

Initial Environmental Examination

May 2014

KGZ: Emergency Assistance for Recovery and Reconstruction

Prepared under the Emergency Assistance for Recovery and Reconstruction Project for the Improvement of the Water Supply and Sewerage Systems for Jalal-Abad City 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
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
IA	Implementing Agency
IEE	Initial Environmental Examination
km	Square kilometers
KR	Kyrgyz Republic
LAR	Land Acquisition and Resettlement
LPCs	Local Point of Contacts
m³/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
OD	Outer Diameter
OM	Operations Manual (ADB)
OVOS	Procedure for Environmental Impact Assessment
PAM	Project Administration Manual
PER	Public Environmental Review
PMC	Project Management Consultant
REA	Rapid Environmental Assessment
RP	Resettlement Plan
SAACCS	State Agency for Architecture, Construction, and Communal Services
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
ToR	Terms of Reference
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 “Improvement of the Water Supply and Sewerage Systems for Jalal Abad City” subproject, 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 water supply and sewerage infrastructure in Susak District and Jalal-Abad City, 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 proposed water supply and sewerage improvements include:

Water supply:

- Drilling deep wells in Prigorod for improving water supply including construction of reservoirs, water chlorination facility, electro-mechanical systems and establishing Sanitary Protection Zones (SPZs).
- Construction of a water transmission pipeline, approximately 7.5 km in length, from Prigorod to Jalal-Abad, connecting to the existing water-distributing system in Jalal-Abad.
- Construction of a bridge to convey the transmission pipelines across the Kugart River.

Sewerage:

- Construction of a sewerage collector from Prigorod connecting it to the municipal sewerage system.

4. The subproject cost is estimated at \$7.3 million. The construction period will be 15 months, with construction commencement tentatively scheduled for March 2014. The subproject’s expected lifetime is 25 years.

Environmental, Legal and Administrative Framework

5. 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 SPS.

Environmental Baseline of Subproject

Geo-Physical Profile

6. The water supply and sewerage infrastructure included under the subproject are located in Susak District and Jalal-Abad City in Jalal-Abad Oblast. Except for the small fringes of the Fergana Valley, Jalal-Abad is an oblast of mountains. Cold air masses, from

the south and northeast, are hindered in their intrusion into Jalal-Abad Oblast area by these mountain ranges.

7. The lowest areas of the Oblast (from 500 to 900 m altitude) are deserts and semi-deserts. These soils are characterized by fine-grained structure, relatively low humus content and high mineral nutrients content. With irrigation the soil is very fertile and cultivable for a wide variety of crops. The forest-steppe zone is located at altitudes between 1,000 to 2,200 m. Soils formed under the walnut forests are especially rich in humus with high moisture capacity. The steppe zones occupy a large area and are used primarily as late spring and summer pastures. Gentle slopes and flat lands are used for irrigated grain crops. The subalpine zone occupies a large part of the mountain area in Jalal-Abad Oblast and is located at altitudes between 2,000 to 3,000 m.

8. The KR is rich in water resources. There are some 2,000 lakes in the country with a total area of 6,836.2 km². The largest of them is the Issyk-Kul Lake, covering 91.2 % of the country's lake area. The Naryn River, the country's largest river, crosses the Oblast. The Kara-Darya, Kugart, and Kara-Unkur rivers that flow within the limits of the Fergana Valley are especially significant in terms of their irrigation capacity.

9. The quality of the groundwater is affected by the quality of the water of the Kugart River, precipitation, and water infiltrated as a result of irrigation. 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.

Ecological Profile

10. The world largest walnuts and fruit forests are located in the KR covering 70,000 hectares. The productivity of walnut forests is high with some trees producing a harvest of up to 200-400 kg per year.

11. 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 Saimaluu-Tash Oblast that also represents cultural and historical heritage site with ancient petroglyphs. All four protected areas are located far enough from the subproject location to not be impacted by the subproject works. No Ramsar sites (wetlands) are located within or close to the subproject area.

12. According to the most recent Red Data Book of the KR, Jalal-Abad Oblast has a high number of plant, 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.

Local Environment at Intake Site

13. There is no natural vegetation and fauna at the water intake site, and no rare and endangered species. 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.

Socio-Economic and Cultural Environment

14. Jalal-Abad Oblast's population is just above one million. One of the leading industries of the oblast's economy is agriculture. In other respects, though Jalal-Abad Oblast is also one of the most industrially developed oblasts in the country. The working-age population is growing rapidly, and the unemployment level is high.

15. According to provided data from the Department of Sanitary and Epidemiological Surveillance of the Ministry of Health, Jalal-Abad Oblast is characterized by high levels of

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

16. The water supply system in Jalal-Abad is entirely based on ground water through a system of 30 boreholes, 7 of which are non-functional due to contamination. The 23 operational boreholes supply water to the city through a total of 17 intakes. The current water supply is not adequate to meet the needs of the population. As most in-city water intakes are situated close to the ever-expanding residential areas, the sanitary protection of these intakes is no longer adequate. Problems with water management and operation of the system further exacerbate the water supply situation; disinfection facilities in the water intakes have become dysfunctional due to damage and inadequate maintenance, and water leakage losses are estimated at 30 to 35 % throughout the distribution system.

Analysis of Alternatives

17. An analysis of subproject alternatives was undertaken during the project design to determine the best way of achieving the subproject objectives while minimizing environmental and social impacts.

18. As an alternative to development of the Prigorod water intake, rehabilitation and improvement of existing wells inside the city was considered. However, that was not considered viable because the Sanitary Protection Zones (SPZs) for most wells in the city have been compromised and the nitrate concentration in the water pumped from the aquifer underlying the city is higher than the permissible concentration.

19. Not undertaking the subproject – the “No Action Alternative” – would severely constrain the objective of improving the water supply for Jalal-Abad City. Therefore, construction of the centralized intake at Prigorod and the sewerage collector will realize the objective of improving municipal services through provision of a more reliable and higher quality water supply and a safer sewerage system.

Environmental Impacts and Mitigation Measures

20. 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 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 has been undertaken based on information on the proposed project and on available environmental data, surveys and site visits undertaken by national and international environmental specialists. Identification of appropriate mitigation measures has been undertaken based on experiences in similar projects in the region and the expertise of the national and international environmental and other specialists.

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

22. Preconstruction phase impacts are low and are related to project siting. The subproject will not require any land acquisition, and the water supply transmission pipelines and the sewerage collector will only affect a narrow band of vegetation adjacent to existing roads, requiring the clearing of 70 trees and 121 m of fence. The affected private assets all occur on public land, and compensation for these impacts has been addressed through a separate Resettlement Plan (RP).

23. 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.

24. 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 through 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 safer sewerage facilities is expected to significantly enhance the quality of life of affected peoples.

Environmental Management Plan

25. 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 Safeguard Policy Statement.

26. 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

27. 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.

28. In this regard, public hearing/consultation meeting were held on 14 May and December 4th, 2013, and the summaries of the meeting proceedings are presented in Appendix 2.

Grievance Redress Mechanism

29. 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

30. 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. Subproject Background

1. This is the Initial Environmental Examination (IEE) for the “Improvement of Water Supply System and Sewerage in Jalal Abad City” subproject, developed under the Emergency Assistance for Recovery and Reconstruction (EARR) Project financed by the Asian Development Bank (ADB). The Kyrgyz Republic (KR) has received a Loan and a Grant through Financing Agreement LPS: KGZ 44236 for the EARR, signed between the KR and ADB on 27 September 2010.¹

2. 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.

3. 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).

4. 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, and 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.

5. The “Improvements of Water Supply System and Sewerage in Jalal Abad City” 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.

6. 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 (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.

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

B. Approach to IEE Preparation

7. 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

8. 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). 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.

9. 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 project 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

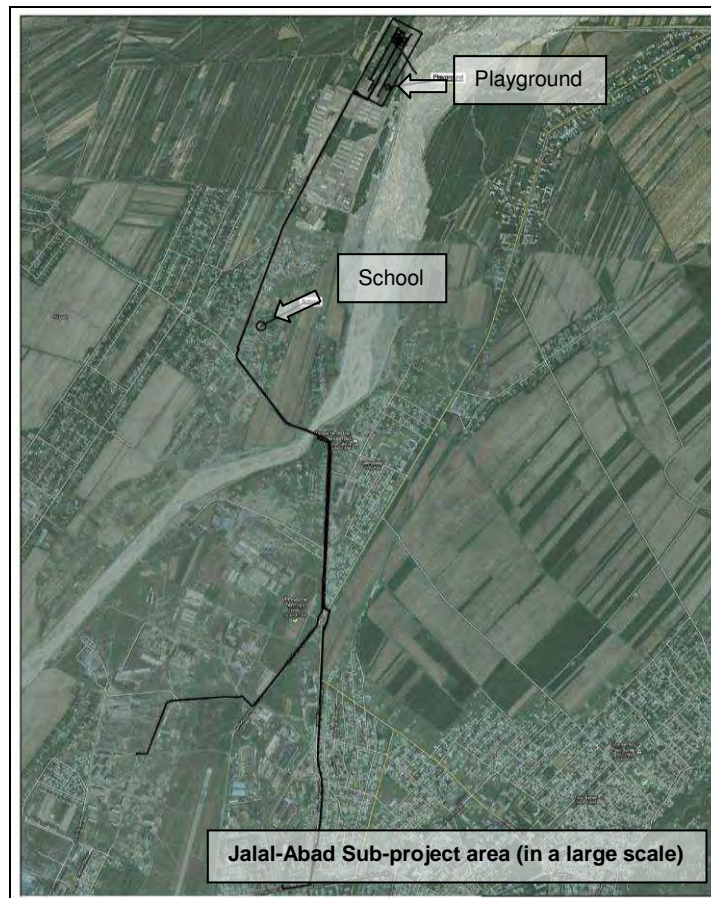
A. Location

10. The water supply and sewerage infrastructure included under the subproject are located in Susak District and Jalal-Abad City in Jalal-Abad Oblast.³ The subproject's "Prigorod" water intake is located in Susak District, which borders Jalal-Abad City. The water intake area is located at the right bank of the Kugart River, 2.9 km north of the road bridge across the Kugart River, 3 km north of a newly-built houses in Prigorod microdistrict at the territory of the former Jalal-Abad poultry factory, and 0.5-0.6 km south-east of Spasovka village. It represents a strip that stretches north-eastward, parallel to the Kugart River. The water intake site is located approximately at an elevation of 600 meter above sea level (masl). The water transmission pipeline and sewer line are located in Susak District and Jalal-Abad City. See Figure 1 for the general location of the subproject.

Figure 1: General location of the subproject



³ Oblast = Province.



B. Subproject Works

11. The subproject includes the following improvement works and activities:

Water supply:

- Drilling deep wells in Prigorod for improving water supply including construction of reservoirs, water chlorination facility, electro-mechanical systems and establishing Sanitary Protection Zones (SPZs).
- Construction of a water transmission pipeline, approximately 7.5 km in length, from Prigorod to Jalal-Abad, connecting to the existing water-distributing system in Jalal-Abad.
- Construction of a bridge to convey the transmission pipelines across the Kugart River.

Sewerage:

- Construction of a sewerage collector from Prigorod connecting it to the municipal sewerage system.⁴

12. Figures 2 to 4 below show the location and details of the most important components of the subproject.

⁴ The sewer collector will also cross the Kugart River by this bridge.

