

KYRGYZ REPUBLIC



**MINISTRY OF AGRICULTURE, FOOD PROCESSING AND LAND IMPROVEMENT
OF THE KYRGYZ REPUBLIC**

DEPARTMENT OF WATER RESOURCES AND LAND IMPROVEMENT

AGRICULTURAL PRODUCTIVITY AND NUTRITION IMPROVEMENT PROJECT

ENVIRONMENTAL MANAGEMENT PLAN

for WUA «Taymonku», Nookan rayon, Djalal-Abad oblast

Environmental Consultant

Neronova T

December 2017

Content

Abbreviations and acronyms.....	3
1. Introduction.....	1
2. Description of the rehabilitation subproject.....	1
2.1. Technical condition of the rehabilitation subproject.....	1
2.2. Description of interventions executed within the subproject framework.....	1
3. Description of environmental parameters on subproject.....	2
3.1. Climate	2
3.2. Landscape.....	2
3.3. Hydrology	2
3.4. Geo-Engineering conditions.....	2
3.5. Vegetation cover	3
4. Description of procedures related to regular operation works	3
4.1. Technical surveillance on canals and structures condition	3
4.2. Preparing on-farm network for the winter period	4
4.3. Looking after wood lines and access roads	4
4.4. Repair works	5
4.5. Desilting of canals and vegetation removal	5
5. Environmental impact	5
5.1. Expected positive environmental impact.....	6
5.2. Potential negative environmental impact	6
5.3. Climate change impact.....	6
6 Environmental management and monitoring plan.....	9
7. Legislative support	14
8. Public hearings	16
8.1. Minutes of public hearings	17
9. Photos of subprojects in current condition.....	21
10. Collection, storage, transportation and disposal of asbestos-containing wastes.	24
10.1. Collection and temporary storage of waste	24
10.2. Disposal of asbestos waste	25

Abbreviations and acronyms

AAS	Agricultural Advisory Services
AISP	Agricultural Investment and Services Project
AHE	Ameliorative Hydrogeological Expedition of DWRLI
APNIP	Agricultural Productivity and Nutrition Improvement Project
DSES	Department of Sanitary and Epidemiological Supervision
DWRLI	Department of Water Resources and Land Improvement
E	Environment
EA	Environmental Assessment
EMP	Environmental Management Plan
IDA	International Development Association
ISF	Irrigation Service Fee
GPAFS	Global Program for Agricultural and Food Security
GWT	Groundwater table
KR	Kyrgyz Republic
OIP-2	Second On-farm Irrigation Project
OIP-2 AF	Additional Financing for OIP-2
O&M	Operation and maintenance
PIU	Project Implementation Unit
POL	Petroleum, Oil and Lubricants
RSU	WUA Rayon Support Unit
RVK	Rayon Irrigation Department (Rayvodkhoz)
SAEPF	State Agency for Environmental Protection and Forestry
SanPin	Sanitary Regulations and Rules
SETI	State Environmental and Technical Inspectorate
WBSMQRS	World Bank safety measures quality rating system
WUA	Water Users Association

1. Introduction

The Agricultural Productivity and Nutrition Improvement Project (APNIP) for the Kyrgyz Republic is being implemented by the International Development Association (IDA) and financed by the Trust Fund of the Global Program for Agricultural and Food Security.

Within APNIP framework the Environmental Management Plan (EMP) prepared that is aimed at ensuring that the Project complies with the principles and practices of environmental management and environmental protection policy and laws requirements of the Government of the Kyrgyz Republic, as well as IDA policy on environmental safety interventions.

The environmental assessment (EA) goals are to identify the significant impact of the proposed project on surrounding environment (positive and negative), identify appropriate preventive and mitigation interventions aimed to minimize or eliminate any expected irreversible impacts. EMP serves as a management tool that ensures proper implementation of interventions to prevent and mitigate the environmental impact, as well as monitoring and institutional strengthening of recommended activities during the implementation of proposed project. EMP also establishes the necessary institutional obligations, proposes timing of the implementation of mentioned activities, as well as cost estimates for their implementation within the project's budget.

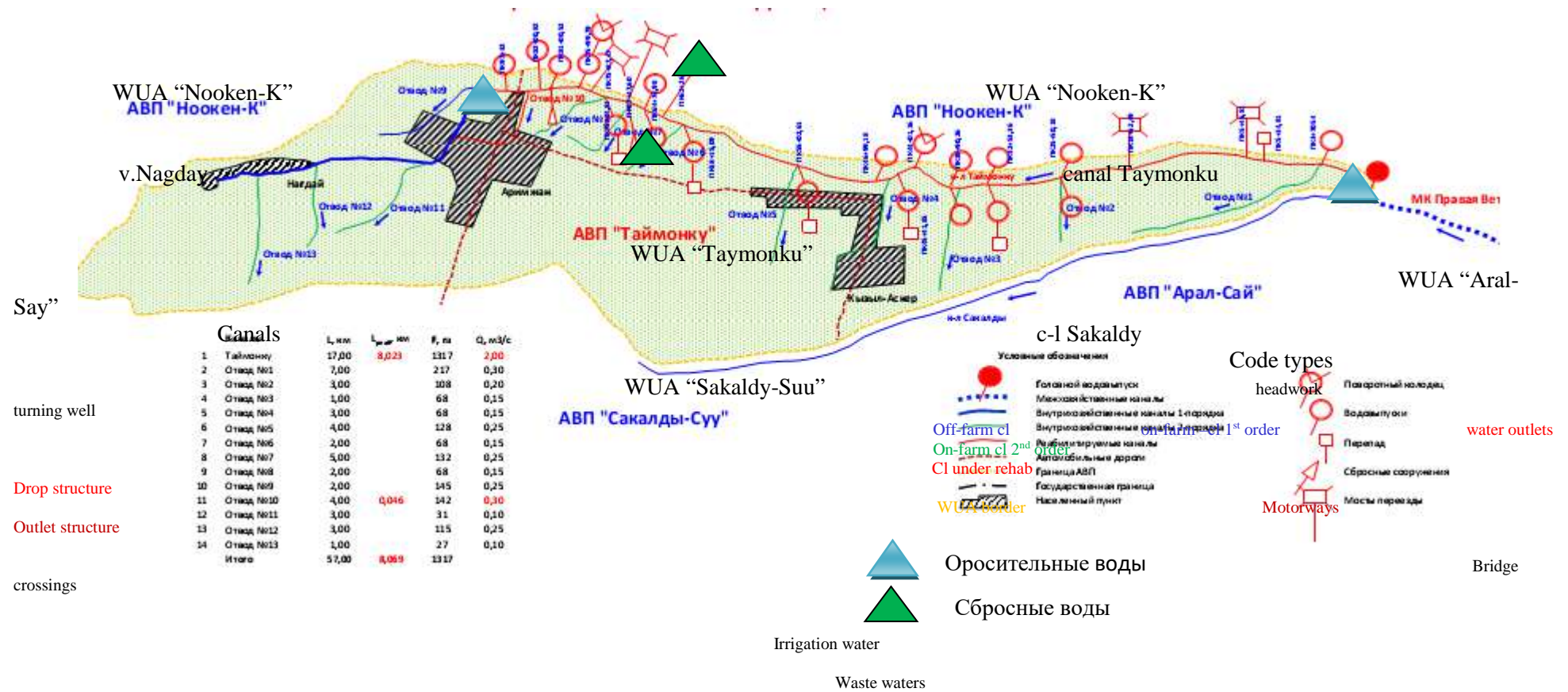
APNIP, in the World Bank environmental risks system, is classified as "B" category. No irreversible or significant impact on the environment is expected.

