

# Bi-annual Environmental Monitoring Report

February 2017

## Loan 3025/3026-UZB: Amu Bukhara Irrigation System Rehabilitation Project

Prepared by the Project Implementation Unit, Ministry of Agriculture and Water Resources, Government of Uzbekistan.

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Project Number: 44458-013

Reporting period: July – December 2016

## Uzbekistan: Amu Bukhara Irrigation System Rehabilitation Project

(Financed by the ADB Loan 3025-UZB/ 3025-UZB)

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## **ABBREVIATIONS**

ABIS	Amu Bukhara Irrigation System
ADB	Asian Development Bank
BISA	Basin Irrigation System Administration
EIA	Environmental Impact Assessment
EMP/ SSEMP	Environmental Management Plan/ Site-Specific Environmental Management Plan
EMMP	Environmental Management and Monitoring Plan
GoU	Government of Uzbekistan
HGME	Hydrogeological Meliorative Expedition
IA	Implementing Agency
IEE	Initial Environmental Examination
ISA	Irrigation System Administration
MAWR	Ministry of Agriculture and Water Resources
M&ES	Monitoring and Evaluation Specialist
NPC	Nature Protection Committee
PIU	Project Implementation Unit
PMO	Project Management Office of PIU
SE	Site Engineer
SC	Supervision Consultant
SO	Safeguards Office
WCA	Water Consumers' Association

## Table of Contents

Part I –Introduction .....	4
1.1 Project Background .....	4
1.2 Construction activities and project progress during the previous 6 months .....	6
1.3 Changes in project organization and environmental management team.....	7
1.4 Relationships with contractors, owner, lender, etc. ....	9
Part III - Environmental Management.....	11
3.1 The status of IEE/EMP and SSEMP .....	11
3.2 Site inspections and audits.....	12
3.4 Consultation and complains .....	12
Part IV - Action plan for the next period .....	12
ANNEX I .....	14
ANNEX II .....	1