Figure 2: Details of the water intake area

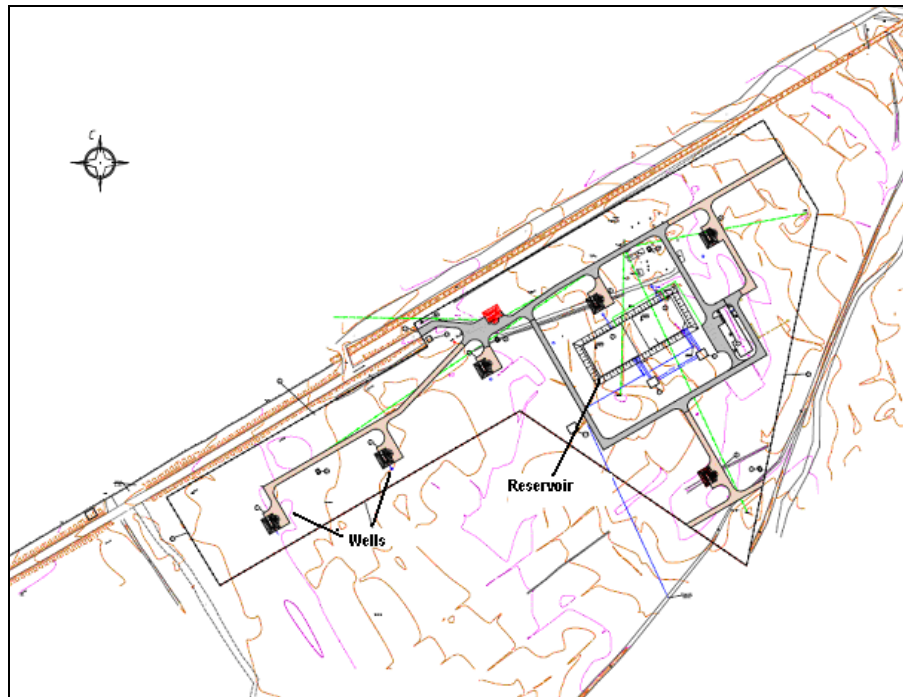


Figure 3: New pipe bridge location

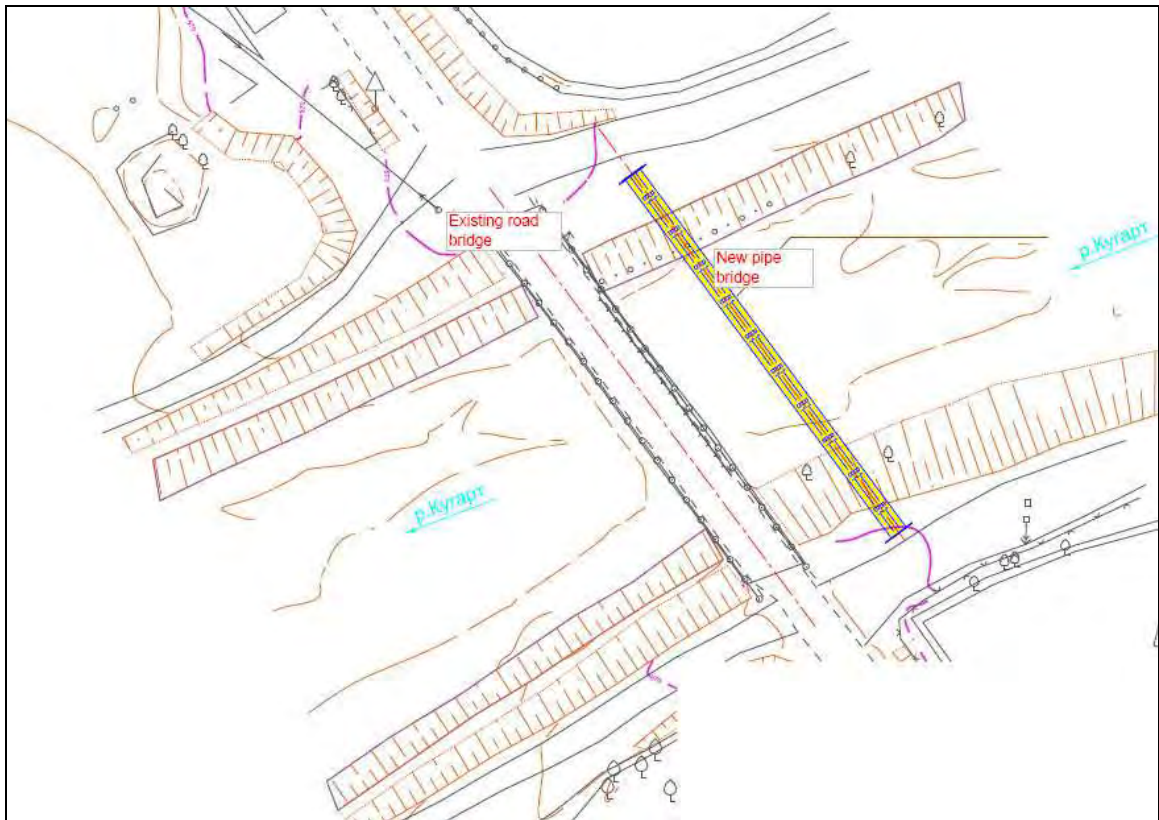
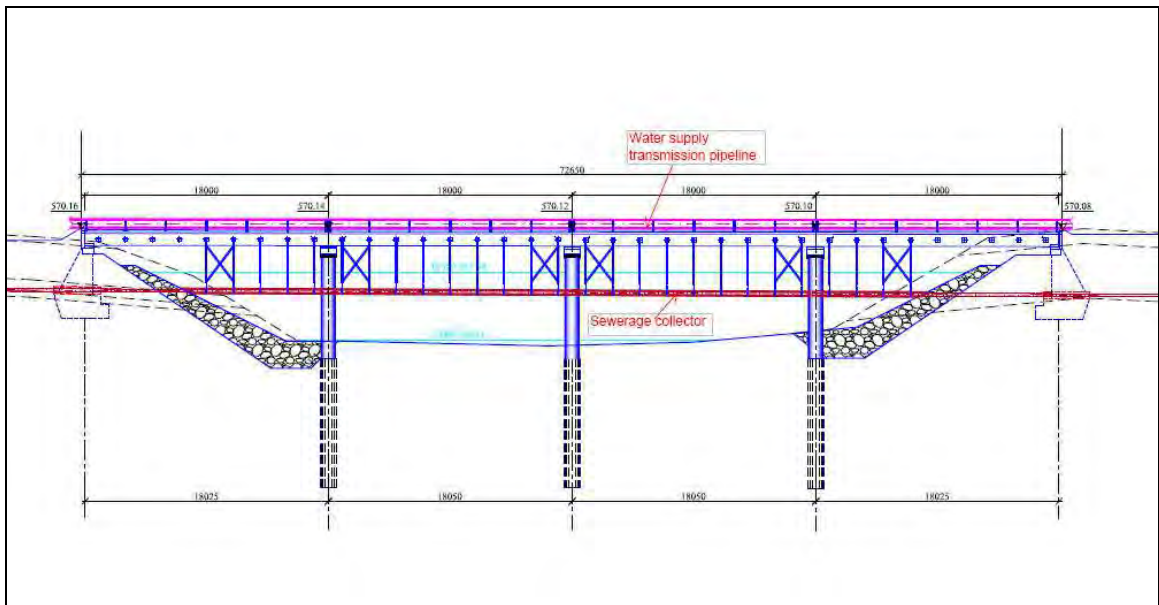


Figure 4: Bridge side view



1. Prigorod Well Field

13. Currently Jalal-Abad City is supplied by more than 20 wells and water-intake facilities distributed throughout the city's territory. Due to the absence of corresponding Sanitary Protection Zones (SPZs), there is a significant risk of well contamination. It has therefore been proposed to establish a well field in Prigorod micro-district which will become the central source for the city's water supply.⁵

14. The following works are included:

- Rehabilitation of the existing drilled well.
- Construction of 6 drilled wells with supply and installation of submersible pumps (capacity of $Q = 100 \text{ m}^3/\text{h}$, efficiency of pumps more than 70%) and construction of well head chambers and manholes including supply and installation of valves and fittings, manometers, flow meters and control panels.
- Construction of an operation building with a surface area of 231 m^2 , housing the chlorination plant, laboratory, control room and facilities for the operating staff.
- Supply and installation of chlorination plant.
- Construction of two reinforced concrete reservoirs with a storage volume of $3,000 \text{ m}^3$ each.
- Construction of the complete internal water supply system for the operation of the wells, reservoirs and the operation building.
- Electrical power supply system for uninterrupted power supply of all objects (electric power of the 1 category of reliability, voltage of 0.4 kV) including:
 - Installation of two 10-kV cells on S/S 35/10 accepting electric power from 2 existing transformers.
 - Construction of a double-circuit overhead line with a voltage of 10 kV from S/S 35/10 to the water intake.
 - Construction of a single-circuit loop line on the territory of the water intake with a voltage of 10 kV with instalment of 2 distribution substations providing automatic change-over and supply of voltage to any transformer.
 - Instalment of 7 transformer substations of 250 kVA (each substation operates for two wells) and one substation of 160 kVA working for one well.
 - Mounting of 0.4 kV cable networks supplying electric power to wells.
 - Construction of electric lighting system with installation of searchlights. Wires of 0.4 kV networks are installed by mutual suspension on towers of 10 kV loop overhead line.
 - Mounting of a system of control cables providing control of the wells operation depending on reservoirs filling and a level of water consumption. Control cables are mounted in overhead version on 10 kV poles.
- Construction of a guardhouse, fence and gate.
- Construction of asphalt and macadam access roads.

2. Water supply transmission pipelines

15. It is planned to construct two transmission pipelines supplying drinking water from the Prigorod water intake to the distribution network of Jalal-Abad City and to the city's Sputnik micro-district. At the crossing with Kugart River a pipe bridge will be constructed for the water supply transmission pipelines as well as for the sewerage pipeline collector from Prigorod micro-district (see below). The works include the following main components:

⁵ An expansion of the Prigorod well field is envisaged at a later time.

- Construction of two polyethylene water supply pipelines outer diameter (OD) 500 mm supplying drinking water from “Prigorod” Well Field to the city’s distribution network and to “Sputnik” micro-district with a total length of 11,344 m.
- Construction of a 73 m span pipe bridge crossing the River Kugart for the two transmission mains and the new sewerage main collector from the Prigorod micro-district.
- Installation of water supply transmission mains on the pipe bridge using OD 530 mm steel pipes. The external pipe surface will be coated with anti-corrosive paint and covered with thermal insulation. On the bridge the pipelines will be installed on sliding supports.
- Construction of 5 control manholes.
- The pipe bridge is a reinforced concrete structure. The foundations of the three intermediate pipe supports will be constructed from driven reinforced concrete piles. The reinforced concrete bridge pillars will be cast in place, while the body of the bridge will be constructed from precast concrete elements. The two steel water pipes will be installed on sliding supports. The sewer pipe will be suspended under the bridge.
- Partial reinstatement of macadam and asphalt road pavement.

3. Sewerage pipeline collector for “Prigorod” micro-district

16. A sewerage pipeline collector will be constructed to connect the “Prigorod” micro-district to the existing sewer network of Jalal-Abad City. The works include the following main components:

- Construction of a sewerage main collector with ND of 200/300 mm made from PVC-U pipes for connection of Prigorod micro-district to the existing sewer network of Jalal-Abad with a length of 2,526 m (ND 200 mm) and 1,804 m (ND 300 mm) and a depth of pipe of up to 6.5 m. At the crossing with Kugart River the sewer will be installed in a steel protection pipe suspended on a pipe bridge.
- Construction of 94 reinforced concrete sewer manholes with ND 1000 mm and a depth of up to 6.5 m.
- Partial reinstatement of macadam and asphalt road pavement.

C. Subproject Budget and Time Schedule

17. The subproject cost is estimated at \$6.8 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

18. 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.

19. 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.

20. 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

21. 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.

22. 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.

23. 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.

24. 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 SAEPP 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.

25. 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.

26. 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

27. 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.

28. 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

29. 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)

30. 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.

31. 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.

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.

32. 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.

33. 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

34. 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

35. 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 (OM Section F1, 2010).

36. 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.

37. 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.

38. 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.

39. 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).

C. International Agreements

40. 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.

41. 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

42. The KR is a land-locked country with an area of approximately 200,000 square kilometers (km²) 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.

43. The subproject is located in the Jalal-Abad Oblast. This Oblast consists of eight rayons (districts) (see Figure 5) with 78 aylokmots (AO, i.e. village councils).

Figure 5: General location of the KR and its bordering countries



44. The Jalal-Abad Oblast occupies an area of 33,500 km² (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

45. 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

46. Except for the small fringes of the Fergana Valley, Jalal-Abad is an oblast of mountains. The Prigorod water intake is located at the right bank of the Kugart River 0.4 km from the shoulder of the first terrace above the flood plain, 2.9 km northward of the road bridge over the Kugart River, 3 km northward of new-built quarters "Prigorod" at the territory of the former Jalal-Abad poultry factory, and 0.5-0.6 km south-eastward of the Spasovka village. It represents a strip of 200 m wide and 700 m long, that stretches northeast parallel to the Kugart River bed. The subproject is located at an elevation of approximately 855-865 masl.

2. Climate and Rainfall

47. 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.

48. 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. Humid air masses bringing most of the precipitation enter from the west via the Fergana Valley. The largest amount of precipitation falls on the south-west slopes of Fergana range (up to 1,000 mm per year). The south-west part of the Oblast is mostly arid, with 100-200 mm precipitation per year.

49. The highest amount of precipitation falls during the spring and the beginning of summer (up to 70 % of the total annual amount). The second part of the summer is dry. For foothills (up to an elevation of about 1,100 m), the climate is semi-desert typically with a moderate warm winter (temperature in January is +4°C) and a hot dry summer (temperature in July is +26°C). Absolute maximum temperature reaches +43°C. The last winter frost periods occur in April while the first autumn frost periods occur in October. For the most part of the Oblast, annual precipitation is up to 600 mm; only at higher elevations in the mountains does precipitation exceeds this level. Predominant wind direction is south-west; average annual wind speed is 1.8 m/sec.

3. Geology

50. Structurally and tectonically Kugart Valley is a part of Fergana Valley. The Fergana valley is an intermountain depression between the mountain systems of the Tien-Shan in the north and the Gissar-Alai in the south. The valley is approximately 300 km long and up to 70 km wide. It includes thick structures of Quaternary and Neogene overlaying more ancient basement rocks. The Quaternary alluvial-proluvial deposits are represented by boulder-gravels, and gravels with layers and lenses of clay loams. Thicknesses of the deposits reach more than 500 meters southward of Jalal-Abad City.

