelines and manuals and in compliance with the Financing Agreement and the EMoP.
- The DSC is responsible for incorporation of mitigation measures into engineering design and technical specification, and into relevant clauses in the contract documentation.
- The DSC NES, in conjunction with the SAACCS SU, is responsible for mitigation compliance monitoring presented in the EMoP and for preparing monthly environmental progress reports submitted to the SAACCS SU.
- The Regional State Environment Protection Department is responsible for general environment monitoring activities during operation.
- The Contractor is responsible for:
    - Construction phase mitigation implementation; water, air and noise monitoring; and reporting, as outlined in the EMP and contract specifications.
    - All mitigation measures will be incorporated in the Technical Specifications of the Works Contract and should be implemented by the Contractor. The costs to implement the measures excluding the ambient monitoring of noise, water and air quality are to be included in the rates of the relevant items in the Bill of Quantities (BOQ). Ambient monitoring is included as provisional sum in the BOQ to ensure that the monitoring will be implemented as required.

- The Contractor will recruit a health, and safety environmental (HSE) Officer, who will be responsible for implementing the Contractors' environmental responsibilities and liaise with the Client, the PMC, DSC and district administration. The HSE Officer will also be responsible for health and safety aspects of work sites.
- The Contractor will submit bi-weekly environmental progress reports to the DSC NES, the DSC will validate reports then submit to SAACCS SU.

- The Jalal-Abad Oblast and the Bazar-Korgon district authorities are responsible for establishing the SPZs II and III for the water intake before it becomes operational.
- After subproject completion, SOOPV will be responsible for operation and maintenance of the subproject. SOOPV in cooperation with the district/regional administrations will undertake monitoring and analyze samples in the analytical control laboratory of SAEPF's in Bishkek as scheduled in the monitoring plan.

183. Implementation responsibilities by construction phase are summarized in Table VII.1.

Table VII.1: Environmental Management Responsibilities

Project Phase	Responsible Organization	Responsibilities
Preconstruction / Detailed Design	DSC	Incorporation of mitigation and monitoring measures into engineering design and technical specification. Translation of mitigation and monitoring measures into clauses in contract documentation.
	SAACCS SU and SAEPF	Review and approve environmental mitigation, monitoring and management measures.
Construction	Contractors	Implementation of required environmental mitigation measures. Recruitment of qualified consultants or agencies to undertake air, water and noise monitoring as presented in the EMoP. Submission of bi-weekly environmental management reports to the DSC NES.
	DSC's supervision engineers assisted by DSC NES	Supervise implementation of the environmental mitigation measures, which are carried by the Contractors, through environmental inspections as presented in the EMoP, carried out in conjunction with the SAACCS SU, and through review of air, water and noise monitoring data provided by the Contactor. Provision of awareness/training to employees and technology transfer to Contractors.
	SAACCS SU	In conjunction with DSC NES, verify Contractor compliance with EMP the through environmental compliance inspections as presented in the EMoP. Preparation of quarterly environmental progress reports to ADB. Verify compliance with Government legal environmental requirements.
Operation	SAEPF	Ensure compliance with Government legal environmental requirements.
	Jalal-Abad Oblast and the Bazar-Korgon district authorities	Establish SPZs
	Regional Department on Environment Protection	Ensure the establishment of the SPZs
	SOOPV in cooperation with the district/regional administrations	Undertake routine and random monitoring and analyze samples.

C. Potential Impacts and Mitigation Measures

184. Potential impacts of the subproject during preconstruction, construction and operation and appropriate mitigation measures including responsibility for implementation are presented in Table VII.2.

D. Environmental Monitoring Plan

185. An environment monitoring plan (EMoP) to monitor the environmental impacts of the subproject and assess the effectiveness of mitigation measures is presented in Table VII.3. The EMoP includes both compliance monitoring and ambient monitoring.

186. Compliance monitoring typically involves inspections to verify compliance with EMP mitigation requirements and with relevant laws and regulations, and will be undertaken by the SAACCS SU and the DSC NES. The PMC will ensure that the compliance monitoring will be undertaken. Prior to the start of construction, the SAACCS SU will develop an implementation protocol for the compliance inspection monitoring that clarifies the day to day roles and responsibilities of the SAACCS SU and the DSC NES, and the specific locations at which monitoring will be undertaken.

187. Ambient monitoring will include air, noise and water quality, and will be undertaken by a qualified consultant or agency to be recruited by the Contractor. All other inspections and monitoring will be undertaken by the DSC with SAACCS/ PMC supervision. Additional details on the sites for ambient monitoring will be specified in the Environmental Protection Section of the Detailed Design Report. A budget of $15,000 has been included in the provisional sum in the BOQ for subproject ambient monitoring.

Table VII. 2: Environment Impacts and Mitigation Measures

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
PRECONSTRUCTION PHASE				
Land Acquisition and Resettlement	Cancelation of leases	• Compensation to be provided through Resettlement Plan.	• SAACCS SU	• Project Budget
CONSTRUCTION PHASE				
Geology	Sourcing of construction materials such as rock, sand and other building materials	• Contractors will be required to obtain basic construction materials from existing quarries which have official permits for their operation.	• Contractor	• Contractor's Budget
Topography	Changes in topography due to reservoir, pipeline and other construction.	• Final forming and replanting of earthworks in backfilled sections will be completed as soon as possible to facilitate the regeneration of a stabilizing ground cover. • Reservoir, pipeline and other works will be re-vegetated to facilitate regeneration and slope stabilization.	• Contractor	• Contractor's Budget
Soil and Land Resources	Soil contamination from accidental spillages of petroleum products and other hazardous contaminants	• Good management practices will be adopted to prevent spills of fuels, oils and hazardous materials. o Fuels, oils and hazardous materials will be stored in a secure bunded area with impermeable floor and weatherproof roof. o Refueling of vehicles will be undertaken at existing stationary gas stations and maintenance, washing and repairs undertaken at existing repair stations. o Construction machinery will be maintained in good condition and any leaks will be quickly repaired. o Spill response equipment will be provided at construction sites, and all spills will be cleaned-up immediately. • Soil contaminated by oily products and other substances will be removed for disposal at a permitted site agreed to by the Territorial Environmental Protection Department in Jalal-Abad City.	• Contractor	• Contractor's Budget
	Soil contamination from drilling	• A closed-loop system of sludge circulation will be used during drilling. • Metal containers will be used for collection of sludge after drilling and transportation to a permitted site agreed with the Territorial Environmental Protection Department in Jalal-Abad City	• Contractor	• Contractor's Budget
	Soil loss, erosion and sedimentation, spoil disposal	• Soil clearance will be minimized to the extent possible. • Topsoil will be separated from subsoil during excavation works, and	• Contractor	• Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		topsoil will be reused as a top layer. • Remaining excavated materials will be reused wherever possible, e.g. for backfilling. • Spoil disposal sites, if required, should avoid sensitive locations such as water sources, wetlands, etc. Site should be selected in consultation with the Territorial Environmental Protection Department in Jalal-Abad City. • Clearing and/or excavation activities will be scheduled taking weather conditions into account (e.g. minimize excavation activities during rainy weather). • Embankments slopes will be stabilized to reduce slips or erosion. • Completed earthwork areas will be replanted to facilitate the regeneration of flora and for stabilizing the ground cover. • Low maintenance landscaping will be implemented along the roadside construction area.		
Hydrology	Surface water pollution	• In addition to the measures below, see above for good management practices to be adopted to prevent spills of fuels, oils and hazardous materials. • Construction work for the river bank protection will be implemented in the Kara-Unkyur River low-flow season. • Where pumping of water is to be carried out, filters will be used at the intake points and the discharge will be through a sediment trap to avoid the entry of sediments in watercourses and the river. • Water quality in the Kara-Unkyur River will be monitored by a qualified consultant or agency (DO, BOD_5, COD, SS, hydrocarbons, conductivity, turbidity, TDS, pH, temperature) if deemed necessary after visual inspection by the Engineer or DSC NES. • Appropriate material stockpiles storage management will be implemented to prevent sediment-laden storm run-off entering watercourses. This includes: o allowing the establishment of vegetation on the exposed soil; o surrounding stockpiles with cut-off ditches to contain any run-off o not siting stockpiles within 50 m of any watercourse, and not siting stockpiles and other construction materials in flood prone areas. • As noted above, fuels, oils and hazardous materials will be stored in a secure bunded area with impermeable floor and weatherproof roof,	• Contractor • Qualified consultant or agency recruited by the Contactor	• Contractor's Budget • Contractor's Budget and provisional sum