Based on the general EMP, the Environmental Management and Monitoring Plan (EMMP) for the rehabilitation of WUA "Taymonku" has been developed, taking into account the specifics of this particular subproject



Picture1. Overview of WUA “Taymoku” location

WUA "Taymonku" irrigation network layout



Picture 2. WUA «Taymonku» irrigation network

2. Description of the rehabilitation subproject

WUA ‘Taymonku’ located in Nookan rayon, Djalal-Abad oblast, 10 km off the rayon center Masy and 55 km off oblast center Djalal-Abad. The nearest residential areas – v.v. Arimjan, Nagday, Kyzyk-Asker are located at the territory of Sakaldy AO. The railway station’s location is in the village Shamaldy-Say and 56 km off.

The total length of on-farm canals is 57.0 km, of which 3.0 km in concrete linings, the remaining 54.0 km is earth bed. The NSR and dams are not within the WUA "Taymonku" system. There is no collector-drainage network on the territory of WUA.

2.1. Technical condition of the rehabilitation subproject

The technical survey conducted for WUA "Taymonku" on-farm irrigation network by a commission consisting of the APNIP PIU specialists’ for south, WUA "Taymonku" and the Nookan RSU of WUA support, it was revealed that the main on-farm canal Taymonku has significant water filtration losses, defective cross structures, water outlets and bridge crossings.

Canal “Taymonku” is the main water supply canal for WUA and carries out, mainly, water transit function and, during rainy days and floods, used as mudflow. The canal’s is in gravel-pebble bed and enormous water filtration losses observed as well as overgrowing of bulrush and erosion processes. The throughput efficiency is 0.56 and, as the consequence, the 2nd order canals receive half of the water abstracted only. The multiyear operation impacted on water outlet structures and hindered transportation because of absence of bridge crossings.

2.2. Description of interventions executed within the subproject framework

Within the subproject framework the rehabilitation of canal “Taymonku” will be executed. The canal abstracts water from off-farm canal “Pravaya Vetka”. Length of the canal is 17.0 km, of which 8.169 km the subject of rehabilitation. The command area is 1317 ha, designed water flow 2,0 m³/s (considering flood discharge).

Following construction work planned:

- Lining of Canal “Taymonku” with monolithic concrete at length 8.169 m;
- Lining with monolithic concrete of canal “Taymonku-2”, at length 108m;
- Cross regulators - 6 units
- Water discharges - 7 units
- Stilling basins - 3 units
- Drop structures - 7 units
- Turning wells - 3 units
- Transition points - 2 units
- Run-off structure - 1 unit
- Bridge crossings - 2 units

Water reservoirs, dams and dikes rehabilitation is not planned. Therefore, the dams safety policy (OP 4.37) is not applicable.

The application of the WB’s policy OP4.12 (*Involuntary Resettlement*) is not required, since all works will be carried out within the existing irrigation system, without constructing additional facilities that capture lands of an individual landowner and land-user, which could require additional coordination and relocation.

The construction and rehabilitation works deadlines are: years 2018-2019

3. Description of environmental parameters on subproject

3.1. Climate

The rayon's climatic characteristics applied in accordance with the "Masy" meteostation database. The rayon is characterized by a hot long summer and a short moderately cold winter:

• Average annual air temperature	+11,9°
• Average annual air temperature in vegetation period	+22,6°
• Absolute air temperature maximum	+42°
• Absolute air temperature minimum	-23°
• Average maximum temperature of the hottest month	+33,5°
• Long-term average annual precipitation	470 mm
• Volume of annual liquid precipitation	389 mm
• Weight of snow coverage per 1 m ² on horizontal surface	51,0 kgs/m ²

3.2. Landscape

The current landscape nature of WUA "Taymonku" relates to the southwestern Ferghana branch of the Tien Shan ridge. The surface nature of WUA "Taimonku" lands there is a geomorphological zone of piedmont plains, which is genetically associated with erosion-accumulative activity of rivers, streams and temporary canals. Absolute marks are in the range of 600-900 meters above sea level. The object located on the territory the general terrain slope of which is directed from north to south. Design works will not damage the ground and affect the landscape.