4. Soil, Land Resources and Use

51. Soil and vegetation cover is diverse and characterized by vertical zonation. The lowest areas of the Oblast (from 500 to 900 m altitude) are deserts and semi-deserts. These soils are characterized by fine-grained structure, relatively low humus content and high mineral nutrients content. With irrigation the soil is very fertile and cultivable for a wide variety

of crops. The lowlands zones occupy altitudes between 900-1,300 masl. The cover soils are dark grey soils and are characterized by relatively high humus content.

52. The forest-steppe zone is located at altitudes between 1,000 to 2,200 m. Soils formed under the walnut forests are especially rich in humus with high moisture capacity. Therefore, despite the significant slopes, there is almost no surface run-off, and most of the melt and rainwater is absorbed into the soil. Unique walnut wood has a huge economic importance for this area.

53. The steppe zones occupy a large area and are used primarily as late spring and summer pastures. Gentle slopes and flat lands are used for irrigated grain crops. The subalpine zone occupies a large part of the mountain area in Jalal-Abad Oblast and is located at altitudes between 2,000 to 3,000 m.

54. Soil cover of the subalpine zone in areas occupied by shrubs and meadows is brown mountain soils, and in areas occupied by spruce-fir forest it is brown forest soils. Grass cover consists of flemis, groundsel, *Phlomis oreophila* (Kar. et Kir.), foxtail, and other species. Subalpine meadows are good summer pastures that can be used up to four months a year.

55. The alpine zone is the highest part of the mountain ridges and lies above 3,000 masl. It is characterized by semi-peaty soil types.

56. Land suitable for agricultural comprises 1,835.5 thousand hectares (ha), of which 8.6% (157.85 thousand ha) is arable, 0.3% (5.51 thousand ha) are occupied by perennial fruit trees, 2.1% (38.55 thousand ha) is reserved for hay harvesting, 88.7% (1,628.1 thousand ha) is under pasture lands and 0.3 % (5.51 thousand ha) is used for other purposes. A total of 147.5 thousand hectares of arable land has been allocated under various crops such as cereals, cotton, tobacco, potatoes, vegetables, fodder, oil seeds and melons. Additionally, 8.1 thousand ha is used for gardening and vineyards.

5. Hydrology

a. Lakes and Rivers

57. The KR is rich in water resources. There are some 2,000 lakes in the country with a total area of 6,836.2 km². The largest of them is the Issyk-Kul Lake, covering 91.2 % of the country's lake area.

58. 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 Jalal-Abad Oblast

59. The Naryn River, the country's largest river, crosses the Oblast. The Kara-Darya, Kugart, and Kara-Unkur rivers that flow within the limits of the Fergana Valley are especially significant in terms of their irrigation capacity. The rivers of the Fergana and Chatkal ranges are primarily fed by melting snow and glaciers. They are characterized by early spring floods. In the Oblast, a network of channels and water reservoirs were constructed to efficiently use the available water resources.

60. Two large waterfalls are located in the park/recreational area "Arslanbob" that is located 70 km from Jalal-Abad, at the foot of the Weber Peak in Babash-Ata range. At the opposite side of the Babash-Ata range, in the valley of the Chong-Kerei, Lake Kutman-Kol is located. At the north-eastern side of the Isfandjailoo range, Lake Kara-Suu can be found at an altitude of 1,900 m. The biggest lake in Jalal-Abad Oblast is Sary-Chelek Lake (507 ha).

61. The site of the proposed water intake is located on the right bank of the Kugart River. Average annual flow of the Kugart River (according to the Djergital hydrological observation station) is 19.6 cubic meters per second (m^3/s) whereas average annual maximum flow is 42.16 m^3/s (1969) and average annual minimum flow is 4.84 m^3/s (1974). Absolute maximum flood flows are about 80 m^3/s (May), and minimum flows are about 2.8 m^3/s to 3 m^3/s (October-November).

62. The Kugart River, both upstream and downstream of the proposed intake, has been modified by river channeling and because of the agricultural activities in the original (before channeling) flood plain area. A diversion weir is located 6 km upstream of the proposed water intake. Approximately 2.8 km downstream from the Prigorod intake, the planned water supply pipelines and sewerage collector will cross the Kugart River by the new pipe bridge, which is close to the existing road bridge. In this area, the river has been narrowed due to artificial channeling (see figures below).

Figure 6: Weir built upstream of intake



Figure 7: Agriculture activities in the surrounding river area

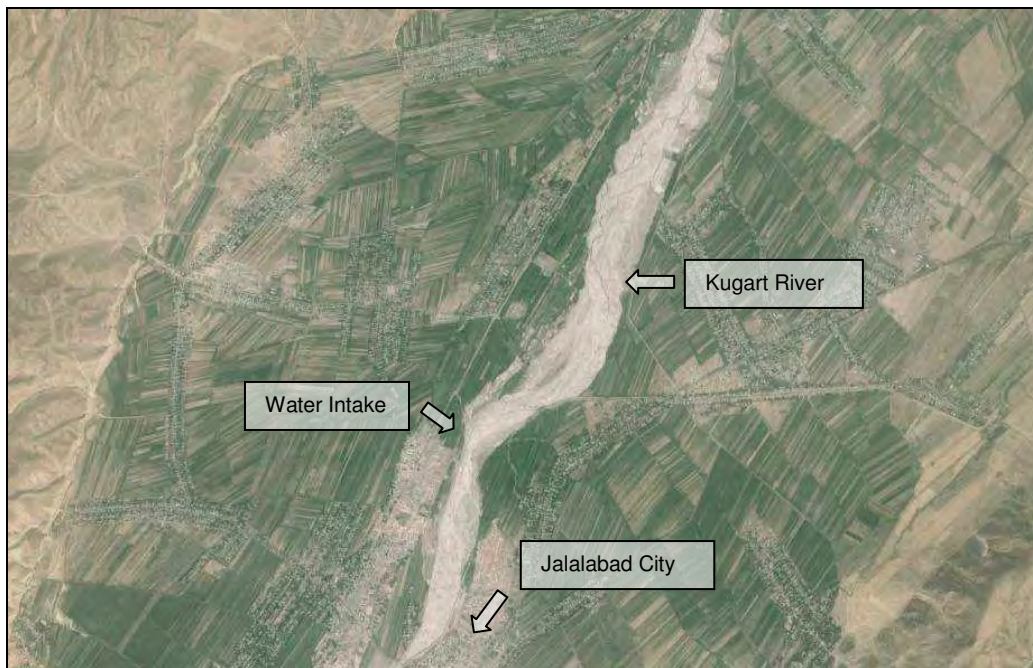


Figure 8: Restricted river channel near existing road and proposed pipe bridge



Figure 9: Existing road bridge



6. Hydrogeology

63. The groundwater in the area belongs to an aquifer within alluvial-proluvial Quaternary deposits. This aquifer is the nearest to the surface, has unconfined hydraulic conditions, and is present along the entire Kugart Valley. The water bearing deposits are boulder-gravel, gravel and gravel-pebbly ones. The granulometric composition of the rocks at the location of the water intake is practically of the same composition.

64. Recharge of the aquifer is mostly provided 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 are the cause for large amplitude of the groundwater level.

65. The quality of the groundwater is affected by the quality of the water of the Kugart River, precipitation, and water infiltrated as a result of irrigation. 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 10: Existing well No 3116 at Prigorod site



C. Ecological Profile

66. 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.

67. 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.

68. There are 22 classes of ecosystems⁶ (see Table IV.1). The presence of deserts (more than 13,200 km², or 6.8% of the territory) together with extremely poor ecosystems of nival – subnival belt (11,500 km², 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.

69. 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%.

⁶ 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.1: Ecosystems of the Kyrgyz Republic

Ecosystem name	Area (km²)	% 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

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

71. 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

72. 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 south-western 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

73. 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

74. 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.

75. 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 ephemeroïd meadows and steppes dominated by bulbous barley, wheat grass other common grasses.

76. 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

77. There are 17 State Reserves and Natural Parks that represent the national system of Specially Protected Areas in the KR (Table IV.2).

5. Special Protected areas in Jalal-Abad Oblast

78. As can be seen in Table IV.2, 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 Saimaluu-Tash Oblast that also represents cultural and historical heritage site with ancient petroglyphs.

79. 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.

Table IV.2: 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.

80. All four protected areas are located far enough from the subproject location not to be impacted 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

81. 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.

D. Local Environment at Intake Site

1. Fauna and Flora

82. There is no natural vegetation at the water intake site, and no rare and endangered species. The flora includes fruit and other trees (apricot, cherry, mulberry, alycha/cherry plum, peach, apple trees, poplars, box trees, weeping willows, and grapevine), typical for a modified environment in the region. There is no fauna at the site, except for several synanthropic species of insects and birds.

Figure 11: A view of flora at water intake site



2. Soils

83. 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 are good for the cultivation of agricultural crops.

Figure 12: The soil at the water intake site



3. Infrastructure

84. Some small buildings are located at the site: a trailer – premises for a Vodokanal staff, two transformer vaults (one of them is operating), a clean water tank and a pumping station. About 20 m eastward from the garden at the intake site there is an irrigation channel and a 110/35 kW power transmission line.

Figure 13: Infrastructure at the water intake site



4. Potential pollution sources

85. There is a defunct poultry factory 200-300 m downstream of the intake that has not operated since the collapse of the Soviet Union. The nearest houses are located at the opposite side of the irrigation channel approximately 200-300 m downstream of the water intake. No other potential sources of pollution have been found near the water intake, except for several land plots (“cheks”) for rice cultivation that could potentially cause ground water pollution. However, according to analyses carried out by Vodokanal and by the Consultants, some bacteriological contamination in the ground water has been observed. In addition to the creation of SPZs to protect the intake, all water withdrawn from the intake will be chlorinated and regularly tested in the onsite laboratory.

Figure 14: Newly built houses in the vicinity of the water intake site



E. Socio-Economic and Cultural Environment

1. Demography and Ethnic Groups

a. Population in the Republic

86. 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 %.⁷

b. Population in Jalal-Abad Oblast

87. As shown in the table below, Jalal-Abad Oblast's population is just above one million. According to Jalal-Abad's Unit of the National Statistical Committee there were close to 50 ethnic nationalities in Jalal-Abad City in 2012. Kyrgyz (60%), Uzbeks (27.5%), and Russians (3.4%) were the major groups. Average household size in Jalal-Abad Oblast is 4.74, below the national average of 5.

⁷ Source: Kyrgyz Republic National Statistical Committee

Table IV.3: 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-Torouzskaia	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

88. Table IV.4 shows the population of Jalal-Abad City by districts. Of the 5 districts, one district (Taigarava) is not served by the city's water supply network: it has its own independent system.

Table IV.4: Population of Jalal-Abad by Territorial Councils/districts

No	Name of Administrative Territory (Teritorialnaya Uprava) in Jalal-Abad City	Population (past) 12/2009
1	Amir Temur	22,900
2	Dostuk (including Prigorod)	22,679
3	Kurmanbek	25,000
4	Suputnik	28,545
5	Taigaraeva	8,178
	Total	107,302

Source: Local Office

2. Economy

a. Jalal-Abad Oblast Economy

89. 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, exploration and excavation of minerals (gold, oil, coal, gas), metal processing, food industry (processing agricultural production), wood processing, machinery construction, and building materials production.

b. Agriculture in the Oblast

90. One of the leading industries of the oblast's economy is agriculture, and cotton growing is one of the most profitable agricultural activities. In 2011, 62.8 thousand tons of raw cotton was harvested. In addition, fruits and vegetable are cultivated, and in 2011, 203.3 thousand tons of vegetables, 61.8 thousand tons of watermelons and melons, 43.1 thousand tons of fruits were produced.⁸

c. Employment

91. 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.

⁸ Source: Kyrgyz Republic National Statistical Committee

92. 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.

93. Table IV.5 shows poverty levels in Jalal-Abad City, Suzak District, and subproject area in comparison with other KR cities and regions. 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.5: Poverty Level in Jalal-Abad

No	Jurisdiction	Number of Households	Population	Households Income Levels (Som/person/month)				
				0-370	371-1050,70	1051 - 1744.80	Total 0-1744.8	% Poor
1	Suzak District	44 511	237 472	13 332	1 273	1 148	15 753	35,4
2	Jalal-Abad City	23 040	98 472	837	1 529	3 956	6 322	27,4
3	Jalal-Abad Oblast	218 203	1 033 590	53 774	20 488	16 977	91 239	41,8
4	Tash-Bulak A/O	2807	16498	782	64	53	899	32,0
5	Kyzyl-Tuu A/O	4436	23876	1434	150	132	1716	38,7
6	Osh city	57 392	258 111	3 492	3 640	3 887	11 019	19,2
7	Osh Oblast	217 294	1 098 032	51 440	34 170	23 592	109 202	50,3
8	Bishkek City	266 395	871 000	2 553	4 379	11 502	18 434	6,9
9	Kyrgyz Republic	1 306 903	5 484 255	161 177	123 204	101 531	385 912	29,5

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

3. Health and Hygiene

94. Jalal-Abad Oblast is characterized by high levels of the waterborne diseases, see Table IV.6.⁹ The most common include those in the general intestinal group (including acute intestinal infections), typhoid fever, dysentery, parasitological helminthosis, 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.