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		and good management practices will be adopted to prevent spills of fuels, oils and hazardous materials. In addition, waste water associated with concrete mixing and placement (including wash-down water) will be contained and treated in settling ponds so as to prevent pollution of watercourses. • Perimeter drainage will be provided around construction sites and drainage will be directed to a settling pond. • Construction camps will be properly sited and provided with drainage and wastewater facilities to collect run-off and, if necessary, treatment of the run-off. Wastewater will not be discharged into water bodies used for domestic or industrial water supply.		
Hydrogeology	Groundwater pollution	• See Hydrology mitigations, above.	• Contractor	• Contractor's Budget
Wastes	Construction and domestic waste disposal	• The Contractor will prepare and implement a Waste Management Plan to be approved by the DSC, the SAACC SU, the Territorial Environmental Protection Department in Jalal-Abad City and the State Center for Sanitary and Epidemiological Surveillance. It will include: o Appropriate temporary waste storage containers will be provided at construction sites and worker camps. o All wastes will be reused or recycled to the maximum extent possible. Wastes will be regularly sorted into what can be reused or recycled. Waste which cannot be reused or recycled will be transported on a regular basis to approved landfill sites. o There should be no final waste disposal on site. o Waste incineration at or near the site is strictly prohibited. o Special care shall be to taken in the dismantling of pipes to avoid the creation of asbestos dust by cutting operations. Pipe should be disposed in accordance with the Technical Specifications and should be provided with adequate soil cover. • The Contractor will be held responsible for proper removal and disposal of any significant residual materials, wastes, and contaminated soils that remain on the site after construction.	• Contractor	• Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
Air Quality	Pollution from dust and vehicle emissions	• During construction activities, dry soil surfaces should be watered to avoid dust generation. Watering activities should be performed regularly with due consideration to weather conditions. • Transport vehicles should travel at low speeds in the construction site to reduce dust. • Construction activities should be halted during high wind events if dust levels are high. • All vehicles delivering dusty construction materials to the site or removing debris should have their loads covered; • Exhaust systems of vehicles, trucks and machineries should be in good working order and well maintained to minimize noise and air pollution. Equipment should be placed as far as possible away from inhabited areas. • Prefabricated structures will be used to the extent possible. • Concrete mix should be delivered to the site in a truck mixer from a host plant, and with the help of concrete pump or auto-crane to the work places. • Welding should be carried out with electric welding. • Air quality (particulate matter) shall be monitored by a qualified consultant or agency at least three times, i.e. before the construction starts, during the construction and after the construction is finished, or as when instructed by the Engineer or DSC NES.	• Contractor • Qualified consultant or agency recruited by the Contactor	• Contractor's Budget • Contractor's Budget and provisional sum.
Noise	Noise impacts on local residents	• Noisy construction activities will be limited to day time hours in the vicinity of houses and other sensitive sites in accordance with KR regulations. • Equipment and high noise activities should be sited as far as possible away from inhabited areas. • Exhaust systems of vehicles, trucks and machineries should be in good working order and well maintained to minimize noise pollution; • Nearby community will be informed regarding schedule and duration of construction works. • If required, noise barriers will be installed around high noise sources. • Noise levels will be monitored by a qualified consultant or agency once before the start of works and then weekly during construction activities to ensure construction noise is less than 65 dB in the daytime for inhabited areas, and 55 dBA at schools and healthcare centers. • See "Worker occupational health and safety" below for measures to	• Contractor • Qualified consultant or agency recruited by the Contactor	• Contractor's Budget • Contractor's Budget and provisional sum.

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		protect workers from high noise activities.		
Biological Impacts	Flora: Loss of vegetation	• Vegetation removal should be minimized to the extent practical. • Cutting of trees that are not required to be cleared or removed will be forbidden. Sanctions will be imposed on any worker cutting down trees unnecessarily for the subproject works. • Temporary use areas such as construction camps sites will be replanted utilizing appropriate native species. As noted above, topsoil will be separated from subsoil during excavation works, and topsoil will be reused as a top layer.	• Contractor	• Contractor's Budget
	Fauna: hunting and poaching	• Hunting or poaching of fauna by workers will be forbidden, and sanctions will be imposed on any worker poaching fauna at or near the subproject sites.	• Contractor	• Contractor's Budget
Health, Socio-cultural and Economic Impacts	Air pollution	• See Above.	• Contractor	• Contractor's Budget
	Noise	• See Above.	• Contractor	• Contractor's Budget
	Interference with access to public services, private properties and businesses	• Local authorities will be consulted to minimize disruption of public services such as telephone, water, gas and power supply. • The Contractor shall take measures to minimize disruption of access to private properties and businesses where possible. • The local communities will be informed about the planned construction activities including schedule and duration of construction works, and expected disruptions. • Temporary access to affected private properties, businesses and public service buildings will be provided including temporary crossings over pipeline trenches, and subsequently good quality permanent access will be provided. • Road sections used for laying the water transmission pipelines and sewer collector will be resurfaced.	• Contractor	• Contractor's Budget
	Public safety and traffic management	• Warning signs, cones and signal lights will be installed along the road to protect workers and people in the neighborhood. • As far as practical, movements of construction vehicles will be limited within peak hours of traffic. • Public access to construction sites and other areas of danger will be restricted and temporary barriers installed. • Employees will be trained on appropriate interactions with local community and awareness program about sanitation and communicable diseases will be instituted. A HIV awareness raising and prevention campaign (including HIV in	• Contractor	• Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		the workplace) will be implemented.		
	Social Disruption from Construction Workers and Camps and Housing	• The location of construction camps and other worker housing will be agreed in consultation with local authorities. Camps will not be located near sensitive areas (schools, hospitals, etc.). • Construction camps will be equipped with adequate water supply and sanitation facilities, and will be maintained in clean/hygienic conditions (see above for mitigations related to waste management plan and water quality). • Employees will be trained on appropriate interactions with local community and awareness program about sanitation and communicable diseases will be instituted. • A HIV awareness raising and prevention campaign (including HIV in the workplace) will be implemented.	• Contractor	• Contractor's Budget
	Worker occupational health and safety	• The contactor is responsible for providing a safe construction site. To achieve this the Contractor will prepare an environment, health and safety (EHS) plan for the construction works on the basis of the EMP and in compliance with relevant KR laws and regulations. The EHS Plan will be submitted to the Engineer for approval. The EHS plan will include the following: o An EHS officer will be appointed by the Contractor to implement and supervise the EHS management plan. o Workers will be training on occupational health and safety during construction, especially with respect to using potentially dangerous equipment, handling and disposal of hazardous materials including asbestos pipe, and use of personal protective equipment. o A first aid facility will be provided onsite. o Fire extinguishers and other safety response devices will be provided onsite. o All equipment will be maintained in a safe operating condition. o Material stockpiles or stacks, such as, pipes must be stable and well secured to avoid collapse and possible injury to site workers. o Appropriate personal protective equipment will be provided to workers to minimize risks, including ear protection, hard hats, dust masks, and safety boots. o Adequate signage in risk areas will be posted, and access to construction sites will be restricted. • Training will be provided to workers on the storage, handling and	• Contractor	• Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		disposal of hazardous materials.		
Physical Cultural Resources	Unexpected discovery of Physical Cultural Resources	• If a previously unknown physical cultural resource is discovered the following chance find procedure will be implemented: o All works at the find site will be halted and the appropriate local authorities will be notified. o The find will be assessed by an archaeologist from the local authority. o Procedures to avoid, minimize or mitigate impacts to the physical cultural resources will be developed by the archaeologist. o Construction will resume only after permission from the appropriate local authority has been obtained.	• Contractor / Local Authority	• Contractor's Budget
OPERATION PHASE				
Hydrology	Reduced river flows, water quality	• Water levels in the Kara-Unkyur River will be monitored. • Water quality in the Kara-Unkyur River will be monitored. • Water quality in the irrigation canal receiving effluent of the WWTP will be monitored.	• SOOPV	• Operating budget
Hydrogeology	Groundwater pollution	***Establishment of Sanitary Protection Zones*** • SPZ I, II and II will be established in accordance with sanitary and epidemiologic rules and regulations (SanPin) 2.1. 4.015-03, as shown in Figure 16. **SPZ I** • SPZ I has strict conditions for the protection of underground water sources. The belt is designed to provide maximum protection from intentional or accidental contamination. Within this zone, the following is strictly prohibited: o human habitation, and the construction and placement of any structures and buildings that have no direct relation to the operation of the water intake; o the presence of unauthorized people, pets and farm animals; the use of pesticides and organic fertilizers for crops and plantations. • SPZ I will extends in a radius 25 m from the outer well. and is to be fenced off (Figure 16).	• Jalal-Abad Oblast and the Bazar-Korgon district authorities based on the provisions in the Kyrgyz Legislation / SanPiN 2.1.4.015-03	• Govern-ment Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source

	Interception of Groundwater	**SPZ II**
		• The purpose of the SPZ II is to protect a groundwater source from microbial contamination. Within this zone, the following is strictly prohibited:
		  ○ to construct all types of buildings, to locate cemeteries, burial grounds, warehouses, fuel depots, landfills, livestock and poultry farms, etc.
		• The proposed SPZ II boundary will be a zone encompassing 147 m upstream of the intake, 70 m downstream of the intake, and 90 m in width from the center of gravity of intake on both sides across groundwater flow (Figure 16).
		
		SPZ III
		• The purpose of the SPZ III is to protect a groundwater source from chemical pollution. Within this zone:
		  ○ It is strictly prohibited to place objects that can cause chemical contamination. These objects include storage facilities for fertilizers, pesticides, and fuel; sludge ponds, etc.
		• The proposed SPZ II boundary will be a zone encompassing 1,200 m upstream of the intake, 110 m downstream of the intake, and 150 m in width from the center of gravity of intake on both sides across groundwater flow (Figure 16).
		
		• The water level in wells will be monitored, especially during low flow periods. The well water quality will be regularly tested by SOOPV, and drinking water will be chlorinated.
		• Treated effluent from the WWTP will be monitored, and shall not exceed MPCs in accordance with the requirements of the Ministry of Health. The percentage of treatment efficiency shall be 90-95% in major parameters (BOD_5, and SS).
			• SOOPV
			• SOOPV
			• SOOPV
				• Operating Budget
				• Operating Budget
				• Operating Budget

Wastes	WWTP sludge	• Sludge will be dehydrated and reused as farm fertilizer if suitable, or landfilled.	• SOOPV	• Operating Budget
Noise, Odor	Community Impacts	• Routine monitoring of noise to ensure no community impacts. • Consult regularly with neighbors and organizers of sporting events to determine if odor is a problem, and if it is, review WWTP operational procedures to address odor source.	• SOOPV	• Operating Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
Health, Socio-cultural and Economic Impacts	Worker Safety	• An operational phase EHS will be developed in compliance with relevant KR laws and regulations prior to the commencement of operation. The plan will include: o Chlorine storage and handling procedures. o Provision of adequate ventilation. o Chlorine emergency spill response procedures in case of accidental release. o Provision of appropriate personal protective equipment. o Regular worker training on EHS implementation, including safe chlorine storage and handling.	• SOOPV	• Operating Budget