The canals' design with a slope from the northeast to the southwest. The landscape slopes vary from 0,0033 to 0,0099.

3.3. Hydrology

The main irrigation source of Sakaldy AA, Nooken rayon is r. Kara-Ungur-Say. The river Kara-Ungur-Sai is the left tributary of the river Kara-Darya. It is formed by the confluence of rivers Arslanbob and Kyzyl-Unkur, originated from the ridge Babash-Ata and the mountain range Ferghana. The river length is 127 km, basin area 4,130 km². The river's water is fresh, type of mineralization is bicarbonate-calcium-magnesium. The main water source are rain and groundwater, as well as thawed snow and glacial waters. The average long-term water consumption is 29.6 m³/s¹. Irrigation water supplied on WUA "Taymonku" lands via off-farm canal "Pravaya Vetka".

In the surrounding areas there are no entities that discharge hazardous chemicals, pesticides and sewage into the source of irrigation.

3.4. Geo-Engineering conditions

The geological-lithological structure along the WUA's on-farm canals route is represented by alluvial-proluvial deposits. From the surface a thick layer of loess-like clay soils development - loams. Loams of light gray color, dry, macroporous, solid, with carbonate deposits inclusion. Ground thickness from 0,6 to 2,0 m. Below loams the gravel soils developing.

The physical characteristics of loams are following:

• natural humidity	7,87%
• unit weight	2,71 g/cm ³
• volume weight	1,61 g/cm ³
• carcass volume weight	1,49 g/cm ³

¹ Ramazan M. C. "Certain distinctive features of hydrological regimes and hydro-technical classification of rivers in Kirghizya.

- plastic index 9,2
- maximum molecular moisture capacity 15,79%
- porosity ratio 0,815
- filtration coefficient 20,0 m/day.

Due to loam development complexity ratio, it belongs to the building category – II -. The standard pressure is up to 2.0 kg/cm² (SNiP IV-5-82). Gravel soil with sand aggregates up to 40% and pebble content up to 10%. The bulk weight of the soil is 1.85 t/m³. Due to the difficulty of gravel soil hand mining, it belongs to the building category - III-. The thickness of gravel soil is more than 10.0 m. The depth of groundwater layer is more than 90.0 m. Stony, absent of non-cultivable soils. Seismicity of the operating area is IX points².

3.5. Vegetation cover

Vegetation cover: agricrops, trees, grass. The soil level will not be impacted, as construction works will be executed on current objects.

In the process of canals rehabilitation, it is necessary to execute tree felling that hamper course of works and are in the alienation zone of water facilities/structures. According to the requirements of the Water Code of the Kyrgyz Republic, Art. 80 p.3, while executing repair and rehabilitation works, the shrubbery cutting and forest felling within the alienation zones of water management structures and canals, as well as sanitary cutting and deadwood cutting, do not require permission from specially authorized state agencies/bodies. Prior to commencement of work, the contractor will inform the environmental protection agency of forthcoming tree and shrub vegetation cutting to be conducted. If rehabilitation works to-be-conducted on the sections that are not within alienation water management zones, then tree and shrubbery cutting is the subject to approval with environmental protection agencies/bodies.

The rehabilitation works will not impact the agricultural areas, as all projected objects for rehabilitation located beyond their borders.

4. Description of procedures related to regular operation works

4.1. Technical surveillance on canals and structures condition

In the operational scheme activities, paramount importance is paid to the timely conduct of preventive and rehabilitation works that exclude probability of system failure, while complying to the rules of its operation.

The main indicators of normal technical condition and reliable operation of the on-farm irrigation network are provision of designed canal's capacity, minimum filtration and performance specification water losses, absence of sedimentation, greenery overgrowing, collapse and canal's erosion.

If the actual canal's capacity corresponds to the estimated throughput, then the technical condition of a canal is good and considered as reliable. If there are 20 -25% throughput deviations, then a canal's reliability is reduced, and the technical condition is an average. If the deviations are more than 25%, then a canal's performance considered as unreliable and its technical condition is below the average.

To ensure a canal's throughput, it is necessary to conduct a careful monitoring over water regulating structures. The water volumes regulating structures must be easily and reliably (re)adjusted and controlled. While operating water regulating structures, it is necessary to ensure that there is no water leakage through the water outlet gates and no canals' erosion and destruction on its structural parts. The lined sections, expansion and construction joint sections of

² Geo-engineering data withdrawn from the working documentation of WUA "Sakaldy-Suu irrigation system rehabilitation", Djalal-Abad oblast, Nooken rayon (PIU OIP-2).

a canal are the subject of constant surveillance. The damaged lining must be reworked immediately. A canal's lined sections must be of monolithic concrete and maintenance must be timely to prevent cracking. A particular attention must be paid to subsiding soils, as concrete lining on those soils is prone to cracks formation.

A daily maintenance of lined and unlined canals, facilities and equipment located on them, keeping them in good condition is reduced to the removal of vegetation and floating objects that block canals and lead to sedimentation in certain areas. During the maintenance, works are carried out to clean up structures and water distribution units from debris and ice, vegetation overgrowth and sedimentation.

A slight and gradual canal's base degradation, sometimes, leads to the formation of cracks on the lining that impossible to rehabilitate. In this case, the cracked and battered lining sections are cut down and filled with new concrete.

The joint sections of a canal, with prefabricated reinforced concrete slabs, are the subject of particular attention. Constant surveillance of which is necessary and, if there any urgency, must be treated with resilient water resistant materials that can withstand a vegetation impact.

Within the flumes it is prohibited to dissolve various types of fertilizers that may cause destruction of concrete. It is also not recommended the flumes network operation if water flow temperature is below -5 - 10°C. Therefore, in the process of preparing the network for winter, the whole canal's route must be completely freed of water.

The livestock crossing and pasturing on canal's dams and slopes is prohibited. The livestock drinking and dipping allowed on special canal's section only.