⁹ According to the Department of Sanitary and Epidemiological Surveillance, Ministry of Health, KR, does not have any medical statistics disaggregated to water borne diseases. The disaggregated data on water borne diseases are planned to be included into the medical statistical data base in the next two-three years. This causes some ambiguity, for example: the statistical breakdown of the diseases mentioned in the Table IV.6 consist of both water borne and viral, thus the numbers can not be attributed only to water borne diseases.

Table IV.6: Registered number of patients in Jalal Abad Province

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

95. 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 KR 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.6 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.

a. Current Water Supply System Situation

96. The development of the water supply system in Jalal-Abad started in 1952 and continued until 1990 to keep up with increased demand. Table IV.7 below shows the population of Jalal-Abad by Territorial Councils/districts and the portion of the population currently benefiting from the existing water supply system.

97. The water supply system in Jalal-Abad is entirely based on ground water through a system of 30 boreholes, 7 of which are non-functional due to contamination. The 23 operational boreholes supply water to the city through a total of 17 intakes. The current water supply is not adequate to meet the needs of the population. As most in-city water intakes are situated close to the ever-expanding residential areas, the sanitary protection of these intakes is no longer adequate. Problems with water management and operation of the system further

exacerbate the water supply situation; disinfection facilities in the water intakes have become dysfunctional due to damage and inadequate maintenance, and water leakage losses are estimated at 30 to 35 % throughout the distribution system. People living in multi-story apartment buildings do not have a reliable water supply due to a combination of limited supplies and lack of pressure while, those in Kurmanbek, Dostuk, Kok-Art and Janish have limited access to safe drinking water.

Table IV.7: Population of Jalal-Abad by Territorial Councils/districts and the People serviced by water supply

No	Name of Administrative Territory (Teritorialnaya Uprava) in Jalal-Abad City	Population 12/2009	Population Currently Benefitting from water supply
1	Amir Temur	22,900	2,000
2	Dostuk (including Prigorod)	22,679	14,000
3	Kurmanbek	25,000	5,400
4	Suputnik	28,545	3,500
5	Taigaraeva	8,178	----
	Total	107,302	24,900

Source: Local Office

b. Current Sewerage Situation

98. The sewerage system in Jalal-Abad was constructed in 1963 including a 1,450 m³/day wastewater treatment plant (WWTP). Another WWTP of 35,000 m³/day capacity was constructed in 1990 and the sewerage system was extended. With the subsequent 20 years of plant operations, the main facilities including pump stations, compressors and main mechanical equipment have steadily deteriorated and are now not functioning satisfactorily, which means functioning with the lower efficiency than design efficiency.

99. In addition to the main sewerage system, there was a local WWTP serving the sewerage system in Prigorod micro-district. This WWTP was damaged by floodwaters 16 years ago and after this event, the WWTP is non-functional and the wastewater flows directly into the Kugart River.

4. Infrastructure and Transportation

100. 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.

101. 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.

102. 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.

5. Historical and archaeological sites

103. 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

104. 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.

A. Well Rehabilitation

105. As an alternative to development of the Prigorod water intake, rehabilitation and improvement of existing wells inside the city was considered. However, that was not considered viable because the SPZs for most wells in the city have been compromised and the nitrate concentration in the water pumped from the aquifer underlying the city is higher than the permissible concentration.

106. The preliminary design for the Prigorod option considered technical and economic aspects as well as social aspects in terms of land acquisition and resettlement. Ultimately, a design option was selected which requires no permanent land acquisition, though further development of the site in the future will require land acquisition.

B. No Subproject Alternative

107. Not undertaking the subproject – the “No Action Alternative” – would severely constrain the objective of improving the water supply for Jalal-Abad City. Because of the continued urbanization of the city, the SPZ I zones for almost all the existing wells have been compromised and drilling new wells within the city perimeter is no longer possible. Therefore, construction of the centralized intake at Prigorod and the sewerage collector will realize the objective of improving municipal services through provision of a more reliable and higher quality water supply and a safer sewerage system.

VI. ASSESSMENT OF ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Methodology

108. 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 project 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 projects in the region and the expertise of the national and international environmental and other specialists.

109. 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.

110. 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

111. 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, the pipe bridge 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

112. 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

113. The physical works do not require any land acquisition or resettlement. The water supply transmission pipelines and the sewerage collector will affect only a narrow band of vegetation adjacent to the existing roads, and involves the clearing of seventy trees and one hundred twenty-one meters of fence. The affected private assets all occur on public land. In all, six households and one community mosque are affected.

114. Compensation for these impacts has been addressed through a separate Resettlement Plan (RP).¹⁰ The RP also includes a corrective action plan (CAP) to remediate land acquisition and resettlement (LAR) activities taken in anticipation of the subproject prior to the preparation, approval, and implementation of the RP. These activities resulted in unintended impacts temporarily displacing private land owners, leaseholders and an informal land user.

115. Overall negative land acquisition and resettlement impacts from subproject siting are considered “**Low Impact**”, and are mitigatable through the RP.

¹⁰ Kyrgyz Republic: Emergency Assistance for Recovery and Reconstruction, Resettlement Plan, Component 3A Water Supply and Sanitation: Jalal-Abad Subproject, Sept 2013.

D. Construction Phase Potential Environmental Impacts

1. Impact on the Physical Environment

a. Climate

Potential Impacts

116. 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

117. 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.

118. 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

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

c. Topography

Potential Impacts

119. Potential impacts on area topography are most likely to occur during the construction phase due to earthworks and the construction of the reservoirs and the new bridge crossing at the Kugart River.

120. 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 5m in height) will be constructed, mainly associated with the construction of reservoirs.

121. Overall it is expected that the topography will not change except for a few areas where the bridge and reservoirs 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.
- The abutments of the bridge will be re-vegetated to facilitate regeneration and slope stabilization.

d. Soil and Land Resources

Potential Impacts

122. 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.¹¹

123. It is expected that some soil and rock disposal will be required. If the disposal is 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.

124. 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.

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.

¹¹ 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.

- 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).
- Slopes for reservoirs and embankments 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 bridge construction area.

e. Hydrology and Surface Water Quality

Potential Impacts

125. Six wells will be drilled at the Prigorod water intake site. The maximum designed well yield is 180l/sec while the expected average abstraction rate will be approximately 135 l/sec. The distance from the wells and reservoirs to the Kugart River will be approximately 150-200 m.

126. Potential impacts during the construction phase relate to surface water quality. Earthworks activities and the construction of the bridge, especially during the construction of the piers in the riverbed and the abutments, may increase soil erosion and some sediment may enter into the Kugart River. Accidental spills could also occur and the Kugart River and other watercourses could be contaminated.

127. 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 during the construction of the bridge to minimize sediment entry and other pollutants into the river, no substantial increase in contamination of the Kugart 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.
- All necessary permits will be obtained to carry out works in the river bed.
- Main construction work for the bridge across the Kugart River will be implemented in the river’s low-flow season.
- Stabilization and anti-scouring measures will be implemented as required for the bridge.
- 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 Kugart River will be monitored (DO, BOD₅, COD, SS, hydrocarbons, conductivity, turbidity, TDS, pH, temperature) as indicated in the Environmental Monitoring Plan (EMoP), see Chapter VII.

- 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; and
 - not siting stockpiles within 50 m of any watercourse, and not siting stockpiles and other construction materials in flood prone areas.

Figure 15: Prigorod site with the Kugart River in the background



Figure 16: Channelized Kugart River downstream of the existing road bridge



- As noted above, fuels, oils and hazardous materials will be stored in a secure bundled 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.

f. Hydrogeology and Ground Water Quality

Potential Impacts

128. As mentioned in the previous section six wells with a depth of about 100 meters and a maximum capacity of 180 l/sec will be drilled at the Prigorod water intake site.

129. 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 close to the subproject area, the depth of the groundwater is between 40 m to 49 m. Because of the significant depth of groundwater no significant pollution is expected; therefore, the risk is considered to be **“Low Impact”**.

Figure 17: Proposed well locations (Prigorod site)



Mitigation Measures

- See construction phase mitigation actions “Hydrology and Water Quality Mitigation Measures”.
- To prevent the pollution of the aquifer, the four existing non-functional wells will be sealed. Sealing of a well requires thorough cleaning and cutting off the access to the groundwater followed by sealing the surface at the well head.

g. Wastes

Potential Impacts

130. 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 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

131. 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 NO₂) and heavy diesel machinery and equipment.

132. Air pollution will affect the population near the water supply transmission pipelines and sewer collector 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

133. 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 sewer collector 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 (Environmental Monitoring Plan (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

134. The area at the water intake is a heavily modified environment characterized by crops, pastures and introduced species with little natural remnant vegetation. There are no threatened or endangered plant species, and no significant impacts on flora are anticipated.

135. The water supply transmission pipelines and the sewerage collector will affect only a narrow band of vegetation adjacent to the existing roads, with a total of 70 privately owned fruit trees, non-fruit trees and saplings trees being removed from public land. Appropriate compensation in accordance with KR and ADB requirements will be provided to the owners. No other vegetation will be affected, and there is no land acquisition. No rare or endangered flora are present in the water supply transmission pipelines and the sewerage collector area.

Considering that no rare or endangered or important natural flora will be affected, and that compensation will be paid to tree owners, the impact on flora is considered to be **“Low Impact”**.

Figure 18: Vegetation at new well locations at intake site



Figure 19: Vegetation at proposed reservoir locations at intake site



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.
- Compensation will be provided to tree owners in accordance with Kyrgyzstan and ADB requirements through the Resettlement Plan (see Section VI.D.3)

b. Fauna

Potential Impacts

136. 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

137. 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

138. 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.
- Seven households will be affected by loss of minor assets (trees/fences) along transmission pipelines.
- Construction activities may disrupt public services.
- Construction activities, especially the excavation of trenches, will disrupt access to private properties and businesses.

139. Considering that there will be disturbance from dust and 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 sewer collector, 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.

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.

b. Worker Safety

Impacts

140. 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

141. 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

142. 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

143. 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

144. The presence of new infrastructure will cause some permanent but minor changes to the topography, primarily in relation to the reservoir and bridge construction. The pipelines for water supply and sewerage system will be underground. For the reservoir and bridge construction, there is also risk of unstable or eroding slopes. As topography changes are minimal and the height of the slopes is moderate and the risk manageable, the impact is considered as **“Low Impact”**.

Mitigation Measures

- Measures to maintain slope stability at the reservoir and bridge will be implemented on an as need basis.

d. Soil and Land Resources

Potential Impacts

145. 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

146. During operation the six wells at the Prigorod water intake site will withdraw a maximum design yield of 180l/sec and an expected average abstraction rate of approximately 135 l/sec. The distance from the wells and reservoirs to the Kugart River will be approximately 150-200 meters.

147. Potential impacts are most likely to occur in the operation stage due to abstraction from the aquifer leading to a decrease in the flow of the Kugart River. According to available data from the Djergetal gauging station, the average annual flow of the Kugart River is 19.6 m³/sec and the average annual minimum flow during the low flow season (October-November) is 4.84 m³/sec. In the worst case situation, assuming a direct connection between the aquifer and the river, and considering the maximum abstraction rate of 180 l/sec, it represents 0.9% of the average annual flow and 3.7% of the average flow during the low flow season.

148. The river flow decrease will in the worst case, be equivalent to a maximum of 3.7% of the annual average-low season flow. However, the actual decrease will be considerably less because of the regulatory capacity of the aquifer and the expected average abstraction rate of 135 l/sec. Accordingly, the impact is considered to be “**Low Impact**”.

149. In addition, the construction of a sewerage pipeline collector for the connection of the Prigorod micro-district to the existing sewer network of Jalal-Abad City should significantly reduce surface and groundwater contamination in the service area.

Mitigation Measures

- Not required.

f. Hydrogeology and Ground Water Quality

Potential Impacts

150. Potential impacts are most likely to occur in the operation stage due to the interception of groundwater resources.

151. The State Commission on Mineral Reserves under the Council of Ministers of the Soviet Union (USSR GKZ) approved in 1966 an abstraction of 49,700 m³/d (575 l / sec) for a water intake at the currently planned site for a centralized water supply of Jalal-Abad City.¹²

¹² As per minutes (protocol) № 5028 dated 14.12.1966

However, this water intake was not constructed. In 1978, again an abstraction of 49,700 m³/d of groundwater resources was approved.¹³ This approval is still valid at the present time.