Table VII.3: Environmental Monitoring Plan

Predicted Impacts	Location	Inspection / Ambient Monitoring	Frequency	Institutional Responsibility[1]
CONSTRUCTION PHASE				
Sourcing of construction materials such as rock, sand and other building materials	Quarries	Inspection to ensure: • Contractors obtain basic construction materials from existing quarries which have official permits for their operation.	At the beginning of construction, and then monthly during construction activities.	DSC / SAACCS SU
Changes on topography due to reservoir construction.	Excavation areas; Reservoir; Pipeline.	Inspection to ensure: • Final forming and replanting of earthworks in backfilled sections completed as soon as possible to facilitate the regeneration of a stabilizing ground cover. • Reservoir, pipeline and other works will be re-vegetated to facilitate regeneration and slope stabilization.	Weekly during related construction period.	DSC / SAACCS SU
Soil contamination from accidental spillages of petroleum products and other hazardous contaminants	All Subproject Sites	Inspection to ensure: • Good management practices adopted to prevent spills of fuels, oils and hazardous materials. • Soil contaminated by oily products and other substances is removed for disposal at a permitted site agreed to by the Territorial Environmental Protection Department in Jalal-Abad City.	Weekly during construction activities, and at end of construction phase.	DSC / SAACCS SU
Soil contamination from drilling	Drilling Sites	Inspection to ensure: • A closed-loop system of sludge circulation is used during drilling. • Metal containers used for collection of sludge after drilling and transportation to a permitted site agreed with the Territorial Environmental Protection Department in Jalal-Abad City	Weekly during construction activities, and at end of construction phase.	DSC / SAACCS SU
Erosion and land stability	Excavation areas; Reservoir; Pipeline.	Inspection to ensure: • Soil clearance is be minimized to the extent possible. • Topsoil is separated from subsoil during excavation works, and topsoil is reused as a top layer. • Remaining excavated materials reused wherever possible, e.g. for backfilling. • Spoil disposal, if required, avoids sensitive locations such as water sources, wetlands, etc., and sites selected in consultation with the Territorial Environmental Protection Department in Jalal-Abad City. • Clearing and/or excavation activities scheduled taking	Weekly during construction activities, and at end of construction phase.	DSC / SAACCS SU

Predicted Impacts		Location	Inspection / Ambient Monitoring	Frequency	Institutional Responsibility[1]
			weather conditions into account (e.g. minimize excavation activities during rainy weather). • Slopes for reservoirs and embankments stabilized to reduce slips or erosion. • Completed earthwork areas replanted to facilitate the regeneration of flora and for stabilizing the ground cover. Low maintenance landscaping will be implemented along the roadside construction area.		
Water pollution		Directly downstream of any observed pollution event	Water quality sampling and analysis: • DO, COD, BOD_5, SS, hydrocarbons, conductivity, turbidity, pH, temperature	Monitoring will be undertaken by the DSC with SAACCS supervision when requested by DSC NES or Project Engineer	Qualified Consultant or Agency recruited by Contractor
		Any site where pumping is carried out	Inspection to ensure: • Filters used at the intake points and the discharge	Weekly during construction involving pumping	DSC / SAACCS SU
		Stockpiles	Inspection to ensure: • Appropriate material stockpiles storage management implemented	Weekly during construction	DSC / SAACCS SU
		All sites	Inspection to ensure: • Good management practices adopted to prevent spills of fuels, oils and hazardous materials. • Perimeter drainage provided around construction sites and drainage directed to a settling pond.	Weekly during construction	DSC / SAACCS SU
		Construction Camps	Inspection to ensure: • Construction camps properly sited and provided with drainage and wastewater facilities to collect run-off and, if necessary, treatment of the run-off	At the time of camp siting, and then weekly during camp operation	DSC / SAACCS SU
Waste disposal problems from construction and domestic waste disposal		Subproject areas Construction camps	Inspection to ensure: • Proper implementation of Contractor's "Waste Management Plan".	At the beginning of the subproject, then weekly during construction activities.	DSC / SAACCS SU
Air Quality	Exhaust gas from trucks and equipment	Construction site and inhabited areas	Inspection to ensure: • Exhaust systems of vehicles, trucks and machinery in good working order and well maintained. • Equipment placed as far as possible away from inhabited areas.	Weekly during construction	DSC / SAACCS SU
	Dust from the	Construction site and	Inspection to ensure:	Weekly during construction	DSC /

Predicted Impacts		Location	Inspection / Ambient Monitoring	Frequency	Institutional Responsibility[1]
	site traffic and excavation works	inhabited areas	• Dry soil surfaces watered to avoid dust generation. Watering activities should be performed regularly with due consideration to weather conditions. • Transport vehicles travel at low speeds in the construction site to reduce dust. • Construction activities halted during high wind events if dust levels are high. • All vehicles delivering dusty construction materials have their loads covered.		SAACCS SU
	Dust and Exhaust emissions	Construction site and inhabited areas	Air quality sampling and analysis: • Particulate matter.	At least three times, i.e. before the construction starts, during construction and after the construction is finished, and when instructed by the Engineer or DSC NES.	Qualified Consultant or Agency recruited by Contractor
Noise		All residential areas adjacent to construction sites	Inspection to ensure: • Noisy construction activities limited to day time hours in the vicinity of houses and other sensitive sites in accordance with KR regulations. • Equipment and high noise activities sited as far as possible away from inhabited areas. • Exhaust systems of vehicles, trucks and machineries in good working order and well maintained to minimize noise pollution. • Nearby community informed regarding schedule and duration of construction works. • If required, noise barriers installed around high noise sources.	Weekly during construction	DSC / SAACCS SU
			Ambient noise monitoring: • Monitoring with decibel-meters to ensure construction noise is less than 65 dB in the daytime for inhabited areas, and 55 dBA at schools and healthcare centers.	Noise levels will be monitored once before the start of works and then weekly during construction activities	Qualified Consultant or Agency recruited by Contractor
Flora: loss of vegetation		Clearance Areas	Inspection to ensure: • Vegetation removal minimized • No cutting of trees that are not required to be cleared or removed. Sanctions imposed on any worker cutting down trees unnecessarily.	At the beginning of subproject. Monthly during construction.	DSC / SAACCS SU

Predicted Impacts	Location	Inspection / Ambient Monitoring	Frequency	Institutional Responsibility[1]
		• Temporary use areas replanted utilizing appropriate native species. • Topsoil separated from subsoil during excavation works, and topsoil reused as a top layer. • Low maintenance landscaping implemented Compensation provided to lease owners		
Fauna: hunting and poaching	All subproject areas	Inspection to ensure: • Hunting or poaching of fauna by workers forbidden. • Sanctions imposed on any worker poaching fauna at or near the subproject sites.	Monthly	DSC / SAACCS SU
Interference with access to public services, private properties and businesses	All subproject areas	Inspection to ensure: • Local authorities consulted. • Temporary access to affected properties and public service buildings provided, and subsequently good quality permanent access to affected properties provided. • Nearby community notified as to the schedule and duration of construction works. • Contractor providing temporary crossings across pipeline trenches. • Road sections used for laying the water transmission pipelines resurfaced.	Weekly during construction activities.	DSC / SAACCS SU
Public Safety and Traffic Management	All subproject traffic areas	Inspection to ensure: • Warning signs, cones and signal lights installed along the road to protect workers and people in the neighborhood. • Movements of construction vehicles limited within peak hours of traffic. • Public access to construction sites and other areas of danger restricted and temporary barriers installed. • Employees trained on appropriate interactions with local community and awareness program about sanitation and communicable diseases instituted. • A HIV awareness raising and prevention campaign (including HIV in the workplace) will be implemented.	Weekly during construction activities.	DSC / SAACCS SU
Social Disruption from Construction Workers and Camps and Housing	Construction Camps and Housing	Inspection to ensure: • Construction camps equipped with adequate water supply and sanitation facilities, and maintained in clean/hygienic conditions (see above for mitigations related to waste management plan and water quality).	Weekly during construction activities	DSC / SAACCS SU

Predicted Impacts	Location	Inspection / Ambient Monitoring	Frequency	Institutional Responsibility[1]
Occupational Health and Safety	Subproject Area Construction Camps	Inspection to ensure: • Ensure Contractor has a "Occupational Health and Safety Plan", and all aspects are properly implemented.	Weekly during construction activities	DSC / SAACCS SU
Unexpected discovery of Physical Cultural Resources	All Subproject Areas	Inspection to ensure: • Chance find procedure properly implemented	When chance finds of Physical Cultural Resources occur	DSC / SAACCS SU
Operation Phase				
Reduced River Flows/Quality	Intake	Monitoring of: • Water levels in the Kara-Unkyur River. • Water quality in the Kara-Unkyur River.	Continuously	SOOPV
Groundwater Pollution	SPZ II and III, WWTP	Inspection to ensure: • SPZ II and III operational and effective • WWTP effluent being monitored and in compliance with Ministry of Health requirements • Sewage collector and oxidation pond upgraded by local government	At the discretion of the Regional State Environment Protection Department Prior to commencement of WWTP operation	Regional State Environment Protection Department SOOPV
Interception of Groundwater	Water intake site	Monitoring of: • Groundwater levels in the water intakes	Continuously	SOOPV
Waste Sludge Generation	WWTP	Inspection to ensure: • Sludge will be dehydrated and reused as farm fertilizer if suitable.	At the discretion of the Regional State Environment Protection Department	Regional State Environment Protection Department
Noise and Odor Generation	WWTP	Monitoring of: • Noise to ensure no community impacts • Neighbors' complaints and complaints from spectators and players/ participants of sporting events to determine if odor is a problem	Monthly	SOOPV

1. The DSC responsibility for inspections will be fulfilled jointly by the DSC construction supervision engineers and the NES. In terms of the SAACCS SU, this responsibility will be fulfilled by the Environmental Expert during monthly visits.