To monitor the quality of irrigation water and prevent a canal's sedimentation, the water samples must be regularly inspected for the following indicators: turbidity, temperature, hydrogen index and mineralization.

4.2. Preparing on-farm network for the winter period

In the winter period, the on-farm irrigation network can be used for water charging irrigation, washing off and other types winter watering, as well as for supplying water to the residential areas and livestock farms, filling up reservoirs. Control over canals and structures operation, in the winter, should be paid particular attention, as to prevent formation of ice jams near bridges, crossings, etc. The trash racks that were set for the summer in front of water structures, must be removed for the winter. When frosts are formed and structures are covered with the ice, in this case the ice must be chipped without violating integrity of the structures and canal's coating.

4.3. Looking after wood lines and access roads

Forest plantations along canals are designed to protect the canals from vegetation overgrowing, lowering the level of groundwater along a canal's route and reducing the adverse effect of wind force on crops. Alongside of permanently located canals of the farm network that require constant desilting interventions, it is recommended to create, on the one side two-row or three-row strips of fast-growing trees and shrubs. The distances between trees in the strip is 1-3 m, between bushes - 0.75 - 1 m with a distance between greenery strips of 1.5 - 3 m.

The field and on-farm roads on irrigated area, as a rule, are ground roads. If they pass through silty loams and solonchaks, then a road is made of gravel or other coating. Roads maintenance is limited to keeping the upper layer in good condition. The thickness of gravel coated roads is maintained within 8 - 10 cm. The roadbed condition is also the subject of maintenance and must be periodically planned and compacted. Roadside cuvettes and canals must be cleaned of dirt and vegetation. To improve the water flow into cuvettes, the roadways must be made with slopes and with a slight lateral inclination from the middle to the cuvettes.

4.4. Repair works

The irrigation schemes are subject to repair works according to the annually developed and approved plans. In the practice of irrigation and drainage systems operation the current, major and emergency repair works are executed.

The current repair works carried out annually including desilting of canals, removal of vegetation, strengthening and widening dams, cleaning berms, eliminating small landslides, collapses, rifts and sandspits, repairing damaged anchorages and canals' lining, repairing small damages of a structure parts. While carrying out current repair works, a complex technical repair works and modifying a structural construction is not included. The preventive (prophylactic) repair works include:

- Patching ratholes;
- Structural cracks maintenance after ice impact;
- Tightening fixing bolts;
- Drainage structures winterization etc.

Preventive repair and a significant part of the current repair, including desilting of canals, vegetation and landslides removal, a minor canal repairs, repair of structures, buildings and other devices are performed annually without stopping the system operation.

Major repair is carried out, as required, within a few years' period and includes: repair works on a canal's sections, dams and parts of structures attritions and destructions, structural modification or replacement of certain elements and structural units.

Emergency repair - rehabilitation of canals, dams and structures or parts of them, destroyed as a result of natural phenomena (mudslides, floods, etc.), or violations of the technical operation rules, execution of which carried out 24/7, and all available material and technical resources and labor resources are mobilized for their implementation.

Repair and construction works on the on-farm network canals performed by WUAs contracting a construction company. Repair works expenses and operation of the on-farm network are annually provided by WUA budget.

4.5. Desilting of canals and vegetation removal

The solid particles of soil form sedimentation that moved around by water flow. The content of solid particles, per water volume unit, characterizes the water flow saturation with sediments, or its turbidity. Sediments, often, are formed as a result of soil wash-away in the catchment basin via snow/glaciers melting and rain waters. Partly the sedimentation is a product of a canal/river bed and banks erosion. The largest bed's sedimentation with pebbles and coarse sand observed and remain within the head section of a bulk water supply canal. The average sized sediment particles washed into a canal's distribution network and even into on-farm irrigation network.

On average, about 80% of sediments remains in the off-farm canals network and about 20% inflows into on-farm irrigation network. A canal's inclination impacts on sedimentation process, if an inclination is too steep then about 60% of sediments washed in on-farm network and fields. Desilting executed on annual basis and, if necessary, more often.

5. Environmental impact

Implementation of APNIP is addressed to provide economic, social and environmental benefits to farmers, farmer entities and local communities through WUA's development, the

rehabilitation and modernization of irrigation and drainage infrastructures in projected areas. The best practices of previous projects demonstrate positive impacts on the environment. In fact, many positive impacts of the projects have been identified during the environmental assessment. Namely, this project is aimed at reducing water losses in irrigation schemes, improving water resources management, improving agricultural productivity and improving soil fertility.

During the canals' rehabilitation process, the trees felling and shrubbery vegetation removal required, which is subject to approval with environmental protection authorities. Design and engineering works require strict compliance to the necessary requirements, including noise control, planting new trees to protect against wind erosion and construction of access roads, air pollution and timely construction waste disposal.

The requirements for the prevention of environmental pollution and negative impact on the population are provided for in the Law of the Kyrgyz Republic "General Technical Regulations for Ensuring Environmental Safety in the Kyrgyz Republic", the Law "On Production and Consumption Wastes", the Law "On Protection of Atmospheric Air", SanPin "Noise in the workplaces, in premises of residential, public buildings and on the territory of residential buildings" the Governmental decree of the KR, dated 11/04/2016. №201,

5.1. Expected positive environmental impact

The positive impact consists of:

- Water losses reduction;
- Improved water resources management, consisting of construction and rehabilitation of water distribution and water-metering structures;
- Agricultural productivity increase;
- Improved soil fertility by increasing humus while applying an efficient irrigation schedules.

5.2. Potential negative environmental impact

At the same time, while carrying out irrigation network reconstruction works, there may be some potentially negative impacts on environmental protection conditions in the projected areas and require attention, preventive actions and appropriate mitigation measures during planning, development, construction, operation and maintenance.