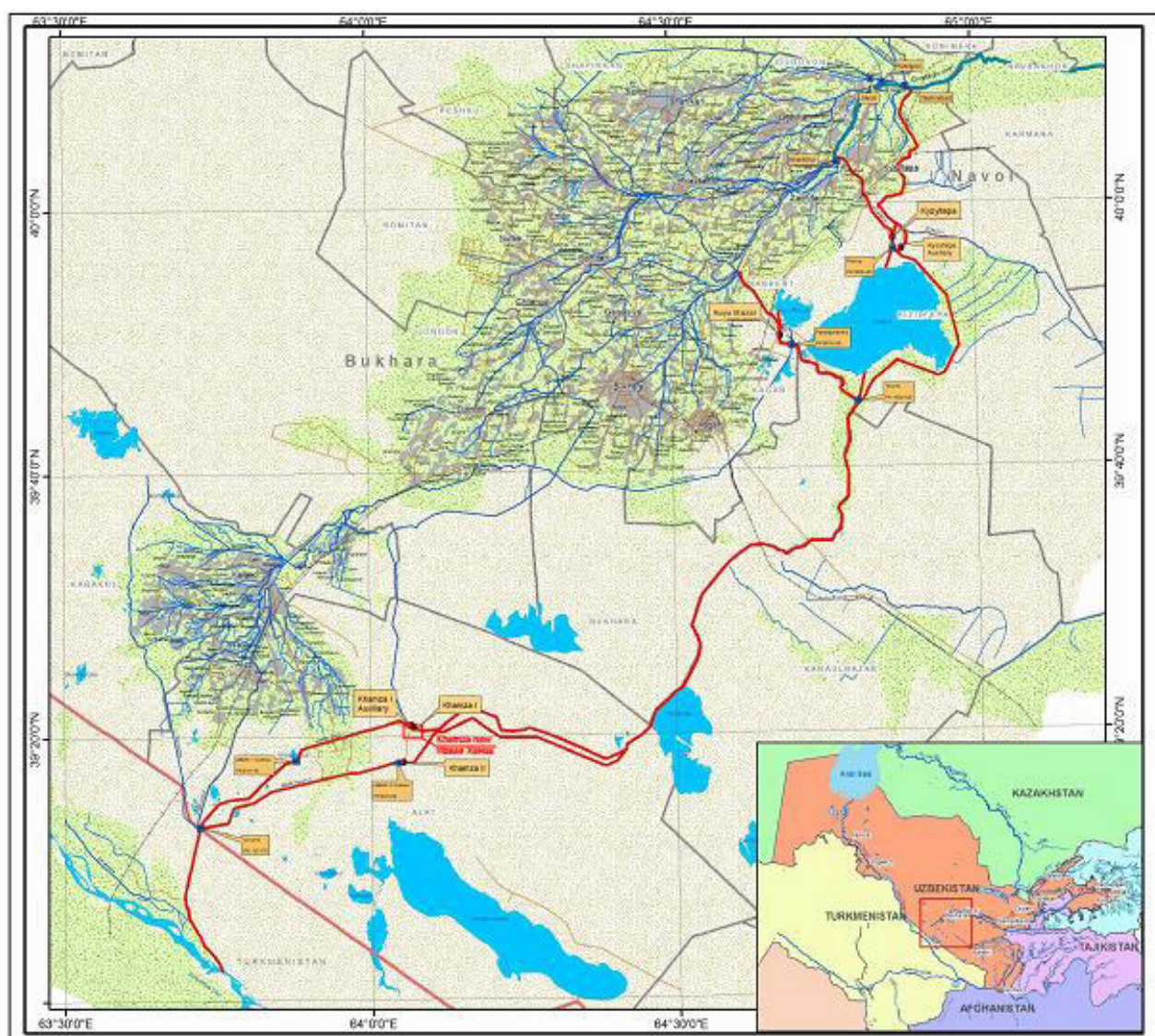
## **Part I –Introduction**

### **1.1 Project Background**

1. The Amu Bukhara Irrigation System (ABIS) Rehabilitation Project is located in the central part of Uzbekistan on the right bank of Amu Darya River bordering to Turkmenistan. Bukhara is 563 km far from the capital Tashkent. The project covers lands of Bukhara and Navoi provinces. The ABIS is very important for the area and gives life as an oasis.
2. The ABIS supplies water to already irrigated lands, cities, settlements, and industries in Bukhara and Navoi provinces through a series of large cascading pump stations and thousands of kilometres of conveyance canals. It also drains the excess water through drainage system outside of the project area.
3. The ABIS, with a command area of 315,000 ha, serves the irrigated lands of the Bukhara-Zarafshan and Karakul oases and the Karaul Bazar massif. The population in the ABIS command area is about 1,788,000 people, including 1,550,000 in Bukhara and 239,000 in two districts of Navoi, of which 68% live in rural areas and fully rely on irrigated agriculture. It is very important to supply reliable water to these people in the region. ABIS also supplies water for municipal and industrial purposes.
4. The aim of the Project is to improve the irrigated agriculture and water resources management in the ABIS, with the goal of promoting sustainable economic and social welfare of communities dependent upon ABIS. The Project objectives are:
  - modernization and rehabilitation of obsolete pump stations;
  - increase of conveyance efficiency in ABIS main canal;
  - increase climate change adaptation capacity; and
  - increase efficiency of project management and irrigation system management.
5. In order to realize a sustainable and reliable water supply in ABIS, the Project is expected to achieve the following outputs:
6. Construction of one new pump station, and modernization and rehabilitation of four existing ones;
7. Increase in the conveyance efficiency of the main canal of ABIS;
8. Increase in the capacity of Basin Irrigation System Administration (BISA), Irrigation System Administrations (ISAs), water consumers' associations (WCAs), and farmers to adapt to climate change; and
9. Efficient management of project and ABIS.
10. In order to realize the first output of ABISR, there will be two main contracts for civil works. These are:
  - 1) Construction of Amu Bukhara 1 New Pump Station (ABISR/ICB/01)

- 2) Modernization and Rehabilitation of Kizil Tepa and Kuyu Mazar Pump Stations (ABISR/ICB/03)
11. The second output will be achieved by the implementation of the following construction project: Modernization and Rehabilitation of Amu Bukhara Main Canal Regulation Structures (ABISR/ICB/02).
12. The third output is expected to be delivered by the Technical Assistance Project associated with the project, whereas the activities for achieving the fourth output will comprise project management, institutional, and operational support of Technical Assistance.

**Figure 1. Project area map**



## 1.2 Construction activities and project progress during the previous 6 months

13. The Project during the reporting period was in tendering stage and no physical activities have taken place over the last 6 months. Only two contracts have been signed under ABISRP/ICB/02 and ABISRP/NCB/04. The main project activities carried out in the reporting period include the following:
14. Tendering procedure for construction of Amu-Bukhara 1 New Pump Station (ABISRP/ICB/01). The expected start of construction period – mid 2017
15. Contract signed for modernization and rehabilitation of Amu Bukhara Main Canal Regulating Structure contract (ABISRP/ICB/02). The Contract is in survey and design stage, the works at site not yet started.
16. Tendering procedure for Modernization and Rehabilitation of Kuyu Mazar and Kizil Tepa Pump Stations (ABISRP/ICB/03). The expected start of construction period – mid 2017
17. Contract signed for Rehabilitation of inter-farm and on-farm pilot irrigation network (ABISRP/NCB/04). Activities on the demonstration farms have started, no constructional activities have started yet.
18. Project organization for the awarded contracts listed above is given in the table 1 below.

**Table 1: Awarded contracts within Amu-Bukhara irrigation system rehabilitation project**

#	Contract name	Contractor's name	Consulting company	Number of Contract	Date of signing	Duration of contract
1	Modernization & Rehabilitation of Amu Bukhara Main Canal Regulation Structures	Consortium LLC "Kogon Suv Qurilish" and JSC "Amubukhorokanalkurilish"	«Temelsu International Engineering Services Inc.» «Sheladia Associates Inc.»	ABISRP 02	March 18, 2016	1080 days
2	Civil works for Inter-farm and On-farm	LLC "Kogon Suv Qurilish"	«Temelsu International Engineering Services Inc.»	ABISRP 04	June 30, 2016	426 days

	Irrigation system		«Sheladia Associates Inc.»			
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### 1.3 Changes in project organization and environmental management team.

19. The following organizations and/or staff will be responsible for environmental monitoring activities. Their relationship has been illustrated in the figure given below.