E. Environmental Reporting

188. Environmental reporting will be undertaken as follows:

- The Contactor will submit bi-weekly progress reports on mitigation implementation and the results of any monitoring undertaken in that period to the DSC which will validate reports and then submit these to SAACCS SU.
- The DSC NES will submit monthly environmental progress reports to the SAACCS SU and the PMC based on environmental monitoring undertaken in that period and the Contactor's bi-weekly progress reports.
- The SAACCS SU will prepare quarterly environmental progress reports documenting the environmental management measures and monitoring results. Following a review by the PMC, SAACCS will submit these reports to ADB. If the monitoring has identified a weakness or deficiency in the implementation of the EMP that has already been addressed, the report should explain the manner by which the issue was resolved. If the monitoring has identified a weakness or deficiency in the implementation of the EMP that has not yet been addressed, a corrective action plan (CAP) should be developed. The CAP should describe actions necessary to address each area of concern; prioritize these actions; identify responsibilities for implementation of each corrective action; identify a time-line for their implementation; and, present a schedule for communicating the results of plan implementation to affected communities.

VIII. INFORMATION, DISCLOSURE, CONSULTATION AND PARTICIPATION

189. ADB's SPS has specific requirements for information disclosure and public consultation. Information disclosure involves delivering information about a proposed project to the general public and to affected communities and other stakeholders, beginning early in the project cycle and continuing throughout the life of the project. Information disclosure is intended to facilitate constructive engagement with affected communities and stakeholders over the life of the project.

190. In addition, the KR is a member of the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) that also has provisions to ensure that project objectives and environmental considerations are made public.

191. In this regard, a public consultation hearing for Bazar-Korgon subproject was held on 6 June 2013, at 10:00, in the Building of Village Local Administration (Ayil Okmotu). A total of, 75 people representing the local communities, NGOs, local state Departments and Services, participated in the meeting.

192. At the start of the consultation, the project's experts explained that during the development of the IEE the impacts on the air, soil, topography, flora and, fauna, groundwater and surface water, and social/economic conditions were assessed. Also, sites of historical heritage, natural reserves and Red Data Book species inhabiting Bazar-Korgon vicinities were taken into account. Based on the assessments, it was concluded that there will be some low and moderate adverse impacts during the construction such as noise and dust. For the operation phase, there will be none or low adverse impacts except for hydrogeology and that there will be a highly positive impact in terms of health. Following these explanations, the participants mostly raised technical issues related to the subproject's design and some environmental impacts.

193. The experts also provided Information about ADB's environmental safeguards requirements and the objectives of the IEE, the EMP, EMoP and GRM. The participants requested information about the commencement date of the construction and its duration, the repair of wells near the road and the possibility of repair of the old sewage treatment plant. The project's representatives from various parties responded to these questions.

194. The summary of the public consultation hearing is presented in Appendix 2.

IX. GRIEVANCE REDRESS MECHANISM

A. Grievance Redress Functions and Process

195. A grievance redress mechanism (GRM) responsive to ADB Safeguard requirements was established for EARR Component 2 by the original Implementing Agency (IA), the State Directorate for Reconstruction and Development of Osh and Jalal-Abad (SDRD), and extended with appropriate adaptations to Component 3A at the outset of subproject design-associated impacts assessment activities in 2012. Following the transition in EARR implementation from SDRD to the State Agency for Architecture, Construction, and Communal Services (SAACCS) in early 2013, the GRM was revalidated by SAACS and the GRM's Grievance Redress Group (GRG) was adjusted accordingly.

196. The GRM provides a basis for receiving, managing, reviewing, and facilitating the resolution of issues, concerns, complaints, or grievances raised by affected people (APs) regarding EARR's environment performance. Based on this mechanism, aggrieved APs may access the GRM through local points of contact (LPC) and will be assisted by the SAACCS Safeguard Unit (SAACCS SU) and the GRG tasked with all activities needed to discuss a grievance, validate and assess the scope of impacts, decide on redress actions needed, and instruct and facilitate the functioning of the GRM. The GRG is composed of a core group and an independent observer (Oblast Ombudsman) to make informed and balanced decisions on complaints lodged. Component 3A will cover compensation costs for impacts found eligible by the GRG during RP implementation. The GRM allows for internal appeal/reconsideration of grievances but there are no ancillary levels of appeal. APs may seek recourse to the court of law at any stage of the grievance redress process. The GRM process is shown in Figure 17 below.

197. Citizen complaint and grievance redress procedures have been developed in compliance with the Law of the KR "On procedure of processing complaints of citizens" as well as ADB Safeguard Policy. As shown in Figure 17, the grievance redress process involves the following steps:

- Complaints/appeals received from affected persons are registered by SAACCS Correspondence Department. After review by the Deputy Chief Architect of Osh City (DSC - responsible for technical project implementation matters), complaints are passed to the appropriate department for review. Received complaints are divided into complains/appeals related to EARR subprojects and those not related to EARR subprojects.
- Complains/appeals related to EARR subprojects are received and registered by the SAACCS SU and acknowledged by letter signed by the DCA to the complainant within 7 days of registration.
- Complains/appeals related to EARR subprojects which are possible to solve under authority of the DCA will be studied and decided. SAACCS SU provides internal review of the grievance, determines eligibility, and advises the DCA accordingly. A response letter will be prepared by the SAACCS Social Safeguards Specialist signed by the DCA and sent to the complainant within 14 days of complaint registration.
- In the event an eligible complaint cannot be resolved within SAACCS immediate authority, the GRG is triggered. The DCA will convene the Grievance Redress Group (GRG) which will consider the balance between the complainant and the public interest. Members of GRG will review the complaint and meet with the complainant. If necessary, they may consult with legal expertise and/or request for additional information from the complainant, LAs, or governmental agencies.

- After the GRG completes its investigation, a letter will be prepared by the SAACCS Social Safeguards Specialist signed by the DCA, and sent to the complainant advising of GRG decision and associated action within 21 days after registration.
- If the complainant does not agree with the decision, he/she will have 5 days to request the reconsideration of his/her complaint. If reconsideration (appeal) is not requested, the case will be closed. This will be clearly stated in the response letter.
- Complaints found ineligible or disputed decisions may also be taken by complainants to the courts.
- If the AP is not satisfied with the Court judgement, there may be an opportunity for appealing to a higher level of court. The AP may also choose to approach ADB under the Accountability Mechanism.[9]

198. For managing the subproject complaint handling system, SAACCS, with support from the PMC, has furnished the GRM with necessary staff and facilities and will provide administrative and organizational support as required. Although the GRM provides an integrated complaints handling system, separate data bases will be maintained containing information about complaints related to the ADB Safeguard Policies on environment and involuntary resettlement. All grievance-related documentation will be kept until the EARR is formally closed. SAACCS will include summary data on complaint processing and results in progress reports submitted to ADB.

199. SAACCS, with assistance from local leaders, and community representatives, will inform the presence of the GRM to the public and subproject area communities through dissemination of subproject information through local media, in consultations with affected persons and the public, and the EARR website (www.earr.kg).

G. Local Point of Contact

200. Affected people may lodge complaints for registration through a personal visit, call or letter to designated local points of contact (LPC) established at the local government level in each subproject area. LPCs nominated by LAs have been officially designated by SAACCS and trained on RP issues to monitor RP implementation, respond to AP queries, and receive AP complaints. Upon receiving complaints, the LPC will promptly forward them to SAACCS, activating the GRM process described above. The GRM LPC for the Bazar-Korgon Subproject is the Head of the Bazar Korgon water supply organization, the Rural Public Association of Drinking Water Consumers (SOOPV).

C. Grievance Redress Group

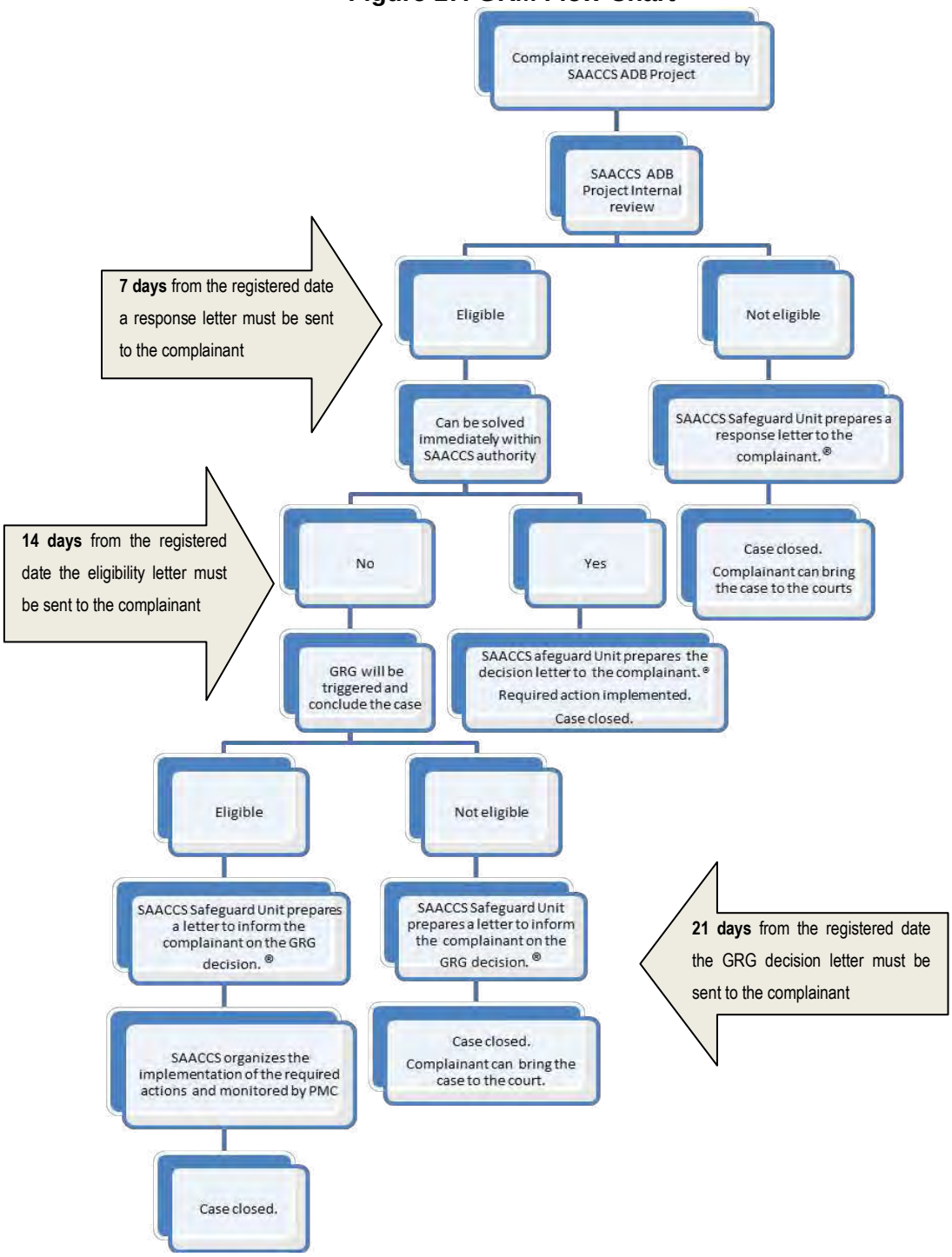
201. The Grievance Redress Group (GRG) for the Bazar Korgon Subproject includes the following:

1. DCA of Osh City (chairperson);
2. Representative(s) from involved subproject area local governments: Bazar-Korgon District and Bazar Korgon and Beshik-Jon A/Os; (members);
3. SAACCS Social Safeguard Specialist; (member);
4. Representative of the Ombudsman of Jalal-Abad Oblast (independent observer)
5. Technical specialist(s) from the relevant organizations as required by the nature of the complaint filed. The technical expertise to objectively review and resolve the case may be solicited from the following state and non-state organizations:

[9] The ADB Accountability Mechanism provides a forum where people adversely affected by ADB-assisted projects can voice and seek solutions to their problems and report alleged noncompliance of ADB's operational policies and procedures. It consists of two separate but complementary functions: consultation phase and compliance review phase. For more information see: http://beta.adb.org/site/accountability-mechanism/main

- PMC/DSC
- State Registration Services (Gosregister)
- Ministry of Agriculture
- State Agency for Environment and Forestry
- Ministry of Justice
- Other agencies

Figure 17: GRM Flow Chart



® A signed receipt of the letter will be required from the complainant

X. CONCLUSIONS

202. The proposed subproject will improve water supply and sewerage infrastructure in Bazar-Korgon Village.

203. Preconstruction phase impacts are low and are related to project siting. The subproject will require cancellation of four public land leases; however, appropriate compensation in accordance with KR and ADB requirements will be provided to the owners.

204. Construction phase impacts are low to moderate in magnitude and are typically temporary and localized in nature. There are no high magnitude construction phase impacts. All impacts can be adequately addressed through typical mitigation measures including good construction and health and safety practices.

205. The operation phase is expected to have limited negative impacts. Potential threats to drinking water quality will be addressed through the delineation of SPZ zones I to III and though chlorination and ongoing drinking water quality laboratory analysis. Worker health will be protected through appropriate health and safety practices. On the other hand, subproject operation will create high positive impacts on public health and hygiene. Provision of good quality water and safe sewerage facilities is expected to significantly enhance the quality of life of affected peoples, and reduce contamination of soil and surface and groundwater.

206. Based on the analysis undertaken in this report, it is concluded that

i) the proposed subproject will have no significant adverse impacts, and will result in significant positive socioeconomic and environmental benefits. Any minimal adverse environmental impacts associated with the subproject can be addressed through the application of appropriate mitigation measures;

ii) the subproject's categorization as ADB environment category B is confirmed; and

iii) this IEE is considered sufficient to meet ADB's environmental safeguard requirements for the subproject, and no additional studies are required.

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APPENDIX 1: Rapid Environment Checklist

RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST – WATER SUPPLY

Country/Project Title: Kyrgyz Republic/Emergency Assistance for Recovery and Reconstruction - Component 3A: Bazar Korgon subproject

Sector Division:

SCREENING QUESTIONS	Yes	No	REMARKS
A. PROJECT SITING Is the project area…			
• Densely populated?	☒	☐	Water intake will take place outside but conduits to the connection points will take place inside the village.
• Heavy with development activities?	☐	☒	
• Adjacent to or within any environmentally sensitive areas?			
• Cultural Heritage Site	☐	☒	
• Protected Area	☐	☒	
• Wetland	☐	☒	
• Mangrove	☐	☒	
• Estuarine	☐	☒	
• Buffer zone of protected area	☐	☒	
• Special area for protecting biodiversity	☐	☒	
• Bay	☐	☒	
B. POTENTIAL ENVIRONMENTAL IMPACTS Will the project cause…			
• Pollution of raw water supply from upstream wastewater discharge from communities, industries, agriculture, and soil erosion runoff?	☐	☒	
• Impairment of historical/cultural monuments/areas and loss/damage to these sites?	☐	☒	
• Hazard of land subsidence caused by excessive ground water pumping?	☐	☒	
• Social conflicts arising from displacement of	☐	☒	

communities?			
• Conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters?	☐	☒	
• Unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)?	☐	☒	
• Delivery of unsafe water to distribution system?	☐	☒	
• Inadequate protection of intake works or wells, leading to pollution of water supply?	☐	☒	
• Over pumping of ground water, leading to salinization and ground subsidence?	☐	☒	Planned abstraction represents at maximum 10% of the approved.
• Excessive algal growth in storage reservoir?	☐	☒	
• Increase in production of sewage beyond capabilities of community facilities?	☐	☒	
• Inadequate disposal of sludge from water treatment plants?	☐	☒	
• Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?	☐	☒	
• Impairments associated with transmission lines and access roads?	☒	☐	Local impairments during construction.
• Health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals.	☐	☒	
• Health and safety hazards to workers from handling and management of chlorine used for disinfection, other contaminants, and biological and physical hazards during project construction and operation?	☐	☒	
• Dislocation or involuntary resettlement of people?	☒	☐	Four households lose their lease but are given replacement leases.
• Disproportionate impacts on the poor, women and children, indigenous people or other vulnerable groups?	☐	☒	
• Noise and dust from construction activities?	☒	☐	
• Increased road traffic due to interference of construction activities?	☒	☐	

• Continuing soil erosion/silt runoff from construction operations?	☐	☒	
• Delivery of unsafe water due to poor O&M treatment processes (especially mud accumulations in filters) and inadequate chlorination due to lack of adequate monitoring of chlorine residuals in distribution systems?	☐	☒	
• Delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals?	☐	☒	
• Accidental leakage of chlorine gas?	☐	☒	
• Excessive abstraction of water affecting downstream water users?	☐	☒	
• Competing uses of water?	☐	☒	
• Increased sewage flow due to increased water supply?	☒	☐	
• Increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant	☒	☐	WWTP has enough capacity for the new volume.
• Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?	☐	☒	
• Social conflicts if workers from other regions or countries are hired?	☐	☒	
• Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during operation and construction?	☐	☒	
• Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?	☐	☒	

RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST
SEWAGE TREATMENT

Country/Project Title: Kyrgyz Republic/Emergency Assistance for Recovery and Reconstruction - Component 3A: Bazar Korgon subproject

Sector Division:

SCREENING QUESTIONS	Yes	No	REMARKS
A. PROJECT SITING Is the project area…			
• Densely populated?	☒	☐	Sewerage collector will lay inside the village or on the outskirts.
• Heavy with development activities?	☐	☒	
• Adjacent to or within any environmentally sensitive areas?	☐	☒	
• Cultural Heritage Site	☐	☒	
• Protected Area	☐	☒	
• Wetland	☐	☒	
• Mangrove	☐	☒	
• Estuarine	☐	☒	
• Buffer zone of protected area	☐	☒	
• Special area for protecting biodiversity	☐	☒	
• Bay	☐	☒	
B. POTENTIAL ENVIRONMENTAL IMPACTS Will the project cause…			
• Impairment of historical/cultural monuments/areas and loss/damage to these sites?	☐	☒	
• Interference with other utilities and blocking of access to buildings; nuisance to neighboring areas due to noise, smell, and influx of insects, rodents, etc.?	☒	☐	There will be increase of noise during construction.
• Dislocation or involuntary resettlement of people?	☐	☒	

• Impairment of downstream water quality due to inadequate sewage treatment or release of untreated sewage?	☐	☒	
• Overflows and flooding of neighboring properties with raw sewage?	☐	☒	
• Environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers?	☐	☒	
• Noise and vibration due to blasting and other civil works?	☒	☐	There will not be blasting but there will be noise during construction.
• Discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers?	☐	☒	
• Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances, and protect facilities?	☐	☒	
• Social conflicts between construction workers from other areas and community workers?	☐	☒	
• Road blocking and temporary flooding due to land excavation during the rainy season?	☐	☒	
• Noise and dust from construction activities?	☒	☐	
• Traffic disturbances due to construction material transport and wastes?	☒	☐	There will be temporary traffic disturbances.
• Temporary silt runoff due to construction?	☒	☐	There will be some temporary silt runoff but there are some mitigation measures planned.
• Hazards to public health due to overflow flooding, and groundwater pollution due to failure of sewerage system?	☐	☒	
• Deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water?	☐	☒	
• Contamination of surface and ground waters due to sludge disposal on land?	☐	☒	
• Health and safety hazards to workers from toxic gases and hazardous materials which may be contained in sewage flow and exposure to pathogens in sewage and sludge?	☐	☒	

APPENDIX 2: Public Consultation

1. PUBLIC CONSULTATION HEARING IN BAZAR-KORGON VILLAGE, 6 JUNE 2013

1. The public consultation hearing for Bazar-Korgon subproject was conducted on 6 June 2013, at 10:00, in the Building of Village Local Administration (Ayil Okmotu).