While performing the planned irrigation networks rehabilitation works, no asbestos-containing materials will be used. It is necessary to mention that previously asbestos cement pipe crossings were used. But they were replaced with structures of more inert materials and, at the moment, problems with asbestos-containing materials are not expected. In the event of removal of asbestos cement pipes asbestos contained materials waste will be collected, transported and finally disposed by applying special protective measures in accordance with the hazardous waste handling standards. See Section 10 for detailed information on disposal of asbestos-containing materials.

The potential negative impacts are relatively minor, and positive economic, social and environmental benefits far outweigh them in environmental assessment. Consideration of these impacts is given below.

5.3. Climate change impact

The irrigation and drainage schemes rehabilitation will enhance the agriculture and farming practices, materially-technical procurement, land owning, pastures and water management that will lead to productivity increase and adaptation to climate change and sustainable use of natural resources.

Table 2. Assessment and ranking of environmental risks

Activities	Impact	Type	Duration	Term	Degree	Risk	Reversibility	Probability
Construction phase								
Construction site location	Soil contamination at a construction site as a result of storage, construction and household waste, including liquid wastes.	direct	short-term	immediate	low	low	reversible	average
	surface water and ground water contamination at a construction site, as a result of storage of construction and household waste, including liquid waste	direct	short-term	immediate or delayed	low	low	reversible	low
Unloading of excavated soil and construction waste	landscape and animals' natural habitat degradation, local drainage scheme alteration	direct	mid-term	immediate	low	low	reversible	average
Transportation of building materials, use of heavy machinery	air contamination and noise impacting local residents/workers during traffic of vehicles and heavy machinery	direct	mid-term	immediate	low	average	reversible	high
canals rehabilitation	Damage and trees felling and shrubbery currying	direct	long term	immediate	high	low	reversible	high
Operation and maintenance phase								
earth-bed canals cleaning while in operation	landscape and animals' natural habitat degradation, local drainage scheme alteration	direct	mid-term	immediate	low	low	reversible	average
increase in irrigation water supply, which increases the volumes of waste water	surface water pollution with agrochemicals, as a result of excessive application of pesticides and mineral fertilizers	indirect	mid-term	delayed	moderate	moderate	reversible	average
increase in irrigation water	ground water pollution with	indirect	long-term	delayed	moderate	moderate	reversible	average

supply that increases the surface water filtration till the groundwater level	agrochemicals, as a result of excessive application of pesticides and mineral fertilizers							
increase in irrigation water supply that leads to water speed increase	soil erosion, related to existing agricultural production practices	indirect	long-term	delayed	moderate	moderate	reversible	low

6 Environmental management and monitoring plan

All the construction phase risks are easily monitored and eliminated. They can be minimized by properly designing mitigation measures and monitoring the Contractor, while executing works. During the (re)construction works, trees felling and shrubbery cutting in a canal's alienation zone will be carried out in accordance with the requirements of the Water Code (Article 80, para. 3.) and in agreement with the specially authorized environmental protection agency/body.

Among the O&M risks, the risk of landscape and animals' natural habitat degradation, while cleaning earth-bed canals and drains, is clear and easily controlled. In case of suspected contamination of surface and groundwater by agrochemicals due to excessive use of pesticides and mineral fertilizers, soil erosion associated with existing practices of agricultural production, increasing groundwater table in the zone of their deep occurrence due to excessive irrigation and, as a consequence, soil salinization, an accredited laboratory will be mobilized for special monitoring.

Table 3: Mitigation plan

Phase	Issue	Preventive/ Mitigation interventions	Cost, US \$		Institutional responsibility		Control
			installation	operation	installation	operation	
Construction	organizing a construction site	1) It is forbidden to locate a construction site in the water protection zones of rivers and canals; 2) Ensure removal of all waste and construction rubble from (re) construction sites to dispose on the authorized municipal landfills, with the permission of local authorities; 3) Execute planning and restoration measures to restore troubled lands during and after completing (re)construction	n/a	part of the (re)construction works contract 611 000	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	soil after a canal's cleaning	conduct a planned rehab works	n/a		PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	trees and shrubbery vegetation	Coordination with the specially authorized environmental protection agency/body cutting greenery plantations	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU;

							3) State Ecological Inspectorate
	vehicular emissions into the atmosphere	1) vehicular exhaust systems and construction equipment should be in good condition, in order to minimize air pollution; 2) Limiting the speed of vehicles and selecting suitable transportation routes to minimize dust emissions; 3) Moisturizing the road surface while driving through the residential area territories	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	noise impact within labor area	machinery and equipment operation	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	Workers' and rural population health and safety	1) construction sites will be equipped with information and designator boards concerning working regulations and requirements; 2) easily accessible and complete first aid kit to treat an injury. 3) ensuring personal protection equipment (helmets, protected shoes, gloves); 4) limiting access to (re)construction sites, zones and equipment locations by local citizens.	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate

Operation	Threats to water quality due to salinity of soils because of drainage	<ul style="list-style-type: none"> - training on water and soil use improvement; - visual monitoring (preventing waterlogging) 	n/a	n/a	AAS/AISP	WUA members	RSU on-site inspection, approval and coordination with SETI
	Threats to water quality due to contamination by agrochemicals	<ul style="list-style-type: none"> - best practices on pesticides application, - application of agrochemicals in accordance with recommended norms, - preventing effluent water discharge into canals and surface water objects, 	n/a	n/a	AAS/AISP	WUA members	RSU on-site inspection, approval and coordination with SETI
	Increase of soil erosion	<ul style="list-style-type: none"> - training on water use and soil science, - outreach campaign - rational use of irrigation water and applying water regimes in accordance with the irrigation requirements, - Arrangement of irrigation furrows on the lowest slope (cross-cut furrows); - shortened furrows length; - altering irrigation technology (sprinklers, drip irrigation) 	n/a	n/a	AAS/AISP	WUA members	RSU on-site inspections
	Climate change impact	<ul style="list-style-type: none"> - education on environmental mitigation activities; - compliance of irrigation norms and regulations. 	n/a	n/a	AAS/AISP	WUA members	DWRLI