152. There are no existing functioning wells in the vicinity of the Prigorod water intake site, though there are 4 non-functional wells in the vicinity belonging to Vodokanal. There are also 23 operational boreholes supplying water to the city through a total of 17 intakes, but further development of these is not possible anymore because of their location in the residential zone.

153. Based on the available data, the aquifer at the water intake is a large and therefore has a significant capacity to balance water resources. The planned operation is not expected to significantly affect the available resources.

154. It is also important to note that the current SPZ I of the 17 water intakes operated by the Vodokanal in Jalal-Abad City are already compromised in nearly all cases. Because of this, the nitrate level of water produced by these intakes is 1.5 to 2 times higher than Maximum Permissible Concentration (MPC) in KR water standards. Additionally, the operation and maintenance cost of the 17 water intakes within the city is high. Therefore, the subproject aims to establish a single centralized water production system through the new Prigorod water intake.

155. Regarding the local sewerage system for Prigorod microdistrict, its effluent is discharged into a simple pond located on the Kugart River bank. All the effluent filtrates into the ground and thereby pollutes the groundwater. To address this undesirable environmental situation, the subproject will connect the sewerage system of Prigorod district with the centralized sewer collector, which discharges its effluent into the municipal waste water treatment facility. The safe disposal of sewerage effluent from the Prigorod district will decrease groundwater contamination. In addition, SPZ zones will be defined to protect the water intake.

156. Overall, It is expected that the groundwater abstraction resulting from the subproject will not have a significant impact because of the large aquifer capacity. Moreover, the abstraction remains well within the abstraction approved for the Prigorod water intake. However, the abstraction may cause a localized lowering of water levels in the vicinity of the water intake. With respect to water quality, the safe disposal of sewerage effluent from the Prigorod district will decrease groundwater contamination and the SPZ will protect the Prigorod water intake. Therefore, the overall impact is considered as a **“Moderate Impact”**.

Mitigation Measures

Prigorod Sewage Connection

- The subproject will construct a sewerage collector from Prigorod to the municipal sewerage system. The safe disposal of sewerage effluent from the Prigorod district will decrease groundwater contamination.

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 an analysis of the geological structure and hydrogeological and groundwater conditions at the Prigorod intake site:¹⁴

¹³ As per minutes (protocol) № 8218 of GKZ USSR dated 29.12.1978

¹⁴ Based on “Project of Jalal-Abad City Water Intake «Prigorodniy» Sanitary Protection Zones Calculation (Kugart Underground Water Deposit). Bishkek, 2013”.

Figure 20: Proposed well locations (Prigorod site)



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; and
 - the presence of unauthorized people, pets and farm animals; the use of pesticides and organic fertilizers for crops and plantations.
- SPZ I will extend in a radius 25 m from the outer well and is to be fenced off (Figure 21).

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 278 m upstream of the intake, 232 m downstream of the intake, and 232 m in width from the centre of gravity of intake on both sides across groundwater flow (Figure 21).

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 III boundary will be a zone encompassing 4,360 m upstream of the intake, 509 m downstream of the intake, and 649 m in width from the centre of gravity of intake on both sides across groundwater flow (Figure 21).

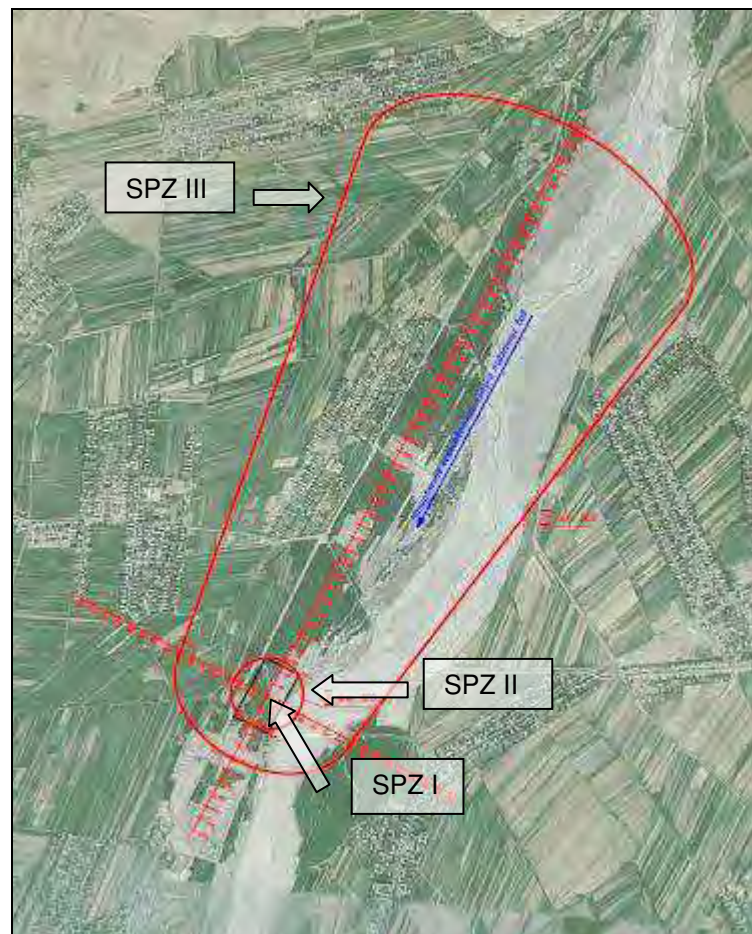
The local government has provided a commitment that they will establish the above SPZs, see Appendix 3.

Sealing of Existing Wells in the Intake Vicinity

- To prevent the pollution of the aquifer, the four existing non-functional wells will be sealed. Sealing of a well requires thorough cleaning and cutting off the access to the groundwater followed by sealing the surface at the well head.

157. In addition, drinking water will be chlorinated, and regularly tested by Vodokanal.

Figure 21: Proposed Delineation of SPZ II and III, Prigorod Intake Facility



g. Wastes

Potential Impacts

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

Mitigation Measures

- See Worker Safety, below.

h. Air Quality

Potential Impacts

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

Mitigation Measures

- None required

j. Noise

Potential Impacts

160. Operation of the subproject facilities is not anticipated to result in significant noise levels and is expected to have **"No Impact"** on local residents.

Mitigation Measures

- None required.

2. Impact on the Biological Environment

a. Flora

Potential Impacts

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

Mitigation Measures

- None required.

b. Fauna

Potential Impacts

162. 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

- None required.

c. Protected Areas

Potential Impacts

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

Mitigation Measures

- None required.

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

a. Community Health, Socio-cultural and Economic Impacts

Potential Impacts

164. Currently there are significant problems with water supply and the operation of the water supply system. The disinfection facilities of most of the 17 existing water intakes are non-functional and the nitrate level of the water produced by the intakes is above acceptable

levels. People living in multi-story apartments do not have a reliable supply of water or access to a functioning sewerage system.

165. 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. The subproject impact in terms of health and population is therefore considered to be positive and **“High Impact”**.

Mitigation Measures

- None required.

b. Worker Safety

Potential Impacts

166. 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

167. 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

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

169. Preconstruction phase impacts are low and are related to project siting. The subproject will not require any land acquisition, and the water supply transmission pipelines and the sewerage collector will only affect a narrow band of vegetation adjacent to existing roads, requiring the clearing of 70 trees and 121 m of fence. The affected private assets all occur on public land, and compensation for these impacts has been addressed through a separate Resettlement Plan (RP).

170. 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.

171. 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 through 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	Low 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	No 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

172. 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 SPS. Organizational responsibilities and budgets are clearly identified for implementation, monitoring and reporting.

B. Implementation Arrangements

173. 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.

174. The responsibilities for environmental management and monitoring are based on Project Administration Manual (PAM) 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 Project Management Consultant (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 are 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 a 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 Suzak district authorities are responsible for establishing the SPZs II and III for the water intake before it becomes operational.
 - After project completion, Vodokanal will be responsible for operation and maintenance of the subproject. Vodokanal 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.
175. Implementation responsibilities by construction phase are summarized in Table VII.1.

Table VII.1: Environmental Management Responsibilities

Subproject 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 Environmental Monitoring Plan (EMoP), carried out in conjunction with the SAACCS SU and through review of air, water and noise monitoring data provided by the Contractor. 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 Suzak district authorities	Establish SPZs
	SAACCS' Safeguards Unit and the Regional Department on Environment Protection	Ensure the establishment of the SPZs
	Vodokanal in cooperation with the district/regional administrations	Undertake routine and random monitoring and analyze samples.

C. Potential Impacts and Mitigation Measures

176. 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

177. The 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.

178. 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.

179. 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 \$20,000 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	Loss of assets (trees, fencing)	<ul style="list-style-type: none"> • Compensation to be provided through Resettlement Plan. 	<ul style="list-style-type: none"> • SAACCS 	<ul style="list-style-type: none"> • Subproject Budget
CONSTRUCTION PHASE				
Geology	Sourcing of construction materials such as rock, sand and other building materials	<ul style="list-style-type: none"> • Contractors will be required to obtain basic construction materials from existing quarries which have official permits for their operation. 	<ul style="list-style-type: none"> • Contractor 	<ul style="list-style-type: none"> • Contractor's Budget
Topography	Changes in topography due to reservoir and bridge construction.	<ul style="list-style-type: none"> • 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. • The abutments of the bridge will be re-vegetated to facilitate regeneration and slope stabilization. 	<ul style="list-style-type: none"> • Contractor 	<ul style="list-style-type: none"> • Contractor's Budget
Soil and Land Resources	Soil contamination from accidental spillages of petroleum products and other hazardous contaminants	<ul style="list-style-type: none"> • Good management practices will be adopted to prevent spills of fuels, oils and hazardous materials. <ul style="list-style-type: none"> ○ 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. 	<ul style="list-style-type: none"> • Contractor 	<ul style="list-style-type: none"> • Contractor's Budget
	Soil contamination from drilling	<ul style="list-style-type: none"> • A closed-loop system of sludge circulation will be used during drilling. 	<ul style="list-style-type: none"> • Contractor 	<ul style="list-style-type: none"> • Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		<ul style="list-style-type: none"> 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 		
	Soil loss, erosion and sedimentation, spoil disposal	<ul style="list-style-type: none"> 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). Slopes for reservoirs and embankments 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 bridge construction area. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget
Hydrology	Surface water pollution	<ul style="list-style-type: none"> In addition to the measures below, see above for good management practices to be adopted to prevent spills of fuels, oils and hazardous materials. All necessary permits will be obtained to carry out works in the river bed. Main construction work for the bridge across the Kugart River will be implemented in the river's low-flow season. Stabilization and anti-scouring measures will be implemented as required for the bridge. 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 Kugart River will be monitored by a qualified consultant or agency (DO, BOD₅, COD, SS, hydrocarbons, conductivity, turbidity, TDS, pH, temperature) on a regular basis or if deemed necessary after visual inspection by the Engineer or DSC National Environmental Specialist). Appropriate material stockpiles storage management will be 	<ul style="list-style-type: none"> Contractor Qualified consultant or agency recruited by the Contractor 	<ul style="list-style-type: none"> Contractor's Budget Contractor's Budget and provisional sum

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		<p>implemented to prevent sediment-laden storm run-off entering watercourses. This includes:</p> <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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. 		
Hydrogeology	Groundwater pollution	<ul style="list-style-type: none"> See Hydrology mitigations, above. To prevent the pollution of the aquifer, the four existing non-functional wells will be sealed. Sealing of a well requires thorough cleaning and cutting off the access to the groundwater followed by sealing the surface at the well head. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget
Wastes	Construction and domestic waste disposal	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		<ul style="list-style-type: none"> prohibited. <ul style="list-style-type: none"> Special care shall be 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. 		
Air Quality	Pollution from dust and vehicle emissions	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Contractor Qualified consultant or agency recruited by the Contactor 	<ul style="list-style-type: none"> Contractor's Budget Contractor's Budget and provisional sum
Noise	Noise impacts on local residents	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		<p>pollution;</p> <ul style="list-style-type: none"> 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 protect workers from high noise activities. 	<ul style="list-style-type: none"> Qualified consultant or agency recruited by the Contactor 	<ul style="list-style-type: none"> Contractor's Budget and provisional sum
Biological Impacts	Flora: Loss of vegetation	<ul style="list-style-type: none"> 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. Compensation will be provided to tree owners in accordance with KR and ADB requirements through the Resettlement Plan 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget
	Fauna: hunting and poaching	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget
Health, Socio-cultural and Economic Impacts	Air pollution	<ul style="list-style-type: none"> See above. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget
	Noise	<ul style="list-style-type: none"> See above. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget
	Interference with access to public services, private properties and businesses	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		permanent access will be provided. <ul style="list-style-type: none"> Road sections used for laying the water transmission pipelines and sewer collector will be resurfaced. 		
	Public safety and traffic management	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget
	Social Disruption from Construction Workers and Camps and Housing	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget
	Worker occupational health and safety	<ul style="list-style-type: none"> The Contractor 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: <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		asbestos pipe, and use of personal protective equipment. <ul style="list-style-type: none"> ○ 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. <ul style="list-style-type: none"> • Training will be provided to workers on the storage, handling and disposal of hazardous materials. 		
Physical Cultural Resources	Unexpected discovery of Physical Cultural Resources	<ul style="list-style-type: none"> • If a previously unknown physical cultural resource is discovered the following chance find procedure will be implemented: <ul style="list-style-type: none"> ○ 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. 	<ul style="list-style-type: none"> • Contractor / Local Authority 	<ul style="list-style-type: none"> • Contractor's Budget
OPERATION PHASE				
Topography	Unstable or eroding slopes at reservoir and bridge	<ul style="list-style-type: none"> • Measures to maintain slope stability at the reservoir and bridge will be implemented on an as need basis. 	<ul style="list-style-type: none"> • Relevant local government department (to be determined) 	<ul style="list-style-type: none"> • Operating Budget
Hydrogeology	Groundwater pollution	Prigorod Sewage Connection <ul style="list-style-type: none"> • The subproject will construct a sewerage collector from Prigorod 	<ul style="list-style-type: none"> • Contractor (to have been completed) 	<ul style="list-style-type: none"> • Contractor's Budget