2. The agenda of the event is provided below in the Table 1:

Table 1: Agenda of Public Consultation Hearing

DATE	06.06.2013
PLACE	Building of Village Local Administration
TIME	10:00
PURPOSE	Public Consultation Hearing
Agenda	
13:30 – 14:00	Registration of the participants
14:00 – 14:10	Welcome speech of the Chief of Bazar-Kurgon City Administrator
14:10 – 14:20	Introductory notes on the subproject; provided by Head of the PMC Team - Pieter Smidt
14:25 – 14:45	Information on technical purposes, tasks and details of the subproject implementation; provided by Chief Engineer of the subproject - Andrey Putilov
14:45 – 15:00	Information on the environmental impacts during construction and operation of water supply and sewer systems; provided by National Environmental Specialist of the subproject - Djamila Aitmatova
15:00 – 15:30	Questions, comments and discussions

3. Totally, 75 people representing the local community, NGOs, local state Departments and Services, attended the meeting. The list of them is provided below in the Table 2:

Table 2: List of participants

Invited People		
No.	**Name**	**Position**
1	Pieter Smidt	Team Leader, PMC
2	Dinesh Nath Chalise	Project Team Leader, EPTISA
3	Anvar Atabaev	Senior Engineer, PMC
4	Andrey Putin	Engineer, Designer, EPTISA /Giprostroy
5	Djamila Aitmatova	Environmental Specialist, EPTISA/RAM Engineering
6	Nasiba Nazirkulova	Environmental Expert, Gosstroy's Safeguards Unit
7	Rusyam Ulukov	Public Relations Expert, PMC
8	Abdykadyr Jolchiev	Head of Village Local Council/Kenesh
9	Altynbek Tokoshev	Gosstroy Representative/ Dep. Chief Architect, Osh City
10	Teshabaev, Yunusjan	Deputy Head of B-K local administration
11	Khusanbaev, Khaibatullah	Head, "Taza-Suu"
12	Sharipov, Shakirjan	Chairman, B-K village council
13	Abdullaev, Abdukhalil	Local kenesh (council) member
14	Kultaev, Kamal	Director, Lyceum
15	Goloborodko, Vera	Sanitary and Epidemiological Service
16	Sulyanbaev, Almaz	Gosregistr (Rayon Department of State Registration)
17	Satarov, Abdumalik	Rayon Department of Architecture
18	Jalalov, Oskon	Environment Inspectorate
19	Topchubaeva, Gulaiym	Head of Condominium of Enesai District

20	Turgunbaeva, Saikal	Head of village
21	Yuldashev, Kabyl	Head of village
22	Akhmalaliev, Mamatkodir	Head of village
23	Orunbaev, Akhmajan	Head of village
24	Ergashev, Azam	Head of village
25	Abdanbaev, Tynychbek	Head of village
26	Ibragimov, Khasanbai	Chairman, Court of Elders
27	Mirzakhamdamov, Mirzaumar	Chairman, Council of Elders
28	Mamajanova, Tursunai	Chairwoman, Women's Council
29	Soliev, Elior	Chairman, Youth Council
30	Abdukakharov, Toktobai	Head of Rayon State Administration
31	Yusupzhanov, Arapbai	Head, Local Municipal Service
32	Khudaiberiev, Azimjan	Chairman, community (neighborhood) Council
33	Abdurakhmanova, Raya	Chairman, community (neighborhood) Council
34	Mirzaeva, Mastura	Chairman, community (neighborhood) Council
35	Aitbaev, Salyr	Head, PIU water and sewer system rehabilitation in Jalal Abad
36	Abdurasulov, Erkin	Lead Specialist of department
37	Jumabekov, Kubanychbek	Chief Architect of Jalal-Abad
38	Jumukov, Duishebai	Deputy Chief Doctor of Sanitary and Epidemiologuical Control Center
39	Alyshbaev, Esenbek	Engineer of GlavArchitectura, Jalal-Abad
40	Tilekeev, K.	Deputy Head of Akimiat (Rayon Administration)
41	Abdykarov, T.	Specialist, Rayon Administration
42	Sultanaliev, A.	Deputy Head of Gosregistr
43	Adbukarimov, A.	Deputy Head of GlavArchitectura, Jalal Abad
44	Jolchiev, A.	Head of B-K Self-governance
45	Abdukarimov, A.	Youth Committee
46	Ibrokhomov, Kh.	B-K Rayon Administration
47	Adbuvaliev, F.	Microdistrict Satyvaldiev, 12
48	Nuraliev, A.	Village B-K
49	Dekhanova, T.	Village B-K
50	Osmanov, Kh.	Village B-K
51	Fedyrkulova, Sveta	Village B-K
52	Akhmadov, A.	Village B-K
53	Sharipov, Anvarjon	Village B-K
54	Tashbaltaev, D.	Village B-K
55	Osmonaliev, A.	Village B-K
56	Mamytov, M.	Village B-K
57	Mamshev, Z.	Village B-K
58	Mahamajanov, K.	Village B-K
59	Orunbaev, J	Village B-K
60	Kojomjaev, S.	Village B-K
61	Mamasidikov, M.	Village B-K
62	YUsupov, A.	Village B-K
63	Mamitov, M.	Village B-K
64	Abdullaev, I.	Pensioner
65	Rakhmanov, G.	Member of village council

66	Urenbaev, A.	Head of village
67	Akhmadaliev, M.	Head of village
68	Ergashev, A.	Head of village
69	Gamidov, A.	Head of village
70	Bazarkulov, A.	Director of an opencast mine
71	Barataliev, S.	Veterinary Center
72	Batyraliev, S.	Director of SPA
73	Sotooldiev, G.	Chairman of the Committee
74	Yusupov, A.	Secrtary of Committee
75	Kholdyrov, M.	Notary officer

4. The participants from the part of the local community asked questions mostly on the technical issues related to the subprojects's design and to a lesser degree on the environmental impacts of the subproject.

Figure 1: Participants of Public Consultation Hearing

Figure 2: An attendee asks a question

5. The program of the meeting included presentations by the PMC and EPTISA experts as well as by the Gosstroy representative/Deputy Chief Architect, Osh City and the Head of Village Local Administration.

6. In his introductory speech of the Gostroy representative Mr. Altynbek Tokoshev noted that the ADB subproject is important for the rehabilitation and construction of the water and sewer systems in Bazar-Korgon which will allow to raise the standards of well-being of the local population.

7. PMC expert Mr. Anvar Atabaev introduced the Agenda and, the experts of EPTISA and the PMC. The Team Leader of the PMC Mr. Pieter Smidt provided information about ADB's environmental safeguards requirements and the objectives of the Initial Environmental Examination (IEE), the EMP, EMoP, and the GRM. The Deputy Team Leader of EPTISA Mr. Andrey Putilov informed the audience about the status of the design work: the on final version of the working documentation is completed. He mentioned that at the water intake (Karacha village) one additional well will be drilled, 2 water reservoirs of 1,000 m^3 each will be constructed and pumping station will be installed. Special measures will be taken to protect the water intake against river bank erosion. Furthermore, the existing water supply distribution network will be rehabilitated and improved. About 11 km of existing water supply pipelines will be tested for leakages and strength. Depending on the results of the testing, about 4-5 km of the network will be replaced and about 1.1 km of new pipelines will be installed

8. Mr. Andrey Putilov also mentioned that design for water supply and sewer works for the Enesai micro district is still ongoing. A water supply network with a length of 2.5 km will be constructed and the sewer system will be rehabilitated. The rehabilitation of the water supply and sewer networks inside the apartment buildings will be the responsibility of the local administration.

Figure 3: Presentation of Andrey Putilov, Deputy Team Leader of Consultant

9. Mr. Anvar Atabaev additionally clarified that all subproject components that would be constructed will be endorsed at all required administrative levels. He also mentioned that internal street networks will be rehabilitated. As for Enesai, the subproject will supply water to the whole micro district with the extension of the distribution main trunk. The repairs of the internal water and sewerage networks will be the responsibility of the local administration. The subproject will restore the main sewer network. As a whole, the amount of water that will be supplied will be enough for everybody in this micro district.

Figure 4: Anvar Atabaev makes additional notes

10. Mr. Altynbek Tokoshev, Gosstroy Representative informed that a recent ADB mission visited Bazar Korgon sites, including water intake and Enesai micro district. As it was mentioned that for Enesai, a modular wastewater treatment plant will be constructed with a containerized plant for mechanical and biological purification. All these structures should be installed at a distance from residential areas due to the smell from the WWTP. Ms. Djamila Aitmatova, EPTISA's national environmental specialist, informed the audience about the

details of the ADB and Kyrgyz environmental safeguards policy in terms of OVOS and IEE. She specifically mentioned that each subproject according to ADB policies and Kyrgyz environmental legislation is subject to an IEE and goes through state environmental review. The latter is under the responsibility of the State Agency of Environmental Protection and Forestry. A constituent part of the IEE is the EMP and EMoP, which include management and monitoring of the environmental mitigation measures and social aspects during the construction and operation phases. During the development of IEE for the Bazar-Korgon subproject, the impacts on the air, soil, topography, flora and, fauna, groundwater and surface water, and social/economic conditions were assessed. Also, sites of historical heritage, natural reserves and Red Data Book species inhabiting Bazar-Korgon vicinities were taken into account. Based on the assessments, it was concluded that in most cases there is no impact or the impacts are insignificant except for hydrogeology where the impact is expected to be medium and positive. Regarding the social/economic conditions, the impact will be positive for health and insignificant for land use. The specialist also provided information about the mitigation measures planned for subproject activities during the phase of construction and operation phase.

11. Mr. Anvar Atabaev informed the audience that environmental principle will be observed during subproject implementation. At the operation stage, the environmental principles will be observed using state budget. Regarding water supply and sewerage infrastructure, the subproject will rehabilitate and improve the system at the planned sites but at the stage of operation, the community and local self-governance structures will be responsible for the maintenance of the infrastructure. Maintenance is essential; otherwise, the infrastructure will break down again in a few years. He also requested the participants to provide their comments to the EPTISA team so that they can be taken into account.