- Basin Irrigation System Authority of Regions
- Contractor of any Subcomponent
- Civil Engineer of Consultant
- Climate Change Mitigation Specialist
- Environmental Expert of Consultant
- Electrical Engineer of Consultant
- Ministry of Health
- Project Manager of Consultant
- Project Management Office
- Water Consumer Associations

20. The key staff for the environmental management and monitoring activities Mrs. Shakhlo Naimova will be the PMO's Monitoring and Evaluation Specialist (M&ES). Mrs Naimova has all responsibilities and tasks related to environment, land, social (including involuntary resettlement and indigenous people), and poverty and gender aspects in accordance with the environment and social safeguard documents and Summary Poverty Reduction and Social Strategy, all of which are project linked documents. Specifically PMO Monitoring and Evaluation Specialist:

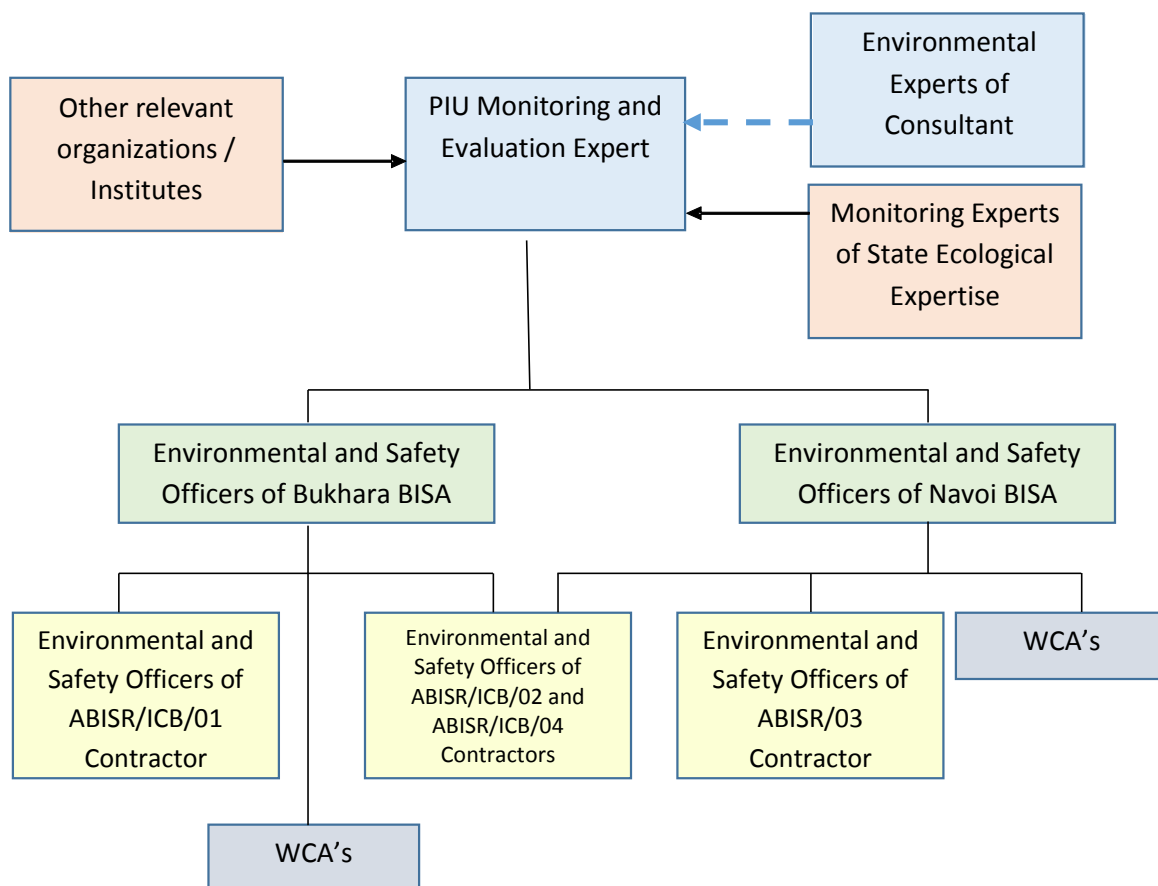
- takes responsibility for monitoring and evaluating performance targets and indicators with baselines indicated in the Design and Monitoring Framework of the project document for all dimensions with support from the implementation consultant;
- provides necessary guidance to the Poverty, Social and Gender Officer in the PIU of Bukhara to collect relevant information on poverty, gender, and social aspects in relation to the Design and Monitoring Framework of the project document and Summary Poverty Reduction and Social Strategy;

21. Additionally, in relation to the environmental aspects, with the support from the international consultant the environmental specialist will:

- ensure that Environmental Management Plan (EMP) is updated during detailed design completed,



- ensure that bidding documents include all requirement to implement IEE and its EMP;
  - ensure that the bidder selected will have adequate resources to implement and update EMP;
  - undertake safeguards monitoring activities and prepare safeguard reports to be submitted to ADB;
  - ensure that all construction works will be taken place in the permanent land possession of ABISA;
  - if additional land required for construction works, ensure that land acquisition and resettlement plan is prepared in accordance to ADB SPS 2009 as well as the Government law and regulation related with land acquisition; and
  - ensure that other project-related tasks are complied with ADB SPS 2009 and Government requirement
22. PMO as responsible IA for the project recruited a Supervision Consultant (SC) – consortium: «Temelsu International Engineering Services Inc» and «Sheladia Associates Inc.». The International environmental expert (Saban Cimen) and national environmental specialist of Supervision Consultant (SC) – Jakhongir Gadaev assist M&ES of PMO in the supervision of the construction activities under the Project.
  23. The part of the work of the Environmental Experts of the Consultant is to develop a capacity building training program for Basin Irrigation System Administration (BISA) in implementing the EMP/SEMP. The timing of this program will be just before the commencement of civil works. The content of training will be developed by Environmental Experts of the Consultant.
  24. As it was mentioned above, two Contractors were assigned for the ABISRP 02 and ABISRP 04 contracts. The Environmental Officers of the Contractors shall be responsible for the preparation of site-specific EMPs (SSEMPs) before commencement of civil works and implementation of EMP/SEMP related to the construction activities.
  25. Monitoring of the environmental performance will be done using checklists and reporting format, which will be completed quarterly as the relevant parts of the Appendix A. This reporting process has been included into the bidding documents as a regular reviewing requirement. The achievements and failures in each reporting period will be evaluated by the Environmental Experts of the Consultant.
  26. Field supervision will be realized mainly by regular or unexpected field visits, by taking photographs, videos, by making inquiries with the staff or public affected from activities, conducting observations or observations.
  27. Meetings and discussions might be required during the implementation phase with Contractor's Environmental Officer and/or Safety Officer, with the other technical members of Technical Assistance Team of PIU.
  28. Structure diagram of the agencies Involved in Project Implementation is shown in the Fig. 2 below:



**Figure 2. Structure Diagram of the Agencies Involved in Project Implementation**

#### 1.4 Relationships with contractors, owner, lender, etc.

29. The Ministry of Agriculture and Water Resources (MAWR) is the national institution responsible for irrigation and drainage with offices at central, provincial (12) and district level. Since 2003, water management is based on natural irrigation boundaries with the formation of basin authorities, Basin Irrigation System Administration (BISA). BISAs are contained within the MAWR structure as semi-autonomous organizations. There are 10 BISAs and each BISA is further subdivided into (i) canal Administration which looks after the canal systems, and (ii) irrigation system administration (ISA) that look after the irrigated areas. The subproject is situated in the Amu-Bukhara BISA.
30. The main institutions that are involved in IEEs/EMPs/SSEMPs implementation and monitoring, are the executing agency (EA) - MAWR, PIU, BISA, ISA, HGME, Uzhydromet, the Consultant, the Contractors, local branches of State Committee of Nature Protection and Municipal Authorities. EA represented by PIU and the Consultant are responsible for

ensuring monitoring of the projects implementation at the construction stage. State Committee of Nature Protection has the authority for periodic audits but should not be considered as a party responsible for monitoring.

31. The overall responsibility for the completion of the work and direction of the contractor to meet the EMMP requirements will be the responsibility of the Construction Engineer (of the Project Management Consultants) supported by the Monitoring Engineer (of the PMO). They will be supported by the SO. The contractor will have his own representative on site – the Site Engineer (SE) who will be responsible for implementing the contract and complying with the EMMP.

## Part II - Environmental Monitoring

32. Since the construction activities have not been started, the Environmental Monitoring study has been based upon the collection of existing background environmental data from the relevant government authorities. The requested information is given in below table 2.

**Table 2: Existing Background Environmental Data**

Indicator	Data source	Frequency	Responsibility	Reporting
Quality of irrigation water (pH, salinity, hardness, BOD, COD, nitrate, nitrite, ammonium, phosphate, pesticides, oil products, phenol)	Measurement	Project area, twice a year	PIU, HGMEs, Uzhydromet	Bi-Annual EMR
Soil quality/pollution (SOM (humus), soil carbon, mobile and gross NPK, nitrates, nitrites, ammonium, phosphate, pesticides).	Measurement	Project area, twice a year	PIU, BISA, HGMEs, and WCAs	Bi-Annual EMR

33. Environmental impact monitoring and mitigation is carried out in accordance with the updated EMPs and Site-Specific Environmental Management Plans (SSEMPs) prepared by the Contractors. A comprehensive list indicators including the frequency of measurements is given in Annex I.
34. During reporting period environmental monitoring has not been conducted yet. Environmental Monitoring will start immediately after the commencement of the civil works under the Project.

## **Part III - Environmental Management**

### **3.1 The status of IEE/EMP and SSEMP**

35. The Initial Environmental Examination Report (IEE) has been reviewed carefully by the Environmental Experts of the Technical Assistance Team. In following a brief information is given about this review.
36. In general, the prepared IEE has been regarded as a comprehensive document, which explains the project activities as required and gives clear identification of the prevailing environmental conditions. The IEE explains the projects impacts on the environment and proposes the necessary mitigation measures to overcome project. On base of this and previous assessment IEE categorizes ABISR is "Category B" according to OM Section F1/OP of ADB. The project impacts on environment is lead it to be considered as Category III Project according to the national requirements. Also comparison of project alternatives has been carried out within IEE.
37. The IEE provides an Environmental Management Plan (EMP) as an appendix, which clearly gives the activities related potential environmental impacts for each phase of the project, e.g. pre-construction, construction and operation and maintenance phases.
38. The EMP identifies also implementing and monitoring responsibilities, parameters to be monitored, frequencies and costs. However, it does not clearly give the cost amounts since they are associated either construction activities or consultant activities.
39. The IEE has been translated into Russian in 2013 and send tot NPC for approval. The approval of IEE has been obtained for the IEE on 23<sup>rd</sup> January 2013. The IEE has been published ADB's website on May 2013.
40. As more than 3 years have passed over this approval, according to the national requirements IEE was renewed and sent to NPC for approval. The approval for the IEE has been obtained on October 13, 2016. The Conclusion of the State Ecological Expertise for the EIA is given in Annex II.
41. Based on this requirement, Environmental Experts of the Consultant have already updated both English and Russian versions of IEE. The Russian Version of the updated IEE was sent to the NPC for renewal of approval. During this approval process, comments received from NPC and reflected to the English version. The renewal of the approval is received from NPC, the English Version of IEE was sent to ADB for issuing in the website.
42. The Consultant has integrated the Environmental Management Plan and its requirements to the Bidding Documents like preparation of SEMP plans, designation of staff responsible for environmental monitoring activities, etc.
43. The Contractors ABISRP/ICB/02 and ABISRP/NCB/04 have prepared a Site Specific Environmental Management Plan (SSEMP), which is based on the Environmental Management Plan.
44. SSEMP's have been prepared and submitted to the Engineer for approval by the end of November 2016. The Engineer has reviewed and made few comments to the submitted plans. By the end of reporting period the Contractor has been revised the SSMPs according to the engineers comments.
45. The project foresees three civil works and installation contracts with expected commencing date as early and middle of 2017. Preparation of at two SSEMP's are

anticipated under the project. The SSEMP is expected to comprise a clear statement of environmental policy to be adopted for the Contract. The SSEMP shall be subject to the approval by the Engineer.