Table 4. Environmental monitoring plan

Project Phase	Parameter	Location	Method/Equipment	Frequency	Objective	Costs		Responsibility	
						Organization	Performance	Organization	Performance
baseline	salinity, concentration of hydrogen ions (pH), water turbidity	Headworks of WUA's irrigation scheme, canal "Taymonku"	Field equipment for parameters measurement	At the beginning, in the middle and at the end of vegetation season	Rehabilitation works and agricultural activities impact assessment	0	Insignificant	Samples selection RSU	water sampling and analysis
Construction	Site-specific environmental management and monitoring plan	subprojects under rehabilitation	Visual inspection of subproject	Before, during and after completion of construction	Compliance with environmental protection measures	0	Insignificant	PIU/Contractor	PIU/Contractor
	Salinity, concentration of hydrogen ions, turbidity	Canals under rehabilitation, located upstream and downstream of the rehabilitation site	Field equipment for parameters measurement	At the beginning, in the middle and at the end of vegetation season	assessment of construction works impact	0	Insignificant	RSU	water sampling and analysis. Introduction of results to PIU
	Pollution of watercourses by petroleum, oil and lubricants	Selectively for subprojects when suspected of contamination. Downstream of rehabilitation subproject	Sample for laboratory analysis	During construction	Civil works impact assessment	0	100 USD	Contractor	Accredited laboratory Water sampling and analysis. Introduction of results to PIU
Operation	Salinity in soil	Problematic sites	Sample of soil/analysis	Quarterly	Soil quality identification	0	300 USD	AHE	AHE
	Salinity, concentration of hydrogen ions, turbidity	Headworks of WUA's irrigation scheme, canal "Taymonku"	Field equipment for parameters measurement	Before, during and after completion of construction	Civil works impact assessment	0	Insignificant	RSU	RSU

7. Legislative support

In the Kyrgyz Republic there are numerous laws on environmental protection, provisions and regulations, which address specific issues of environmental protection. Table 5 summarizes the legal regulations relevant to this project.

Table 5: Basic laws, provisions and resolutions

Legal authority	Legal mandate
Constitution (2010)	The state's ownership of natural resources, rights and duties of citizens.
Water Code of the Kyrgyz Republic (2005)	It identifies the state policy, legislative and institutional basics on water resources management and protection
Law on environmental protection (1999)	It identifies state policy on environmental protection, legislative and institutional basics on water resources management and environmental protection
Law "General technical regulation on ensuring environmental safety in the Kyrgyz Republic" (2009)	The Regulation determines the main provisions of technical regulation in the field of environmental safety and establishes general requirements for ensuring environmental safety while designing and implementing of interventions within economic and other types of production activities, storage, transportation and production disposal.
Law on environmental appraisal (1999)	It requires review of environmental protection issues (environmental appraisal) and prevents negative environmental impacts and human health as a result of economic and other activities
Law on specifically protected natural reservations (2011)	It establishes regulations for specially protected natural areas, various types and/or levels of economic activity.
Law on protection of atmosphere (1999)	It regulates emissions to atmosphere and specific obligations on protection of atmosphere
SanPin "Noise in the workplaces, in premises of residential, public buildings and on the territory of residential buildings" the Governmental decree of the KR, dated 11/04/2016. №201,	Establish sanitary-epidemiological requirements, standardized parameters and maximum permissible noise levels at (re)construction sites, noise classification, permissible noise levels in the projected rooms, (re)construction sites, (re)constructed and operated residential, public buildings and on the territory of residential buildings.
the GovKR. Provision No.224 of 03/05/2013. "On approval of fees for calculating the amount of penalties for damages caused to objects of animal and plant life, mumijo-containing mineral materials and mushrooms by legal entities and individuals"	Fees designed to ensure preservation of biodiversity, proper protection of flora and fauna

The Government of the Kyrgyz Republic ratified a series of international conventions on environmental protection and agreements, related to this project:

- Convention on environmental impact assessment of the transboundary territories Espoo(2001);
- Agreement on cooperation in environmental protection and efficient use of natural resources (Kyrgyz Republic, Kazakhstan, Uzbekistan) (1998),

- Convention on wetlands, representing international importance for the main habitat for waterfowls (Ramsar Convention) (2002);
- Convention on right to use international watercourses as transport routes (1997), Agreement on the use of water structures for interstate purposes on the Chu and Talas Rivers (Kyrgyz Republic and Kazakhstan) (2000);
- the United Nations Framework Convention on Climate Change (2000 r.);
- Kyoto Protocol (2003).

8. Public hearings

In accordance with Operational Procedures OP4.01.³ The WB has special requirements for information and public consultations disclosure. The disclosure includes presentation of information about the Project to the general public and population covered by the Project and other stakeholders, starting from earlier implementation cycle and throughout the framework. The information disclosure is intended to facilitate constructive interaction with the population covered by the Project and stakeholders throughout the Project's lifecycle.

In addition, the Kyrgyz Republic is a member of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, the United Nations Economic Commission for Europe, which also contains provisions for ensuring the disclosure of objectives and environmental considerations of the Project.

Public hearings in the WUA "Taimonku" were held on September 14, 2017, in v.Arimzhan, Nookan rayon of Jalal-Abad oblast and 41 people took part in the public hearings: representatives of WUAs, local self-governing authorities, farmers, WUA's rayon support units, designers, PIU.

At public hearings, the information was provided concerning technical solutions of the Project and its environmental impact, as well as the interventions that would be taken to prevent and mitigate the impact.

Participants in the hearings were asked a number of questions, the activities for which are included in the EMP.

The minutes of the public hearings, list of participants and photos are attached.

³ Operational Guidelines of the World Bank: OG 4.01, "Environmental Assessment", point 3.