12. Following the presentations, the participants had the following questions and comments.

- **When will the construction works start?**

13. Mr. Anvar Atabaev: Construction will start in the beginning of next year and according to the schedule works are to be completed within one year. Thus, at the end of the next year most of the works are anticipated to be finished.

- **Who will repair the wells near the road?**

14. Mr. Anvar Atabaev: Work on these wells is not planned under the subproject.

- **Does it make sense to repair the old sewage treatment plant with the provision of converting to a closed structure by covering it?**

15. Mr. Anvar Atabaev: The EPTISA team has looked into this option and concluded that the available funding is not sufficient for the repair of the existing sewage treatment plant. Also, the old treatment plant is too large for the current demands of the settlement, since no industrial enterprises are operating. Therefore, the team decided to provide a smaller treatment plant of a modular (prefabricated) type.

APPENDIX 3: WWTP Brochure (translation)

Data on BLOS

The calculated discharge (design discharge)	250.0 m^3/h
Pumped medium	Household domestic waste water
Degree of purification	According to the requirements of SanPiN 2.1.5.980-00
Additional Requirements	Aseismic stability of structures is 9 points

Block local treatment facilities of “BLOS” series are intended for treatment of municipal and similar by composition wastewater. The technology is designed especially for the strict environmental regulations, placement and operation in strict sanitary protection zone; this technology allows to achieve treatment indices of the discharge to a fishery water body.

SCHEMATIC DIAGRAM OF WASTEWATER TREATMENT

The design should provide supply of wastewater by sewage pumping station (SPS) for the installation of "BLOS-250” of ground version.

Block local treatment facilities “BLOS-250” are intended for treatment of domestic and similar by composition wastewater. The facility provides treatment of household wastewater to levels corresponding to the MPC of discharge to fishery water bodies (BPK/20 = 3 mg/l, suspended solids = 3 mg/l). Treatment technology is based on the biological removal of organic compounds and biological elements (nitrogen and phosphorus) from wastewaters, and includes: averaging, anaerobic and aerobic processes, after treatment on a pressure filter and UV disinfection.

Block local treatment facilities, "BLOS-250" are supplied in full operational readiness, ground container type with thermally insulated covers, walls, automatic electric heating, with installed valves and fittings, automation unit, flow meters, compressors, flow sensors, UV-sterilizers, installation of sludge dewatering. The unit housing is made of stainless steel, which guarantees a lifetime not less than 25 years. In the technology room there is ventilation and electric heating; grounding and lighting are provided, in addition, there is equipment with individual means of fire-extinguishing. Electricity is supplied from the local network with voltage of 380/220 V on the 2nd category of reliability.

Methods of waste waters treatment on block treatment facilities.

Waste water supplied from the pump station (pump station is not included in delivery) sequentially passes three zones. The first zone provides mechanical pre-treatment from sand and coarsely dispersed suspended matters, compaction and stabilization of sediment, which is periodically pumped out by airlift. In the second zone equipped with fine-bubble aeration and blocks of flat load processes of biological treatment in aerobic-anoxic conditions take place. In the third zone activated sludge is settled and airlift pumped to the first zone. Treated effluents are discharged through the equalizing tray and are disinfected in UV installation.
The unit additionally contains a block of wastewater post-treatment up to the requirements to discharge into water reservoirs of household and drinking, cultural, civil and fishery categories of water use. Operation of the plants is fully automated.
Both versions have a dry compartment, which houses a control board, shut-off-and-regulating fittings, blowers, electric heater of air and other equipment.
For dewatering excess sludge pumped out by the airlift from the unit a module of sludge treatment is used.
Sludge dewatering unit is formed as a standard container of 40ft, inside which there is equipment for stabilization and dewatering of the sediment of excess sludge type.

Capacity on initial sediment humidity of 98% - 5 m^3 per day (up to 1 m^3/h)

Coming sediment is accumulated and stabilized in the mineralizator, whereupon, in a periodical mode, (with participation of an operator) it is fed to dehydration. Treated sludge is stored in bags in the rack, from where after the accumulation it is transported for disposal or utilization. Filtrate resulting in dewatering flows into the local sewer system BOO and is removed to the input of sewage treatment facilities.

The work is automated. Thermal electrical ventilators are used to heat the room of the module (permissible outdoor temperature is minus 55 ° C).

It can be used for dewatering of excess silt generated in the wastewater treatment plants. In this case, BOO water for preparation of flocculent solution and washing of the dewatering equipment is supplied from the plants by using part of the treated wastewater.

DEVICE "BLOS-250"

Block local sewage treatment plants of "BLOS-250" series are made as a single unit module conditionally divided into the process unit and the control unit. The plant is heat insulated with a layer of heat insulation material and is sheathed with facing material.

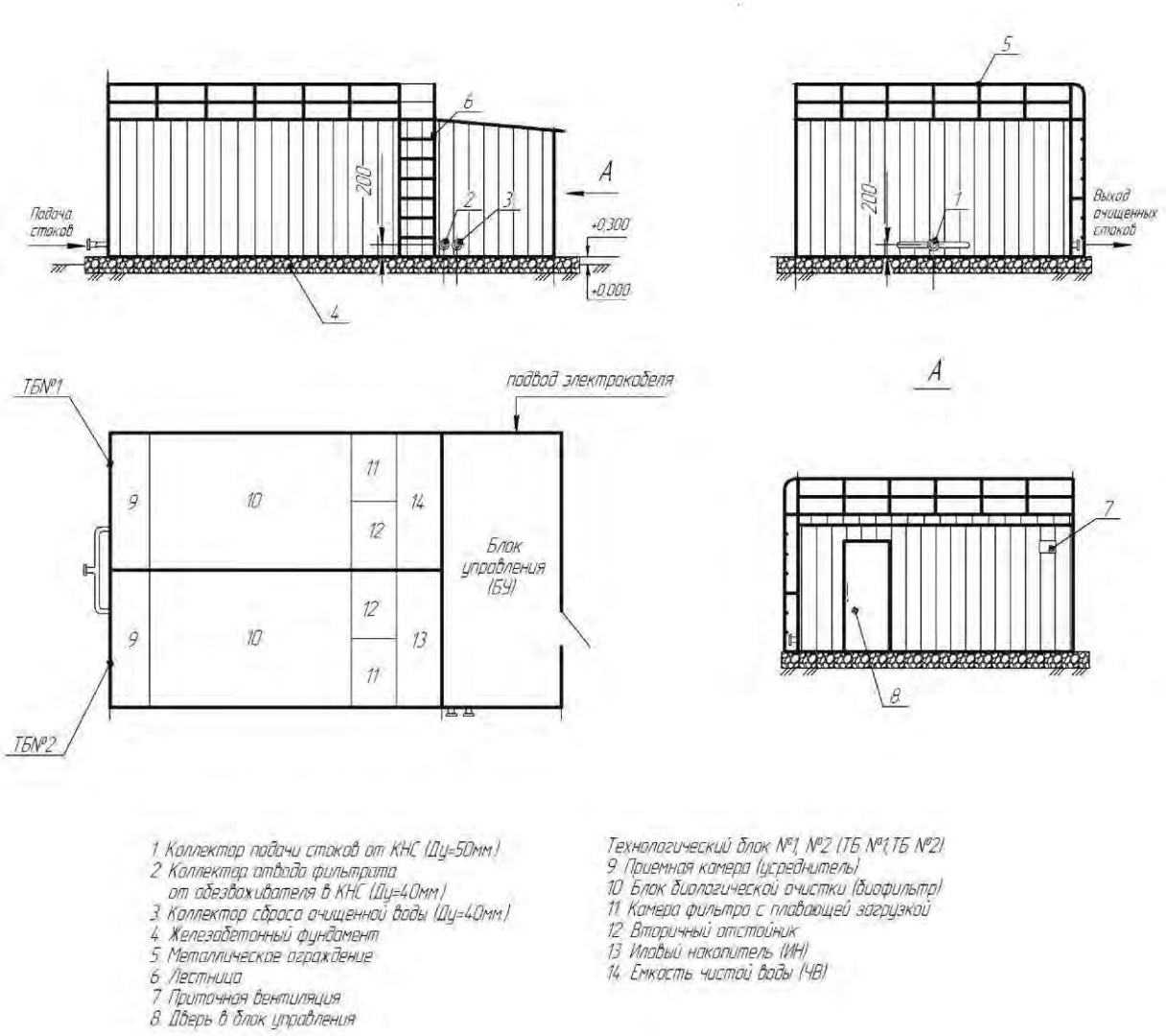
Process block is divided into chambers and containers, containers are made of stainless steel or ferrous metal steel with anticorrosive treatment.

The control unit is equipped for a working area, it has an interior lining. Electric lighting facilities, heating with an electric convector, forced ventilation, a fire extinguisher are provided. The unit has three taken out collectors to join the pipeline:

- supply of effluents from SPS;
- removal of filtrate from the dehydrator in SPS;
- drainage pipeline for discharge of treated water.

Entrance electric cable is put into the control unit on the switchboard.

Technological equipment is controlled both in automatic and manual modes.