### **3.2 Site inspections and audits**

46. "Not yet applicable".

### **3.3 Non-compliance notices and corrective action plan**

47. "Not yet applicable".

### **3.4 Consultation and complains**

48. In case of occurrence of complaints from non-staff or the affected population, the project management office (PMO) is the designated a complaint receiver. However, since the population is having more access to Hokimiyat, local mahallas, the environmental officer from PIU will routinely check at least 1 times/month with local hokim and mahallas where the project located to gather information whether any complaint has been received by them. In addition, the Consultant will also oversee and record to PIU, if there is any inconvenience caused by the project that could cause a complaint from affected people. The Grievance Logs will be developed and managed by the Contact Person and will be kept at site as well as at Hokimiyat.
49. The PIU environmental officer will coordinate with local authorities, mahalla, and committee on nature protection to resolve any complaint within 5 working days by identifying how the solution will be implemented, and communicating with the complainants. If within 5 working days, complaint cannot be resolved, complainants have the right to bring the complaint to high authorities, such as Hokim, or Ministry of Agriculture by following the Government Resolution on Civil Right. All complaints received and handled will be recorded in systematic manner and both resolved or unresolved have to be directly reported to ADB.

## **Part IV - Action plan for the next period**

50. The anticipated physical activities have been planned for the early and the first half of the 2017. Therefore the main activities related to environmental monitoring will be focused on collection of baseline information related to the project area, ensuring the inclusion of safeguard and environmental mitigation measures in bid proposals. These activities will be carried out by environmental and safeguard officers of PIU with the support of local and international consultants.
- Preparation of Site –Specific Environmental Management Plan under the contract (ABISRP/ICB/01) - March 2017;
  - Preparation of Site –Specific Environmental Management Plan under the contract (ABISRP/ICB/03) - March 2017;
  - Approval of SEMP and start construction phase of the contract (ABISRP/ICB/02) – January 2017;

- Approval of SEMP and start construction phase of the contract (ABISRP/NCB/04) – January 2017;
- Conducting capacity building training related to ADB environmental safeguards requirements for the representatives of PIU, SC and CC by ADB/RETA Regional Environmental Safeguards Consultant – Postponed. Will be at the first half of the 2017

## **ANNEX I**

### **ENVIRONMENTAL MONITORING FRAMEWORK OF ABISR**

INDICATORS	Data Source How it will be measured?	Frequency How often it will be measured?	Responsibility Who will measure it?	Reporting Where it will be reporting?
<b>PRE-CONSTRUCTION PHASE</b>				
Has the Consultant reviewed IEE?	By the activities of PMO Technical Assistance Team	Once in the initial phase of project.	EEC	Bi-annual EMR
If the IEE has been updated has it been send to the ADB for approval?	By the activities of PMO Technical Assistance Team	Once in the initial phase of project.	EEC	Bi-annual EMR
Has the PMO submitted IEE assessment report for approval to the National Authorities?	By the activities of PMO Technical Assistance Team	Once in the initial phase of project.	PMO	Bi-annual EMR
Has the Consultant included the EMP as a special Condition in the Bid Document?	By the activities of PMO Technical Assistance Team	Once in the initial phase of project.	PEC	Bi-annual EMR
Has the Contractor designed adequate staff facilities in the pump house redesigns (water-seal toilets, furbished rest rooms, dining rooms, etc.)	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Does the Contractor's design include raised walking ways?	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Does the Contractor's design provide safety guards on the areas exposed to the machinery?	By technical review	Once in the review of design documents	MEC	Bi-annual EMR
Does the Contractor's design have any drainage facility to lower ground water?	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Does the design meet the internationally acceptable safety standards of electricity for wet working areas?	By technical review	Once in the review of design documents	EIEC	Bi-annual EMR
Does the design consider critical periods for biological life and adhere any avoidance plan?	By technical review	Once in the review of design documents	EEC	Bi-annual EMR



<b>INDICATORS</b>	<b>Data Source How it will be measured?</b>	<b>Frequency How often it will be measured?</b>	<b>Responsibility Who will measure it?</b>	<b>Reporting Where it will be reporting?</b>
Does the Contractor have proper survey equipment?	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Does the design ensures free access to the facilities and availability of roads to them for O&M?	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Does the design take care the placement of building and facilities considering fire breaks?	By technical review	Once in the review of design documents	MEC	Bi-annual EMR
Does the design considers Corrosion protection of buildings by ground water?	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Does the design care the fire proof materials where necessary?	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Has the Contractor checked the desilting efficiency of inlet canal design and desilting basins?	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Has the Contractor developed inlet having sand trap and/or other alternative devices?	By technical review	Once in the review of design documents	CEC/MEC	Bi-annual EMR
Does the design consider oil separators to have oil concentration less than 0.3 mg/l?	By technical review	Once in the review of design documents	CEC/MEC	Bi-annual EMR
Does the Contractor developed a Worker Safety Plan in compliance with Uzbekistan Labor Code?	By technical review	Once in the review of design documents	EEC	Bi-annual EMR
Does the design consider protection measures for pipes laid in saline areas ?	By technical review	Once in the review of design documents	MEC	Bi-annual EMR