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		<p>to the municipal sewerage system. The safe disposal of sewerage effluent from the Prigorod district will decrease groundwater contamination.</p> <p>Establishment of Sanitary Protection Zones</p> <ul style="list-style-type: none"> 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 21.¹⁵ <p>SPZ I</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 21). <p>SPZ II</p> <ul style="list-style-type: none"> The purpose of the SPZ II is to protect a groundwater source from microbial contamination. Within this zone, the following is strictly prohibited: <ul style="list-style-type: none"> 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 278 m upstream of the intake, 232 m downstream of the intake, and 232 m in width from the center of gravity of intake on both sides across 	<p>during construction phase)</p> <ul style="list-style-type: none"> Jalal-Abad Oblast and the Suzak district authorities based on the provisions in the Kyrgyz Legislation / SanPiN 2.1.4.015-03 	<ul style="list-style-type: none"> Government Budget

¹⁵ Based on "Project of Jalal-Abad City Water Intake «Prigorodniy» Sanitary Protection Zones Calculation (Kugart Underground Water Deposit). Bishkek, 2013".

Predicted Impacts		Mitigation Measures	Responsibility	Budget Source
		<p>groundwater flow (Figure 21).</p> <p>SPZ III</p> <ul style="list-style-type: none"> The purpose of the SPZ III is to protect a groundwater source from chemical pollution. Within this zone: <ul style="list-style-type: none"> 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 4,360 m upstream of the intake, 509 m downstream of the intake, and 649 m in width from the center of gravity of intake on both sides across groundwater flow (Figure 21). <p>Sealing of Existing Wells in the Intake Vicinity</p> <ul style="list-style-type: none"> To prevent the pollution of the aquifer, the four existing non-functional wells will be sealed. Sealing of a well requires thorough cleaning and cutting off the access to the groundwater followed by sealing the surface at the well head. 	<ul style="list-style-type: none"> Contractor (to have been completed during construction phase) 	<ul style="list-style-type: none"> Contractor's Budget
Health, Socio-cultural and Economic Impacts	Worker Safety	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Vodokanal 	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 and bridge construction.	Excavation areas; Embankments; Bridge site.	Inspection to ensure: <ul style="list-style-type: none"> Final forming and replanting of earthworks in backfilled sections completed as soon as possible to facilitate the regeneration of a stabilizing ground cover. Abutments of the bridge are 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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; Embankments; Bridge site;	Inspection to ensure: <ul style="list-style-type: none"> 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 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. 	Weekly during construction activities, and at end of construction phase.	DSC / SAACCS SU

Predicted Impacts	Location	Inspection / Ambient Monitoring	Frequency	Institutional Responsibility ¹
		<ul style="list-style-type: none"> Clearing and/or excavation activities scheduled taking 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 implemented along the roadside of the bridge construction area. 		
Water pollution	Bridge Site	Inspection to ensure: <ul style="list-style-type: none"> Construction work implemented in the river's low-flow season. Stabilization and anti-scouring measures implemented. 	Weekly during construction	DSC / SAACCS SU
	Bridge Site	Water quality sampling and analysis: <ul style="list-style-type: none"> DO, COD, BOD₅, SS, hydrocarbons, conductivity, turbidity, pH, temperature 	Before the works starts as background	Qualified Consultant or Agency recruited by Contractor
	Bridge Site	Inspection to assess: <ul style="list-style-type: none"> If water bodies are silt-laden. 	At the beginning of construction, and then weekly during bridge construction	DSC / SAACCS SU
	Directly downstream of any observed pollution event	Water quality sampling and analysis: <ul style="list-style-type: none"> DO, COD, 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: <ul style="list-style-type: none"> Filters used at the intake points and the discharge 	Weekly during construction involving pumping	DSC / SAACCS SU
	Stockpiles	Inspection to ensure: <ul style="list-style-type: none"> Appropriate material stockpiles storage management implemented 	Weekly during construction	DSC / SAACCS SU
	All sites	Inspection to ensure: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Construction camps properly sited and provided with 	At the time of camp siting, and then weekly during	DSC / SAACCS SU

Predicted Impacts		Location	Inspection / Ambient Monitoring	Frequency	Institutional Responsibility ¹
			drainage and wastewater facilities to collect run-off and, if necessary, treatment of the run-off	camp operation	
Groundwater pollution		4 non-functioning existing wells at Prigorod	Inspection to ensure: <ul style="list-style-type: none"> Well sealing is doing in the planned procedure. 	Daily during sealing works	DSC / SAACCS SU
Waste disposal problems from construction and domestic waste disposal		Sub project areas Construction camps	Inspection to ensure: <ul style="list-style-type: none"> Proper implementation of Contractor's "Waste Management Plan". 	At the beginning of the sub project, then weekly during construction activities.	DSC / SAACCS SU
Air Quality	Exhaust gas from trucks and equipment	Construction site and inhabited areas	Inspection to ensure: <ul style="list-style-type: none"> 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 site traffic and excavation works	Construction site and inhabited areas	Inspection to ensure: <ul style="list-style-type: none"> 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. 	Weekly during construction	DSC / SAACCS SU
	Dust and Exhaust emissions	Construction site and inhabited areas	Air quality sampling and analysis: <ul style="list-style-type: none"> 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 National Environmental Specialist.	Qualified Consultant or Agency recruited by Contractor
Noise		All residential areas adjacent to construction sites	Inspection to ensure: <ul style="list-style-type: none"> 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 	Weekly during construction	DSC / SAACCS SU

Predicted Impacts	Location	Inspection / Ambient Monitoring	Frequency	Institutional Responsibility ¹
		good working order and well maintained to minimize noise pollution. <ul style="list-style-type: none"> Nearby community informed regarding schedule and duration of construction works. If required, noise barriers installed around high noise sources. 		
		Ambient noise monitoring: <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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. 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 tree owners 	At the beginning of subproject. Monthly during construction.	DSC / SAACCS SU
Fauna: hunting and poaching	All subproject areas	Inspection to ensure: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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

Predicted Impacts	Location	Inspection / Ambient Monitoring	Frequency	Institutional Responsibility ¹
Public Safety and Traffic Management	All subproject traffic areas	Inspection to ensure: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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
Occupational Health and Safety	Subproject Area Construction Camps	Inspection to ensure: <ul style="list-style-type: none"> Ensure Contractor has an "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: <ul style="list-style-type: none"> Chance find procedure properly implemented 	When chance finds of Physical Cultural Resources occur	DSC / SAACCS SU
Operation Phase				
Unstable or eroding slopes	Reservoir and bridge	Inspection to ensure: <ul style="list-style-type: none"> Measures to maintain slope stability at the reservoir and bridge implemented on an as need basis. 	As required	Vodokanal
Groundwater Pollution	SPZ II and III	Inspection to ensure: <ul style="list-style-type: none"> SPZ II and III operational and effective 	At the discretion of the Regional State Environment Protection Department	Regional State Environment Protection Department
Interception of groundwater	Water intake site	Monitoring of: <ul style="list-style-type: none"> Groundwater levels in the water intakes 	Continuously	Vodokanal

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

180. 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, with a copy also sent to the SAACCS Safeguards Unit.
- The DSC NES will submit monthly environmental progress reports to the SAACCS Safeguards Unit based on environmental monitoring undertaken in that period and the Contactor's bi-weekly progress reports.
- The SAACCS' Safeguards Unit will submit quarterly environmental progress reports to the ADB documenting the environmental management measures and monitoring results. 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

181. 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.

182. 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.

183. In this regard, public hearing/consultation meeting were held on 14 May and December 4th, 2013, and the summaries of the meeting proceedings are presented in Appendix 2.

184. In this regard, public consultation hearings for Jalal-Abad subproject were conducted two times at the dates of 14 May 2013 and 4 December 2013. The first public consultation hearing performed in the Mayor's House with the participation of 19 people representing the local communities, NGOs, local state Departments and Services.

185. The second one conducted again in the Jalal-Abad Mayor House according to the earlier distributed agenda with the attendance total of 39 people representing the local community including affected persons (APs), local Departments and Services. To demonstrate importance to the meeting, the Mayor Office had invited the local mass-media to distribute information on the process of public hearings.

186. For both of the public consultation meetings, 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 Jalal-Abad 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.

187. 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 funding and technical features of sub-project. The project's representatives from various parties responded to these questions.

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

IX. GRIEVANCE REDRESS MECHANISM

A. Grievance Redress Functions and Process

189. A GRM responsive to ADB safeguard requirements was established for Component 2 by the original IA, SDRD, and extended with 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 SAACCS in early 2013, the GRM was revalidated and the GRG was adjusted accordingly. The GRM is accessible to all persons affected by the Jalal-Abad Subproject.

190. The GRM provides a basis for receiving, managing, reviewing, and facilitating the resolution of issues, concerns, complaints, or grievances raised by APs regarding RP implementation, including those associated with assets compensation. 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 compensation or other redress action needed. 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 22 below.

191. 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 22, 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 (DCA) of Osh City (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.¹⁶

192. 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.

193. 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).

B. Local Point of Contact

194. Affected people may lodge complaints for registration through a personal visit, call or letter to designate LPCs established at the local government level in each Subproject Area. LPCs nominated by LAs have been officially presented 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 Jalal Abad Subproject is the Deputy of Kyzyl-Tuu A/O.

C. Grievance Redress Group

195. The GRG for the Jalal-Abad Subproject includes the following:

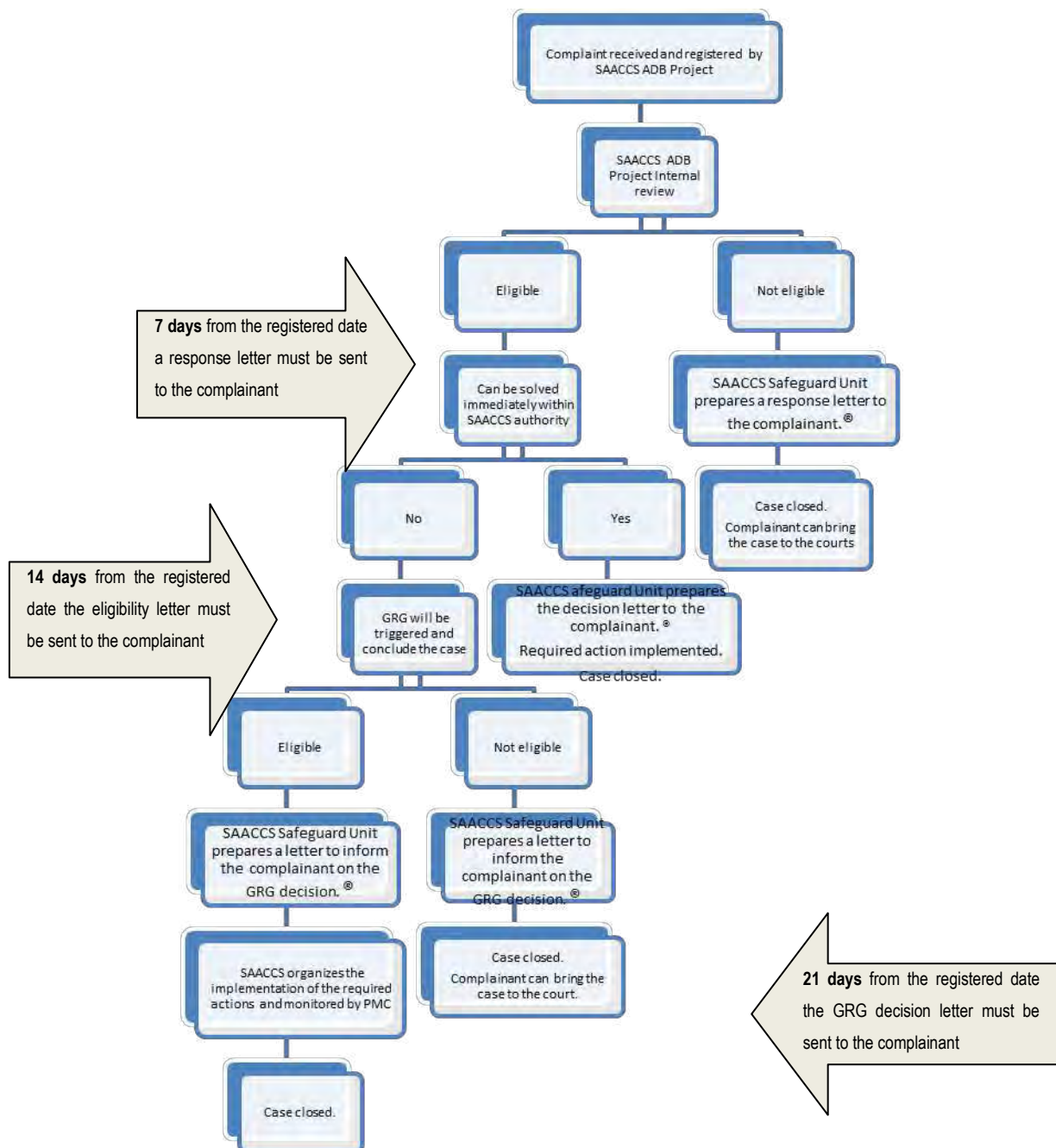
1. DCA of Osh City (chairperson);
2. Representative(s) from involved Subproject Area local governments: Jalal-Abad City and Tash-Bulak and Kyzyl-Tuu A/Os (member);
3. SAACCS Social Safeguard Specialist; (member);
4. Representative of the Ombudsman of Jalal-Abad Oblast (independent observer)
5. Technical specialist(s) from the relevant organizations as required by the nature of the