8.1. Minutes of public hearings

Minutes of public hearings on environmental issues in the rehabilitation of the irrigation network of the WUA Taimonku of Nookan rayon of Jalal-Abad oblast under the World Bank Agricultural Productivity and Nutrition Improvement Project

Arimzhan village

September 14

Attended by:

A. Azhimatov - APNIP PIU engineering coordinator for South

Neronova T.I. – APNIP PIU environmental protection consultant;

Nazirbayev M.T. – WUA Council Chairman

Isakov A. – WUA Taimonku Director

L. Karpova - APNIP PIU design engineer

K. Anipayev - APNIP PIU design engineer

R. Tashbayev - APNIP PIU design engineer

A. Tashtanov - Head of WUA Support and Development Unit of Jalal-Abad oblast

Sh. Bakirov - Chief specialist of WUA Support and Development Unit of Nookan rayon

M. Sultanov - Head of Sakaldy ayil district

41 people have participated in the public hearings: water users, representatives of peasant farms, farmers, WUA members. The list of participants in the public hearings is attached.

Chairman of the meeting – Nazirbayev M.N. Chairman of WUA Council.

Azhimatov A.B. - APNIP PIU engineering coordinator for South has explained about the project and assumed works on rehabilitation of the on-farm network under the Agricultural Productivity and Nutrition Improvement Project.

Neronova T.I. – APNIP PIU environmental protection consultant has explained about the requirements of the environmental legislation of the Kyrgyz Republic and the World Bank's policy on environmental protection in the implementation of the project.

The task of environmental assessment is to identify the significant impact of the proposed project to the environment (positive and negative), identify appropriate preventive measures and mitigation measures aimed at preventing, minimizing or eliminating any expected irreversible impact.

The experience of previous projects shows the positive impact of the proposed project on the environment. In fact, many positive impacts of projects have been identified during the environmental assessment. Namely, this project is aimed at reducing water losses in irrigation schemes, improving water management, improving agricultural productivity and improving soil fertility.

At the same time, when carrying out civil works on reconstruction of irrigation networks, there may be some potentially negative impacts on environmental protection conditions in the project areas that need attention, take preventive actions and appropriate mitigation measures during planning, development, construction, operation and maintenance.

- No asbestos-containing materials will be used for the planned rehabilitation of irrigation networks. Note that previously asbestos cement pipe crossings were used. But even in the past years they were dismantled and replaced with structures of more inert materials. Accordingly, no problems with asbestos-containing materials are expected.

- Potential negative impacts are relatively small, and positive economic, social and environmental benefits far outweigh them in environmental assessment. Consideration of these impacts is given below.

The main impact that can be provided as a result of the civil works:

- 1) Soil pollution on construction site
- 2) Groundwater pollution on construction site
- 3) Deterioration of the landscape, destruction of the natural habitat of the animal world, changing the local drainage network
- 4) Air pollution and impact on workers/population during traffic and heavy equipment operation

Site specific EMP is compiled for each of the rehabilitation subproject to prevent or mitigate the negative impact of the construction. It includes a mitigation and monitoring plan, both for the construction phase, and for the O&M phase.

All the risks of the construction phase are easily controlled and eliminated. They can be minimized by properly designing mitigation measures and controlling the Contractor in carrying out the works.

Among the risks of operation and maintenance phase (O&M), the risk of degradation of the landscape and destruction of the natural habitat of the animal world when cleaning unlined canals and drains is explicit and easily controlled. Risks of pollution of surface and groundwater by agrochemicals due to excessive use of pesticides and mineral fertilizers, soil erosion associated with existing practices of agricultural production, groundwater table rising in the shallow zone due to excessive irrigation and, as a consequence, salinization of soils, require special monitoring. The need for mitigating measures at the stage of O&M is determined precisely during the process of environmental monitoring.

Questions:

Isakov A. WUA Taimonku Director - Do we need to get permission to cut green plantations if they are in the right-of-way zone?

Neronova T.I. – When examining rehabilitated sections, it was found that there are no green plantations that are subject to cutting in the operations area. If such issue arises during the works progress, the WUA needs to prepare a letter to the Osh Oblast Environmental Protection Agency, and they will coordinate the cutting down.

Umetaliyev K. - Can noise and dust affect the population during the works progress?

Neronova T.I. The settlements are located at more sufficient distance from the operations area. Therefore, the impact of noise from operating machinery will also not effect on the population. Dust impact can be provided when vehicles pass through settlements. EMP is designed to transit through settlements at a low speed, which contributes to less formation of dust and noise.

Ibragimov N.– Where will be disposed construction waste and household garbage after construction?

Neronova T.I. – Construction and household waste will be disposed by the contractor to the places agreed with the local government. Construction waste can be reused, which subject to be used.

Tashtanov M.T. WUA support unit of Osh oblast – Will there be monitoring of the water in the canal?

Neronova T. – Monitoring will be conducted by the WUA rayon support unit at the monitoring points, which will be specified in the EMP. Also, monitoring will be conducted continuously during the operation: Mineralization, concentration of hydrogen ions (pH), turbidity of water.

In conclusion, all participants have supported the implementation of this project.

Chairman of the WUA Council, on behalf of all attended persons has expressed his gratitude for the support and information provided.

Chairman

Nazirbayev M.T.

Environmental protection consultant

Neronova T.