<b>INDICATORS</b>	<b>Data Source How it will be measured?</b>	<b>Frequency How often it will be measured?</b>	<b>Responsibility Who will measure it?</b>	<b>Reporting Where it will be reporting?</b>
Does the design consider safety conditions of crossing, bridges that will be used for transportation of vehicles, equipment and staff?	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Does the design consider landscaping convenient to the prevailing natural conditions?	By technical review	Once in the review of design documents	EEC	Bi-annual EMR
Does the design consider training of O&M staff on mechanical and electrical equipment?	By technical review	Once in the review of design documents	EIEC	Bi-annual EMR
Does the design consider to supply transformers free of PCB?	By technical review	Once in the review of design documents	EIEC	Bi-annual EMR
Is the EMP attached to the Contract to form a part of Contract Documents?	By technical review	Once in the review of design documents	PEC	Bi-annual EMR
Does the design consider the irrigational and drinking water requirements?	By technical review	Once in the review of design documents	MEC	Bi-annual EMR
Has PMO evaluated the bidder by checking EMP requirements?	By technical review	Once in the review of design documents	PEC	Bi-annual EMR
Has the Contractor prepared an acceptable EMP based on the Approved IEE?	By technical review	Once in the review of design documents	CEC	Bi-annual EMR
Has the Contractor developed Contingency Plan for accidents including spill of fuel?	By technical review	Once in the review of design documents	EEC	Bi-annual EMR
Has the Contractor submitted the Site Environmental Management Plan?	By technical review	Once in the review of design documents	EEC	Bi-annual EMR

INDICATORS	Data Source How it will be measured?	Frequency How often it will be measured?	Responsibility Who will measure it?	Reporting Where it will be reporting?
<b>CONSTRUCTION PHASE</b>				
Does the Contractor published a public notice regarding the nature and location of the project?	Questionaries	Once in the initial phase of construction project.	C	Bi-annual EMR
Has the Consultant conducted training program for WCA?	By the activities of PMO Technical Assitance Team	Once according to the time schedule of the training program	WCAC	Bi-annual EMR
Has the Consultant conducted training program for BISA?	By the activities of PMO Technical Assitance Team	Once according to the time schedule of the training program	WCAC/EEC/MEC	Bi-annual EMR
Has the EMP been explained to the Contractor before the commencement of works?	By the activities of PMO Technical Assitance Team	Once before the commencement of construction project.	PMC/EEC/PMO	Bi-annual EMR
Has the Contractor defined Environmental Management Officer?	Biding Documents	Once in bid evaluation phase	C	MROc and Bi-annual EMR
Has the Contractor defined Safety Officer?	Biding Documents	Once in bid evaluation phase	C	MROc and Bi-annual EMR
Does the Contractor handle the protected plant species, trees taking care of environmental concerns and/or permissions?	Questionaries	monthly	C	MROc and Bi-annual EMR
Does the Contractor excavate and preserve the top soil?	Questionaries	monthly	C	MROc and Bi-annual EMR
Does the Contractor maximize the use of excavated material for construction works?	Questionaries	monthly	C	MROc and Bi-annual EMR
Has the Contractor defined the licensed or got permissions borrow area for usage of construction material?	Questionaries	monthly	C	MROc and Bi-annual EMR
Has the Contractor caused any landslide or erosion?	Questionaries	monthly	C	MROc and Bi-annual EMR

<b>INDICATORS</b>	<b>Data Source How it will be measured?</b>	<b>Frequency How often it will be measured?</b>	<b>Responsibility Who will measure it?</b>	<b>Reporting Where it will be reporting?</b>
Has the Contrator stockpiles of excavated material for backfilling?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor realized the work activities during non-cropping periods?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor take measures for providing water continuously during construction work?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor defined spoil disposal site with the local authorities?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor disposed/recycled the waste material from the construction area?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has PCB containing electirical equipment disposed according to the requirements of Gozecoexpertisa?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor defined material storage area?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor defined fuel storage area 20 m away from water course?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Is the noise level in working area below the defined limit 80 dB(A)?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor taken noise prevention measures for staff using noisy equipment, vehicles?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Is the nearest residential area affected by the noise level?	Questionaries	monthly	C	MRoC and Bi-annual EMR

<b>INDICATORS</b>	<b>Data Source How it will be measured?</b>	<b>Frequency How often it will be measured?</b>	<b>Responsibility Who will measure it?</b>	<b>Reporting Where it will be reporting?</b>
Has the working activities limited by daylight hours?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor have a water tanker for spraying water to roads?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor suppress the dust by watering?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor trained the staff on personnel health and sanitation procedures at the working camp, how to interact with the host communities, subprojects environmental protection measures?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor trained the staff on contingency plan?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor trained the personnel for fuel handling procedure?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor trained any person for the first-aid?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor apply any simple training measure for the visitors?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor keep the records for all kind of training?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Number of accidents occurred during report period?	Questionaries	monthly	C	MRoC and Bi-annual EMR