¹⁶ 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>

complaint filed. The technical expertise to objectively review and resolve the case may be solicited from the following state and non-state organizations:

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

Figure 22: GRM Flow Chart



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

X. CONCLUSION

196. The proposed subproject will improve water supply and sewerage infrastructure in Jalal-Abad City.

197. Preconstruction phase impacts are low and are related to project siting. The subproject will not require any land acquisition, and the water supply transmission pipelines and the sewerage collector will only affect a narrow band of vegetation adjacent to existing roads, requiring the clearing of 70 trees and 121 m of fence. The affected private assets all occur on public land, and compensation for these impacts has been addressed through a separate Resettlement Plan (RP).

198. Construction phase impacts are low to moderate in magnitude and are typically temporary and localized in nature. All impacts can be adequately addressed through typical mitigation measures including good construction and health and safety practices.

199. 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 through 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. These impacts will jointly in turn improve public health.

200. 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.

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: Jalal-Abad subproject

Sector Division:

SCREENING QUESTIONS	Yes	No	REMARKS
A. PROJECT SITING			
Is the project area...			
• Densely populated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water intake will take place outside but conduits to the connection points will take place inside the city.
• Heavy with development activities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Adjacent to or within any environmentally sensitive areas?			
• Cultural Heritage Site	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Protected Area	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Wetland	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Mangrove	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Estuarine	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Buffer zone of protected area	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Special area for protecting biodiversity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Bay	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Impairment of historical/cultural monuments/areas and loss/damage to these sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

• Hazard of land subsidence caused by excessive ground water pumping?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Social conflicts arising from displacement of communities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Delivery of unsafe water to distribution system?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Inadequate protection of intake works or wells, leading to pollution of water supply?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Over pumping of ground water, leading to salinization and ground subsidence?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Planned abstraction represents at maximum 31% of the approved.
• Excessive algal growth in storage reservoir?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Increase in production of sewage beyond capabilities of community facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Inadequate disposal of sludge from water treatment plants?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Impairments associated with transmission lines and access roads?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Local impairments during construction.
• Health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Dislocation or involuntary resettlement of people?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Disproportionate impacts on the poor, women and children, indigenous people or other vulnerable groups?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Noise and dust from construction activities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

<ul style="list-style-type: none"> Increased road traffic due to interference of construction activities? 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> Continuing soil erosion/silt runoff from construction operations? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> 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? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Accidental leakage of chlorine gas? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Excessive abstraction of water affecting downstream water users? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Competing uses of water? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Increased sewage flow due to increased water supply? 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> Increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	WWTP has enough capacity for the new volume.
<ul style="list-style-type: none"> Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Social conflicts if workers from other regions or countries are hired? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> 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? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> 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? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST - BUILDINGS

Country/Project Title:

Kyrgyz Republic/Emergency Assistance for Recovery and Reconstruction - Component 3A: Jalal-Abad subproject

Sector Division:

SCREENING QUESTIONS	Yes	No	REMARKS
A. PROJECT SITING			
Is the project area adjacent to or within any of the following areas?			
• Underground Utilities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Cultural Heritage Site	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Protected Area	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Wetland	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Mangrove	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Estuarine	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Buffer zone of protected area	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Special area for protecting biodiversity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Bay	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
B. POTENTIAL ENVIRONMENTAL IMPACTS			
Will the project cause...			
• Encroachment on historical/cultural areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Encroachment on precious ecology (e.g. sensitive or protected areas)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Impacts on the sustainability of associated sanitation and solid waste disposal systems?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Dislocation or involuntary resettlement of people?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
• Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

<ul style="list-style-type: none"> Accident risks associated with increased vehicular traffic, leading to loss of life? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Increased noise and air pollution resulting from increased traffic volume? 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	There will be increase of noise and air pollution during the works.
<ul style="list-style-type: none"> Occupational and community health and safety risks? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation? 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	It will be use chlorine at the water disinfection facilities. The workers won't be in contact with the chlorine. Could be injured worker in case of accident but is not expected.
<ul style="list-style-type: none"> Generation of dust in sensitive areas during construction? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Requirements for disposal of fill, excavation, and/or spoil materials? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	It will be insignificant.
<ul style="list-style-type: none"> Noise and vibration due to blasting and other civil works? 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	There will not be blasting but there will be noise during construction.
<ul style="list-style-type: none"> Long-term impacts on groundwater flows as result of needing to drain the project site prior to construction? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Social conflicts if workers from other regions or countries are hired? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Risks to community safety caused by fire, electric shock, or failure of the buildings safety features during operation? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> Risks to community health and safety caused by management and disposal of waste? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> 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? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

APPENDIX 2: Public Consultation

1. PUBLIC CONSULTATION HEARING IN JALAL ABAD, 14 MAY 2013

1. The public consultation hearing for Jalal-Abad subproject was conducted on 14 May 2013, at 14:00-16:00, in the Mayor's House.
2. The agenda included presentations by the PMC Team Leader Pieter Smidt, Consultant (Giprostroy) Chief Engineer Andrey Putilov, and Consultant (RAM Eng AS/Eptisa) National Environmental Expert Djamila Aitmatova (Table 1.1).

Table 1.1: Agenda of Public Hearings

DATE	14.05.2013
PLACE	Mayor House
TIME	14:00 – 16:00
PURPOSE	Public Hearings
Agenda	
13:30 – 14:00	Registration of the participants
14:00 – 14:10	Welcome speech of the Jalal Abad Mayor Office Administration (Apparat) Head
14:10 – 14:20	Introductory notes on the Project; provided by Head of the PMC Team - Pieter Smidt
14:25 – 14:45	Information on technical purposes, tasks and details of the Project implementation; provided by Chief Engineer of the Project - Andrey Putilov
14:45 – 15:00	Information on the environmental impacts during construction and operation of water supply and sewer systems; provided by both International Environmental Specialist of the Project - Javier Espa Felip, and National Environmental Specialist of the Project - Djamila Aitmatova
15:00 – 15:30	Questions, comments and discussions

3. Totally, 11 people representing the local community, NGOs, and local state Departments and Services, attended the meeting. The list of them is provided below in the Table 1.2:

Table 1.2: List of Participants

Invited people		
No.	Name	Position
1	Isabaev, Kanybek	Director, Aarhus Center under the local OSCE Bureau, Osh
2	Kurmankulov, Omorbek	Head, Jalal Abad town Statistical Committee
3	Misiraliev, N.A.	Head, Town Department of Gosregister
4	Toktogulov, D.S.	Senior dispatch operator, Jalal Abad District Power Supply Enterprise
5	Jumabekov, K.A.	Head Architect of Jalal Abad town
6	Jumukov, D.	Deputy Head Doctor, Center of State Sanitary and Epidemiological Surveillance, Jalal Abad town
7	Kasymov, R.K.	Senior Specialist of State Inspectorate for Environmental and Technical Safety, local Department
8	Aitbaev, S.T.	Project Implementation Group under Mayor House of Jalal Abad
9	Tokoshev, Altynbek	Deputy Head of the rayon department of State Agency for Architecture, construction and housing construction under the KR Government (Gosstroy)
10	Lindorenko, Lidiya	NGO "LIBRA"
11	Boronbaeva, D.M.	Deputy Head, Provincial Center for Family Medicine
12	Dinesh Nath Chalise	Team Leader, Eptisa

13	Asylgul Seitbekova	Gosstroy, Osh
14	Pieter Smidt	Team Leader, PMC
15	Javier Espa	International Environmental Expert, Eptisa
16	Djamila Aitmatova	National Environmental Expert, (RAM/Eptisa)
17	Andrey Putilov	Head Engineer of the Project (Giprostroy)
18	Vladimir Kadola	Chief Engineer of the Project (Goprostroy)
19	Alexander Khromov	Engineer of the Project (Giprostroy)

4. The participants were informed regarding to technical details, cost and duration of water supply and sewerage infrastructure under the subproject in Sujak District and Jalal-Abad City in Jalal-Abad Oblast. Information presented on the proposed water supply and sewerage improvements are summarized in below:

Water supply infrastructure:

- Drilling deep wells in Prigorod for improving water supply including construction of reservoirs, water chlorination facility, electro-mechanical systems and establishing Sanitary Protection Zones.
- Construction of a water transmission pipeline, approximately 7.5 km in length, from Prigorod to Jalal-Abad, connecting to the existing water-distributing system in Jalal-Abad.
- Construction of a bridge to convey the transmission pipelines across the Kugart River.

Sewerage infrastructure:

- Construction of a sewerage collector from Prigorod connecting it to the municipal sewerage system.

Figure 1: Public Hearing Participants



5. The participants were informed regarding to ADB's Safeguard Policy Statement (SPS) and category of project. The Project has been classified by ADB as environment category B, requiring the preparation of an IEE 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) Project compliance with the KR's relevant environmental laws, standards and regulations and ADB's SPS.

6. The subproject's impacts were presented to participants (Table 1.3) and required mitigation measures were explained.

Table 1.3: Impact Assessment Summary

	CONSTRUCTION PHASE	OPERATION PHASE	MITIGATION MEASURES
Hydrology	During the construction of the river bridge sediments could go into the river and quality water can be affected. As well accidental spoil could occur and after a rainfall the contamination could go into the river.		<ul style="list-style-type: none"> During construction of the bridge the risk of siltation of the river course arising from watering excavations will be minimized by appropriate use of settlement ponds for silt-laden waters. During earthworks and bridge construction, water quality will be monitored on sediment levels analysis and chemical analysis if after a visual exploration it is required.
Hydrogeology		Interception of groundwater resources	<ul style="list-style-type: none"> Based on the available data is a large aquifer and therefore with a high capacity for regulation of the water resources, the recharge of the aquifer levels is expected. There will be periodic control of the ground water level There will be a Sanitary Protection Zone in order to prevent groundwater pollution.
Population	Due to the fact that in the course of work, construction equipment will be used, it is expected a short-term impact on the environment and the surrounding residential areas of the town. Impacts will include noise, vibration and dust.		<ul style="list-style-type: none"> During construction activities, dry soil surfaces will be watered to avoid dust generation. Watering activities will be performed regularly with due consideration to weather conditions. Regular equipment maintenance will be undertaken. Machineries will be placed as far from sensitive receptors as practical.

7. Participants were also informed about the project-level grievance redress mechanism (GRM), which will be established to receive and facilitate resolution of complaints about the Project'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.

8. Participant questions were related to wheather local specialists would be used in environmental monitoring, impacts related to pipeline construction, fill disposal, intake water treatment, intake power source, and project schedule. All questions were responded to in detail, including planned mitigations to address potential impacts.

2. FOLLOW-ON PUBLIC CONSULTATION IN JALAL ABAD – 4 DECEMBER 2013

9. A follow on Public Consultation was conducted in the Jalal Abad Mayor House at the date of 04.12.2013 accordingly to the earlier distributed agenda.