Список участников общественных слушаний 14 сентября 2017г. АВП «Тоймонку»

Ноокенский р-н, Джалал-Абадская область

№№	Фамилия, имя, отчество	Организация и	Телефон
1	Бодороев Т.В.	мураб	0773 886644
2	Исмаилов А.	ИВП. Тоймонку	0777 851557
3	Исмаилов А.	мураб	779336251
4	Исмаилов А.	мураб	0778 759590
5	Исмаилов А.	мураб	0771 524525
6	Исмаилов А.	мураб	0772 285358
7	Исмаилов А.	мураб	0772 627422
8	Исмаилов А.	мураб	0778 408402
9	Исмаилов А.	мураб	0778 915605
10	Исмаилов А.	мураб	0771 181774
11	Исмаилов А.	мураб	0779 065122
12	Исмаилов А.	мураб	778466515
13	Исмаилов А.	мураб	0778 860986
14	Исмаилов А.	мураб	0776 831022
15	Исмаилов А.	мураб	554 045254
16	Исмаилов А.	мураб	0770 376263
17	Исмаилов А.	мураб	0773 417986
18	Исмаилов А.	мураб	0770 700188
19	Исмаилов А.	мураб	0772 902516
20	Исмаилов А.	мураб	0770 25-4958
21	Исмаилов А.	мураб	0770 24-9600
22	Исмаилов А.	мураб	0778-75-7800
23	Исмаилов А.	мураб	0773 0453-98
24	Исмаилов А.	мураб	0773 340588
25	Исмаилов А.	мураб	0777 696942
26	Исмаилов А.	мураб	0770 661666
27	Исмаилов А.	мураб	0779 371579
28	Исмаилов А.	мураб	0772-70-6600
29	Исмаилов А.	мураб	0771-00-84-94
30	Исмаилов А.	мураб	0778 21-18-58
31	Исмаилов А.	мураб	0772-89-0825
32	Исмаилов А.	мураб	0778 06 6657
33	Исмаилов А.	мураб	0777 06 4039
34	Исмаилов А.	мураб	0776 91 9925
35	Исмаилов А.	мураб	0773 15 03 77
36	Исмаилов А.	мураб	0770 23 9748
37	Исмаилов А.	мураб	0772 54 26 03
38	Исмаилов А.	мураб	0773 01 45 08
39	Исмаилов А.	мураб	0773 24 64 28
40	Исмаилов А.	мураб	0772 83 00 02
41	Исмаилов А.	мураб	---
42	Исмаилов А.	мураб	---
43	Исмаилов А.	мураб	---

9. Photos of subprojects in current condition



Picture1. Earth-bed canal «Taymonku», 13 September, 2017



Picture 2. Distribution gate on canal “Taymonku”, 13September, 2017



Picture 3. Section of canal «Taymonku», 13September, 2017



Picture 4. Public hearing in village Arimjan WUA «Taymonku», 13September, 2017



Picture 5. Public hearing in village Arimjan WUA «Taymonku», 13 September, 2017



Фото 6. Public hearing in village Arimjan WUA «Taymonku», 13 September, 2017

10. Collection, storage, transportation and disposal of asbestos-containing wastes.

Removal of materials that contain asbestos will be carried out in line with the local legislation, including construction standards, work safety issues, air borne emissions of hazardous pollutants and disposal of waste and hazardous waste (in the event that there is no local legislation, the Directive 2003/18/EC of the European Parliament will be used, that amends and supplements Directive of the Council 83/477/EEC on worker protection from workplace asbestos exposure risks: threshold values of airborne dust particles is 0.1 fiber/cm³; also use the Good Practice Note: Asbestos: Health Issues at Workplace and Community; World Bank). Asbestos materials shall be subject to immediate final disposal/burial under special conditions.

According to Order #885 of the Government of the Kyrgyz Republic *On Hazardous Waste Management in the Kyrgyz Republic* of December 28, 2015, asbestos-containing wastes should be disposed as follows.

The hazardous waste management process (waste lifecycle) consists of the following phases: generation, accumulation (collection, temporary storage, stockpiling), transportation, neutralization, recycling, reuse of recycled products, and disposal.

When asbestos is present at a project site, it should be clearly labeled as a hazardous material. Asbestos-containing materials should not be subject to cutting or breaking as this will result in dust generation. In reconstruction, all workers should avoid crushing/damaging asbestos-containing waste, stockpile such waste at designated locations within the construction site and dispose of it properly afterwards to a special location or landfill.

When asbestos-containing waste is subject to temporary on-site storage, they should be properly contained in leak-tight containers and labeled appropriately as a hazardous material. Safety precautions should be taken to prevent any unauthorized removal of such waste from the site.

10.1. Collection and temporary storage of waste

Asbestos waste generation should be minimized by using efficient technologies.

All asbestos-containing materials should be handled and disposed by qualified and experienced personnel only. The personnel should wear appropriate protective equipment (safety masks, gloves and overalls).

The amount of waste stored at the designated site must not be greater than permitted by the standards.

Industrial waste collection sites and access ways must not be blocked up.

When handling asbestos waste, the workers should necessarily wear special protective clothing, gloves and respirators. Prior to removing (if required) asbestos from the site, it should be treated with a wetting agent to minimize asbestos dust emission. Removed asbestos should never be reused.

Keeping foreign items, individual or working clothes, or personal protection equipment, or having meals at waste collection sites is not allowed.

During handling operations, workers must comply with applicable handling requirements and general safety rules. All operations should be carried out mechanically, using labor-saving lifting and transport equipment.

Hazardous wastes should be transported to the landfills by properly equipped vehicles, either own or of a specialized third party carrier. The transport vehicles should be constructed and used in a manner that prevents potential incidents, losses and environmental pollution both on the way to the landfill and when transferring waste from one vehicle to another. All activities that involve loading, transportation and unloading of waste at main and auxiliary sites should be mechanized and use leak-tight equipment. Opening hazardous waste containers during transportation is prohibited.

Solid and dusty wastes should be transported in special containers or containers fitted with gripping devices for unloading by truck cranes. Transporting unpacked asbestos in open trucks or on flat wagons is not allowed.

Using hooks and other sharp tools in handling operations is not allowed.

No one except the driver and staff members authorized to escort the waste off site is allowed to be in vehicles transporting hazardous waste. The drivers of vehicles that will transport asbestos waste must be trained in safe transport requirements.

All operations in connection with loading, transport, unloading and disposal of waste must be mechanized. The waste must be transported in a way to prevent transportation losses and environmental impacts.

10.2. Disposal of asbestos waste

Asbestos waste must be disposed to landfills for municipal solid waste or unrecycled industrial solid waste.