<b>INDICATORS</b>	<b>Data Source How it will be measured?</b>	<b>Frequency How often it will be measured?</b>	<b>Responsibility Who will measure it?</b>	<b>Reporting Where it will be reporting?</b>
Does the Contractor supply clean drinking water to the staff?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor provide the staff hygienic living and working conditions?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor have toilets, baths, sleeping quarter, dining hall for the staff?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor have any social facilities like sporting area, canteen, shuttle vehicles to the local centers, etc.?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor check the health of the staff regularly?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor keep the health record of the staff?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor have adequate fire protection measures?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor made available the first aid kit to the staff?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor provided safe floor and hand rails, stairs, lifts where necessary?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor provided the enough ventilation and lightening in the specific areas?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor provided the safety equipment, material to the staff?	Questionaries	monthly	C	MRoC and Bi-annual EMR

<b>INDICATORS</b>	<b>Data Source How it will be measured?</b>	<b>Frequency How often it will be measured?</b>	<b>Responsibility Who will measure it?</b>	<b>Reporting Where it will be reporting?</b>
Does security staff exist in the working area?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the working area have fencing in order to protect intrusion?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor defined solid waste storage area?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor defined the area for used material storage area?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor defined used material storage?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor apply solid waste separation for recyclable solid waste?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor keeps any record for the waste recycled?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor keep any record for the solid waste disposed?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor keep any record for the hazardous waste disposed?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor use the local public roads even the avoidance from these road(s) possible?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor collected and disposed the solid waste regularly?	Questionaries	monthly	C	MRoC and Bi-annual EMR

<b>INDICATORS</b>	<b>Data Source How it will be measured?</b>	<b>Frequency How often it will be measured?</b>	<b>Responsibility Who will measure it?</b>	<b>Reporting Where it will be reporting?</b>
Does the Contractor discharge the sewerage after treatment?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor avoid the peak hours of local traffic in case of use of local public roads?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the material carried on public roads covered?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor use the vehicles having the controlled exhaust emissions?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Roads selected by the Contractor effect the protected areas?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the public informed with adequate signs about the working area and vehicles?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Do the Vehicles of the Contractor fit in to the speed limits?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Does the Contractor repair all infrastructure/roads when damage given by them?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor removed the soil if they contaminated?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Contractor left the working area as defined in Landscape section of the Bidding Documents?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Has the Operating Personnel signed and accepted all work sites, labor camps, storage areas and temporary dumping areas?	Questionaries	monthly	C	MRoC and Bi-annual EMR
Number of grievances about the Contractor?	Interview with the relevant authorities	monthly	BISA	MRoC and Bi-annual EMR
Number of grievances solved by the Contractor?	Interview with the relevant authorities	monthly	BISA	MRoC and Bi-annual EMR



<b>INDICATORS</b>	<b>Data Source How it will be measured?</b>	<b>Frequency How often it will be measured?</b>	<b>Responsibility Who will measure it?</b>	<b>Reporting Where it will be reporting?</b>
<b>OPERATION PHASE</b>				
Has the Contractor provided the training on the safe use of electricity and pumps for operational staff?	Questionaries	Once when the project activities completed	EEC	Bi-annual EMR
Has the Contractor evalauted the trained O&M staff?	Questionaries	Once when the project activities completed	MEC/EIEC	Bi-annual EMR
Has the Consultant trained the WCA, BISA staff for irrigation canal and drainage canal management?	Questionaries	Once when the project activities completed	EEC	Bi-annual EMR
Has the Consultant evalauted the trained WCA, BISA staff?	Questionaries	Once when the project activities completed	EEC	Bi-annual EMR
Has the Oil Separator regularly checked and properly maintained?	Questionaries	Once when the project activities completed	EEC	Bi-annual EMR
Has the relevant organisations observed the irrigation water quality?	Questionaries	Once when the project activities completed	WCAC	Bi-annual EMR
Has the relevant organisations observed the ground water level in the irrigation area?	Questionaries	Once when the project activities completed	WCAC	Bi-annual EMR
Have the farmers applied crop rotation?	Questionaries	Once when the project activities completed	BISA	Bi-annual EMR
Have the farmers applied environmentally friendly agricultural production techniques?	Questionaries	Once when the project activities completed	BISA	Bi-annual EMR
Has the fertility and productivity been ehanced?	Questionaries	Once when the project activities completed	BISA	Bi-annual EMR
Has the O&M staff applies the national Worker Safety Plan?	Questionaries	Once when the project activities completed	C	MRoC and Bi-annual EMR

INDICATORS	Data Source How it will be measured?	Frequency How often it will be measured?	Responsibility Who will measure it?	Reporting Where it will be reporting?
Has the Contractor made facilities available in the operational building with the clean drinking water?	Questionaries	Once when the project activities completed	C	MRoC and Bi-annual EMR
Has the Contractor made facilities available in the operational building with sewerage disposal/handling?	Questionaries	Once when the project activities completed	C	MRoC and Bi-annual EMR
Has the international agreements about the water abstraction been fitted?	Questionaries	Once when the project activities completed	EEC	Bi-annual EMR
<b>GENERAL ENVIRONMENTAL IMPACTS OF THE PROJECT ON THE ENVIRONMENT</b>				
Flow amount of water in channels?	Measurement	Monthly	BISA/WCA	Bi-annual EMR
Irrigated Area (ha)	Measurement	Monthly	BISA/WCA	Bi-annual EMR
Amount of water used for irrigation purposes.	Measurement	Monthly	BISA/WCA	Bi-annual EMR
Water quality of irrigation water (pH, salinity, hardness, BOD, COD, Nitrate, Nitrite, Ammonium, Phosphate, Pesticides, Oil products, phenol) in the project area.	Measurement	Bi-annual	PMO, HGMEs, Uzhydromet	Bi-annual EMR
Soil quality/pollution (SOM) (humus), soil carbon, mobile and gross NPK, nitrates, nitrites, ammonium, phosphate, pesticides)	Measurement	Bi-annual	PMO, BISA, HGMEs, and WCAs	Bi-annual EMR
Water levels of wells in the irrigated areas? (specify wells)	Measurement	Monthly	BISA/WCA	Bi-annual EMR
Amount of water used for irrigation purposes.	Health Statistics of Local Authorities	Yearly	PMO from local MoH	Bi-annual EMR
Electricity Consumed before the project by pumping?	Electricity Meter Records	Monthly Consumed, yearly total	BISA	Bi-annual EMR
Electricity Consumed after the project by pumping?	Electricity Meter Records	Monthly Consumed, yearly total	BISA	Bi-annual EMR
Water quantity pumped before rehabilitation/reconstruction?	Flow Measurement	Monthly, average flow	BISA	Bi-annual EMR
Water quantity pumped after rehabilitation/reconstruction?	Flow Measurement	Monthly, average flow	BISA	Bi-annual EMR
Reduction in % of GHG by implementation of project?	Calculations	Once based on yearly energy consumption amounts	Calculated by PMO CCMS	Bi-annual EMR