1. Коллектор подачи стоков от КНС (Ду=50мм)
2. Коллектор отвода фильтрата от обезвоживателя в КНС (Ду=40мм)
3. Коллектор сброса очищенной воды (Ду=40мм)
4. Железобетонный фундамент
5. Металлическое ограждение
6. Лестница
7. Приточная вентиляция
8. Дверь в блок управления

Технологический блок №1, №2 (ТБ №1, ТБ №2)
9. Приемная камера (усреднитель)
10. Блок биологической очистки (биофильтр)
11. Камера фильтра с плавающей загрузкой
12. Вторичный отстойник
13. Иловый накопитель (ИН)
14. Емкость чистой воды (ЧВ)

1. Collector for waste water supply from SPS (Du=50mm)
2. Collector for removal of filtrate from the dehydrator in SPS (Du=40mm)
3. Collector for discharge of treated water (Du=40mm)
4. Ferroconcrete foundation
5. Metal fence
6. Ladder
7. Forced ventilation
8. Door to the control unit

Technological block No 1, No 2 (TB No 1, TB No 2)
9. Inleak chamber (averager)
10. Biological treatment block (biofilter)
11. Filter chamber with floating load
12. Secondary sedimentation tank
13. Silt accumulator (SA)
14. Pure water tank (PW)

TECHNICAL CHARACTERISTICS OF THE INSTALLATION

No	Parameter name	Measuring unit	Value
1.	Production capacity	m^3/day	250
2.	The average hourly discharge of waste waters	m^3/h	10,42
3.	The maximum coefficient of hour irregularity	-	1,4-2,0
4.	Head, at the plant output	m of water col.	1-2
5.	Number of blocks in the module, including:	pc	5
5.1	Technological block No 1	pc	2
5.2	Technological block No 2	pc	2

5.3	Control block	pc	1
6.	Overall dimensions of the unit (L x B x H)	M	13,8 x 6,9 x 2,3
7.	Mains voltage	V	380/220
8.	Consumed electric power of technological equipment	kW	11,2
9.	Consumed electric power for electrical heating	kW	23,9
10.	Weight of the unit without water, not more than	tons	26,4
11.	Weight of the unit with water, not more than	tons	201,9
12.	Minimum ambient air temperature	0 ^{o}C	-50
13.	Maximum ambient air temperature	0 ^{o}C	+60
14.	Minimum temperature of wastewater	0 ^{o}C	+13
15.	Maximum temperature of wastewater	0^{o}C	+30
16.	Degree of fire resistance SNiP 21-01-97	-	4
17.	Number of mineralized sediment at humidity of 98% at most	m3/day	0,2
18.	Humidity of compacted silt	%	98
19.	Humidity of dewatered silt	%	80
20.	Regulatory snow load	kgs/m^2	200
21.	Wind dynamic pressure	kgs/m^2	55
22.	Seismicity	points	9

PREFERENCES OF "BLOS-250" PLANTS

- Supplied in full operational readiness;
- Minimum cost for construction;
- Absence of noise and odor;
- It is possible to increase the volume of capacity by installing additional modular units;
- Reduction of labor costs by automation of working procedure;
- Lower cost compared to plants of foreign companies at high treatment efficiency and work reliability;
- Maintenance does not require special training and high qualifications of staff.

APPENDIX 4: Local Government Commitment - Sewage Collector and Oxidation Ponds to Collect Discharge from New WWTP

(Copy of the Original Letter)

КЫРГЫЗ РЕСПУБЛИКАСЫ
ЖАЛАЛ-АБАД ОБЛУСУ
БАЗАР-КОРГОН РАЙОНУ
БАЗАР-КОРГОН АЙЫЛ ОКРУГУ

КЫРГЫЗСКАЯ РЕСПУБЛИКА
ЖАЛАЛ-АБАДСКАЯ ОБЛАСТЬ
БАЗАР-КОРГОНСКИЙ РАЙОН
СЕЛЬСКАЯ УПРАВА БАЗАР-КОРГОН

с. Базар-Коргон, ул. Жалалабад №84 тел: (03736) 5-00-53

исх. № 735
«20» 09 2013-ж.

Представителю
Госархстройжилкомхоза КР в проекте
ЧПВР господину А.Токошеву.

Проектному институту
«КЫРГЫЗГИПРОСТРОЙ»

В соответствии с заключением Базар-Коргонскго райводхоза о невозможности сброса очищенных сточных вод с модульной КОС в зимное время для полива лесопосадки указанной в ранее выданном письме №.546 от 19.06.2013г и решения выездного технического совета проекта ЧПВР от 11.09.2013, Базар Коргонский айылный округ сообщает следующее;

Планируемый сброс очищенных сточных вод от модульного КОС в объеме 259м3/сутки будут исползованы для полива лесопосадки в вегетационный период, что составляет 7-10% необходымой ирригационной воды для этого участка. В зимное время предлогается осуществить сборос этих вод в канализационный коллектор Д=500мм.

В свою очередь Базар-Коргонский айылный огруг объязуется выполнить очистку названного коллектора до площадки старых КОС и восстановить внутренные сети площадки старых КОС от коллектора до полей филтрации своими силами.

Работы по очистке коллектора и восстановление сетей будут завершены до начала строительных работы.

Глава Базар-Коргонского
айылного округа: А.Жолчиев.

Председатель ЧПВР: Х.Хусанбаев.

(Translation of original letter)

KYRGYZ REPUBLIC

JALAL-ABAD PROVINCE

BAZAR-KORGON DISTRICT

BAZAR-KORGON RURAL DISTRICT ADMINISTRATION

84, Jalal-Abad St., Bazar-Korgon Village

Tel.: (03736) 5-00-53

Ref. # 735

September 20, 2013

SAACCS' EARR Representative

Mr. A. Tokoshev

The KYRGYZGIPTOSTROY

Design Institute

In accordance with the conclusion of the Water Authority of Bazar-Korgon District about the impossibility to discharge treated waste water from the modular Waste Water Treatment Plant (WWTP) for watering the forest plantation in wintertime stated in the previously issued letter # 546 of June 19, 2013 and the decision of the EARR field technical meeting of September 11, 2013, the Bazar-Korgon Rural District informs about the following:

The planned discharge of treated waste from the modular WWTP rated at 259 m^3/day will be used for watering the forest plantation during the vegetative period, which makes up 7-10% of the irrigation water required for this area. It is proposed to discharge this water to the sewage collector (D=500 mm) in wintertime.

The Bazar-Korgon Rural District in turn commits itself to undertake cleaning of the aforementioned collector up to the site of the old WWTPs and to rehabilitate the internal networks at the site of the old WWTPs from the collector to the filtration fields with its own efforts.

Works to clean the collector and to rehabilitate the networks will be completed before the beginning of the construction works.

Head of the Bazar-Korgon Rural District **A. Jolchiev**

Chairman of the Rural Public Association of

Drinking Water Consumers **Kh. Khusanbaev**

APPENDIX 5: Local Government Commitment – Establishment of SPZs

КЫРГЫЗ РЕСПУБЛИКАСЫ
ЖАЛАЛ-АБАТ ОБЛАСТЫ
БАЗАР-КОРГОН РАЙОНУ
БАЗАР-КОРГОН АЙЫЛ ОКРУГУ

КЫРГЫЗСКАЯ РЕСПУБЛИКА
ЖАЛАЛ-АБАДСКАЯ ОБЛАСТЬ
БАЗАР-КОРГОНСКИЙ РАЙОН
БАЗАР-КОРГОНСКИЙ АЙЫЛЬНЫЙ ОКРУГ

С Базар-Коргон ул Жалал-абадская -84
тел: (03736) 5-00-53

№ 605
от 25.07 2013 г.

Директору Государственного агентства архитектуры, строительства и жилищно-коммунального хозяйства при Правительстве Кыргызской Республики

Нарбаеву К. Ж.

Уважаемый Каныбек Жайчиевич!

В настоящем, извещаем Вас о том, что проект «Улучшение систем водоснабжения и канализации село Базар-коргон» включает в себя модернизацию головного водозаборного сооружения на участке КАРАЧА на территории Бешик-жонской айылного округа. Существующего водозаборного сооружения настоящее время является муниципальной собственностью Базар-Коргонского айылного округа. Территория на участке КАРАЧА было передано безвоздмездно в Базар-коргонской айылный округ в начале 2013 года. Переданный территория не имеет документаций с указанием санитарно - охранной зоны II и III поясов согласно СаНПиН 2.1.4.015-03 в связи с отсутствием информации о его создании.

На основании вышеизложенного Базар-коргонской айылный округ просит Вас содействовать к разработке и определению II и III - пояса санитарно- охранной зоны вокруг территории водозаборного сооружения в рамках реализуемого проекта.

В свою очередь, после вычисления границ II и III поясов Санитарно-охранных зон Базар-Коргонский А/Округ обязуется исполнить все необходимые юридические и административные действия по созданию соответствующих СОЗ II и III поясов до ввода в эксплуатацию водозаборного сооружения, предусмотренной по компоненту 3А

С уважением,

Глава Базар-коргонского айылного округа: **А.Жолчиев.**

(Copy of original letter)

(Translation of Original Letter)

KYRGYZ REPUBLIC

JALAL-ABAD PROVINCE

BAZAR-KORGON DISTRICT

BAZAR-KORGON RURAL DISTRICT

84, Jalal-Abadskaya St., Bazar-Korgon Village

Tel.: (03736) 5-00-53

 # 605

of July 25, 2013

Director of the State Agency for Architecture, Construction and Communal Services under the Government of the Kyrgyz Republic

Narbaev K. J.

Dear Kanybek Jaychievich,

We hereby inform you that the Improvement of the Water Supply and Sewerage Systems for Bazar-Korgon Village Project includes the improvement of the main water intake facility in the area of KARACHA, on the territory of Beshik-Jon Rural District. The existing water intake facility is currently the municipal property of Bazar-Korgon Rural District. In early 2013, the site in the area of KARACHA was transferred for free to the Bazar-Korgon Rural District. The transferred site does not have documentation indicating Sanitary Protection Zones II and III as per Sanitary Norms and Regulations (SanPiN) 2.1.4.015-03 since there is no information about their establishment.

In view of the foregoing, the Bazar-Korgon Rural District asks you to assist in the design and determination of Sanitary Protection Zones II and III around the site of the water intake facility within the scope of the ongoing project.

After the calculation of boundaries of Sanitary Protection Zones II and III, the Bazar-Korgon Rural District commits itself to take all necessary legal and administrative actions to establish the respective Sanitary Protection Zones II and III before the commissioning of the water intake facility envisaged under Component 3A.

Sincerely,

Head of the Bazar-Korgon Rural District **A. Jolchiev**