10. A total of 39 persons representing the local community including affected persons (APs) and local Departments and Services attended the meeting. The list of them is provided below in the Table 2.1:

Table 2.1: List of participants in Public Hearings in Jalal Abad, 4 December

Invited People		
No	Name	Position
1	Murazaliev A.	Suzak GosRegister
2	Umarbaev A.U.	Public Fund "Green Light" (NGO)
3	Mamataliev Hazasnbai	Village council #1 "Chingiz Aitmatov", Chairman of the Quarter
4	Pazylov Japar Ganievich	"People's control to avoid corruption", Public Association
5	Samartkanov S.	Sanitary and Epidemiological Control of Jalal Abad
6	Jamashev K.S.	Kyzyl Tuu Aiyl Okmotu
7	Bechelov A.A.	Kyzyl Tuu Aiyl Okmotu
8	Tursunbaev N.P.	Suzak District Electric Grid Company
9	Amatov A.	"Dostuk" Village council
10	Baev K.T.	Village council "Dostuk", Quarter #6
11	Djaparov J.S.	Village council "Dostuk"
12	Mamytova Nazira	Chairwoman of condominium #1, joint village council
13	Vakhidova Izatpasha	Chairwoman of quarter #13, joint village council "Kurmanbek"
14	Mamajabarova Uulkan	Joint territorial council "Kurmanbek"
15	Akmatov Esenbek	Joint territorial council "Sputnik"
16	Kurmanbekov Konokbek	Joint territorial council "Sputnik"
17	Kudaiberdieva Gulmira	Joint territorial council "Sputnik"
18	Galchabaeva Batma	Joint territorial council "Sputnik"
19	Aldosova Baktygul	Joint territorial council "Sputnik"
20	Nazaralieva Begaiym	Joint territorial council "Sputnik"
21	Abjaparova Gulnora	Village council "Dostuk"
22	Toktogulova Umutai	Village council "Dostuk"
23	Akhunova Makhnirat	Dacha "Rassvet"
24	Kadirova Minnavarkhan	Village council #1 "Chingiz Aitmatov"
25	Begmatova Gulzada	Village council #1 "Chingiz Aitmatov"
26	Burkhanov Sh.Sh.	Chairman of the territorial council "Kurmanbek"
27	Tashkhojaev Abdulpatta	Territorial council "Kurmanbek"
28	Akushova Manzura	Territorial council "Kurmanbek"
29	Ismailova Kulbarchyn	Jalal Abad officer of the National Society of Red Crescent
30	Nazirkulova Nasiba	Environmental specialist, PMC
31	Atabaev Rustam	Chief Engineer, PMC
32	Kaparova Djamila	Social expert, PMC
33	Ullukov Rustam	PR Specialist, PMC
34	Asylgul	Social expert, PMC
35	Aitmatova Djamila	Environmental expert, Eptisa
36	Jorobaeva Mamira	Village council "Dostuk", chairwoman
37	Isabaev Kanybek	Aarhus Center, Director (NGO)

38	Nurakova Mimoza	"Women Leaders Jalal Abad" (NGO)
39	Arapbaev Mukhtar	Mayor of Jalal Abad
40	Isaev Ajimurat	Head of department of Jalal-Abad Governor office

11. To demonstrate importance to the meeting, the Mayor Office had invited the local mass-media to distribute information on the process of public hearings widely among the community via TV and radio.

Figure 2: Mass media representatives before the Public consultation hearing



12. Opening the meeting, the Mayor of Jalal Abad, Mr. Mukhtar Arapbaev, took the floor and briefly discussed the current situation regarding water in the Province. As per the provided information, there were several areas - Suzak, Toktogul, Aksy, Bazar-Korgon districts and the city of Jalal- Abad, where water supply problems were still not solved. In these areas, the problems affect literally each local resident. The biggest challenge, as mentioned, is getting clean drinking water. Maximum of only 40 % of the population have access to clean drinking water. So it is required to start a work, which will be supported by the ADB project on water and sanitation to provide supply of safe water for the rest of the population in the area. Within the scope of this public consultation, details of report studied by experts under the ABD Project will be disclosed to the participants.

Figure 3: The Mayor of Jalal Abad, Mr. Mukhtar Arapbaev



13. Then the Mayor passed the floor to Mr. Ajimurat Isaev, Transport and Communication Department Chief, Jalal Abad Governor's Staff (Apparat). In his speech, Mr. Ajimurat Isaev emphasized that solving problems of drinking water really plays a big role. Influence of water quality on the human health is large, especially from the viewpoint of "soft water" and "hard water" concept. As per the provided information by him, drinking of hard water heavily affects kidney and pancreas, as well as the gastrointestinal system activity as a whole. Due to having good water, undoubtedly, the health of our population will be better.

Figure 4: Mr. Ajimurat Isaev, Transport and Communication Department Chief, Jalal Abad Governor's Staff (Apparat)



14. Then Mr. Anvar Atabaev, the senior engineer, PMC introduced by the Mayor. Mr. Atabaev A. noted that experts working under ADB's Emergency Assistance for Recover

and Reconstruction Project are conducting public consultations regarding the Project's environmental aspects and the impact of planned activities on the population. He requested that the attendees would take an active part in the consultation, ask questions, clarify all that is still unclear, and most importantly, that they have enough information about the scope of work that is planned to be carried out. Mr Anvar Atabaev then introduced Ms. Nasiba Nazirkulova, Ms. Djamila Aitmatova, Ms. Djamilia Kaparova, Jenishkul, Asylgul, and Abdykadyr Sultanaliev.

15. Further, Mr. Anvar Atabaev informed the attendees about some Project details, noting that the Project started three years earlier and included four main components:

- Budget support to deal with the immediate fiscal impacts of the June 2010 events which was provided during 2010;
- Reconstruction of damaged and destroyed houses during the 2010 events;
- Rehabilitation and improvement of water supply and sanitation in Osh, Jalal-Abad and Bazar-Korgon for which design began in 2012 – the Project's component 3A; and
- Rehabilitation of sanitation facilities for schools which is still to be started.

16. Design work for component 3A has been completed and the environmental impacts and mitigation measures will be considered within the scope of this public consultation.

Figure 5: Participants of the Public Consultation at the Conference Hall of Jalal Abad Mayor House



17. In addition, Mr. Anvar Atabaev informed that on November 15 the international tender for the component 3A works was advertised. The tender will be closed on December 27. Local companies may also participate in the tender process. It is expected that the contracts will be signed in February 2014 and that contractors will start work in early March 2014. The construction activities are to be carried out within one year. Mr. Anvar Atabaev expressed the Project team's hope that in the middle of 2015 all works will be completed. For Jalal-Abad subproject, the existing water intake at Prigorod, where currently there is only one well, will be upgraded. A total of 6 new wells will be drilled and the existing well will be repaired and a transmission line with a capacity of 10 kV will be

provided to supply the power for the wells. As it was mentioned that two reservoirs as well as a chlorination plant

18. will be built. From there, the water will be supplied to the city. A service bridge will be built over the river Kugart.

19. It was further informed by Mr. Anvar Atabaev, that during the construction stage, the local population will have some inconveniences as work will be done in several places. It will sometimes be noisy and dusty. It is possible that the contractor chooses to work in three shifts because of the very tight contract schedule. Roads will be affected due to the excavation of trenches, some about 4 meters wide. Warning signs as well as temporary crossings will be installed, but in any case, some inconveniences for the local population will occur. He then passed on the floor to Ms. Djamila Aitmatova, the environmental expert of the consultant company for the design and supervision.

20. Ms. Djamila Aitmatova presented in detail what kind of work will be carried out in order to mitigate the negative impact of the construction works. She pointed out that sanitary protection zones will be designed and established which will protect groundwater from contamination and ensure the clean drinking water supply to the local population. This will result in a positive social impact by improving the health situation in Jalal- Abad and the local residents' welfare.

21. Mr. Anvar Atabaev further took the floor and informed the attendees that a Grievance Redress Mechanism (GRM) for the local population was developed and a special group for this purpose was established. During the construction phase, this group will work to consider complaints and solve them. If someone from the local citizens would file a complaint, the group will immediately respond to such claims. The group consists of representatives of the local community, local authorities, and the environmental unit.

22. Mr. Anvar Atabaev additionally indicated that during the trench excavation and installation of pipes the, residual earth from trench excavation will be brought to a site to be agreed with the local authorities for reuse later on. he main construction activities for the bridge on the river Kugart will be done at a time when the riverbed is mostly dry to avoid contamination of water. Also, the contractor will be required to work at the entire length of the route, but in a site-by-site mode, i.e., when working in one area is completed, the works will move to another site, so that the local population would have less discomfort.

Figure 6: Attendees ask questions



23. Ms. Nasiba Nazirkulova, national environmental expert, PMC, pointed out that the ADB Project is aimed at increasing the wellbeing of the Jalal-Abad population, but it is only possible under the strict compliance with all the environmental measures provided in the Project documentation. The local residents are asked to take an active part in the discussion so that everybody will understand the temporary inconveniences resulting from the construction works, she said.

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

- **Will the ADB rehabilitate the distribution water network, i.e., bring the water to the households?**

25. The Mayor: No, the project will only deal with the construction of the intake and the transmission line and sewage main. Distribution network will be rehabilitated through public funding.

- **What is the amount of the subproject funding?**

26. Ms. Djamila Aitmatova: The amount is indicated in the handouts; 7 million USD.

- **Tell us more about the sewerage network, how will it be rehabilitated?**

27. Mr. Anvar Atabaev: The project envisages a collector line from the Prigorod to be connected to the city' sewer system at the Mill Factory. The designer has provided a future possibility of connecting additionally 20,000 households. The capacity of the treatment facilities comes under a parallel project funded by the EBRD, as the Mayor said. The ADB Project will provide safe disposal of sewerage from Prigorod where the old sewage treatment plant near the Animal Farm Bazaar was washed away by the flood.

- **Tell us what are the technical features of the water distribution points between different settlements?**

28. Mr. Anvar Atabaev: The Project will provide special distribution chambers but the distribution network for each locality is not included; this is to be done through another project. There will be a chamber with a valve and a meter and people will be charged for water according to the meter's indications.

**APPENDIX 3: Local Government
Commitment – Establishment of SPZs**

(Original Letter)

FROM : MERX G. JALAL-ABAD

FAX NO. : 0372253011

Jul. 24 2013 01:52AM P1

КЫРГЫЗ РЕСПУБЛИКАСЫ

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ИНН 01105199310066, БИК 1290259

КЫРГЫЗСКАЯ РЕСПУБЛИКА

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ИНН 01105199310066, БИК 129025919.07.2013 № 3-1/1039Директору 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 города Жалал-Абад» включает в себя модернизацию головного водозаборного сооружения в микрорайоне Пригородный города Жалал-Абад на территории существующего водозаборного сооружения бывшей Жалал-Абадской птицефабрики что, настоящее время является муниципальной собственностью мэрии города Жалал-Абад. При ликвидации бывшей Жалал-Абадской Птицефабрики водозабор птицефабрики был передан на баланс мэрии города. Переданный объект не имеет проектно-сметной документации с указанием санитарно охранной зоны согласно СанПиН 2.1.4.015-03 при проектировании модернизации водозаборного сооружения. Базовые документации водозабора не передавались ни муниципалитету, ни (УВКХ), и в государственное хранение в архив Жалал-Абадской области. В этой связи, на сегодняшний день из-за утери базовых документаций существующего водозабора не возможно определить II и III - пояса санитарно охранной зоны.

На основании вышеизложенного, мэрия города Жалал-Абад просит Вас содействовать к разработке и определению II и III - пояса санитарно-охранной зоны вокруг территории застройки водозаборного сооружения в рамках реализуемого проекта.

В свою очередь, после вычисления границ II и III поясов санитарно-охранных зон мэрия города 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,

Мэр города

М.Арапбаев

Исп. 012.7РП
0710077142, 071043-0223.

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(Translation of Original Letter)

KYRGYZ REPUBLIC

JALAL-ABAD PROVINCE

MAYOR'S OFFICE OF JALAL-ABAD CITY

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INN 01105199310066, BIC 129029

July 19, 2013 # 3-1/1039

**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 Jalal-Abad City Project includes the improvement of the main water intake facility in Prigorod microdistrict of Jalal-Abad city, at the site of the existing water intake facility of the former Jalal-Abad Poultry Factory which is at the present time is the municipal property of the Mayor's Office of Jalal-Abad City. On the winding up of the former Jalal-Abad Poultry Factory, the water intake facility of the Poultry Factory was transferred to the books of the Mayor's Office of the city. The transferred facility does not have the design estimate documentation with the indication of Sanitary Protection Zone as per Sanitary Norms and Regulations (SanPiN) 2.1.4.015-03 for the design of the improvement of a water intake facility. Basic documents for the water intake facility have

been given neither to the municipality, nor to the Water and Sewerage Authority, nor to the Archive of Jalal-Abad Province for state storage. Thereby, due to the loss of basic documents for the existing water intake facility it is currently impossible to determine Sanitary Protection Zones II and III.

In view of the foregoing, the Mayor's Office of Jalal-Abad City asks you to assist in the design and determination of Sanitary Protection Zones II and III around the built-up area 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 Mayor's Office of Jalal-Abad City in turn 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,

Mayor of Jalal-Abad City

M. Arapbaev

Executive Division of the PIU
0770077742, 0770434323