BISA : Basin Irrigation System Authority of Regions  
C: Contractor of any Subcomponent  
CEC: Civil Engineer of Consultant  
CCMS: Climate Change Mitigation Specialist  
EEC: Environmental Expert of Consultant  
EIEC: Electrical Engineer of Consultant  
EMR: Environmental Monitoring Report  
MEC: Mechanical Engineer of Consultant  
MoH : Ministry of Health  
MRoC: Monthly Report of the Contractor about the Implementation of EMP  
PEC: Procurement Expert of Consultant  
PMC: Project Manager of Consultant  
PMO: Project Management Office  
WCA: Water Consumer Associations  
WCAC: Water Consumer Associations of Consultant

**Table 1. Main infective diseases in relation to water supplies**

1977)	Disease	Frequency	Severity	Chronicity	% suggested reduction by water improvements
I	Cholera	+	+++		90
I	Typhoid	++	+++		80
I	Leptospirosis	+	++		80
I	Tularaemia	+	++		40?
I	Paratyphoid	+	++		40
I	Infective hepatitis	++	+++	+	10?
I	Some enteroviruses	++	+		10?
I, II	Bacillary dysentery	++	+++		50
I, II	Amoebic dysentery	+	++	++	50
I, II	Gastroenteritis	+++	+++		50
II	Skin sepsis and ulcers	+++	+	+	50
II	Trachoma	+++	++	++	60
II	Conjunctivitis	++	+	+	70
II	Scabies	++	+	+	80
II	Yaws	+	++	+	70
II	Leprosy	++	++	++	50
II	Tinea	+	+		50
II	Louse-borne fevers		+++		40
II	Diarrhoeal diseases	+++	+++		50
II	Ascariasis	+++	+	+	40
III a	Schistosomiasis	++	++	++	60
III b	Guinea worm	++	++	+	100
IV	Gambian sleeping sickness	+	+++	+	80
IV	Onchocerciasis	++	++	++	20?
IV	Yellow fever	+	+++		10?

Category	Preventive strategy
<b>I Faecal-oral</b>	Improve water quality. Prevent casual use of unimproved sources
<b>II Water-washed</b>	Improve water quality. improve hygiene. Improve water accessibility
<b>III Water-based</b>	Decrease water contact. Control snails. Improve water quality
<b>a. Penetrating skin</b>	
<b>b. Ingested</b>	
<b>IV Water-related insect vectors</b>	Improve surface water management. Destroy breeding sites. Decrease human-insect contacts

Source: Environmental impact assessment of irrigation and drainage projects, T.C. Dougherty, A.W. Hall, HR Wallingford, UK, 53 FAO Irrigation and Drainage Paper



## ANNEX II

**O'ZBEKISTON RESPUBLIKASI  
TABIATNI MUHOFAZA QILISH  
DAVLAT QO'MITASI**

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## ЗАКЛЮЧЕНИЕ

### Государственной экологической экспертизы

По объекту: ОВОС реабилитации Аму-Бухарской ирригационной системы  
(на этапе предварительного экологического обследования).  
Заказчик: ГУП «Реабилитация Аму-Бухарской ирригационной системы»  
Разработчик: ООО «Temelsu Sheladia»

И.о.Руководителя проекта  
ГУП «Реабилитация Аму-Бухарской  
ирригационной системы»  
КАСИМОВУ Г.

копия: Председателю Бухараоблкомприроды  
НИЯЗОВУ А. Б.

Председателю Навоийоблкомприроды  
ХУДОЙКУЛОВУ Ш.Ж.

На государственную экологическую экспертизу представлены материалы первого этапа оценки воздействия на окружающую среду реабилитации Аму-Бухарской ирригационной системы в Бухарской и Навоийской областях (на этапе предварительного экологического обследования).

Основой Аму-Бухарской ирригационной системы является система Аму - Бухарского машинного канала (АБМК), имеющая протяженность 384,8 км и общую подкомандную площадь 315 тыс. га. АБМК является одним из важнейших водохозяйственных комплексов республики, т.к. этой системой орошаются земли Бухарской и частично Навоийской областей, где проживают 1,6 млн. человек. Водозабор АБМК из Амударьи составляет 5,3 Мм<sup>3</sup>/год, включая 4,7 Мм<sup>3</sup>/год для Бухарской и 60 Мм<sup>3</sup>/год для Навоийской областей.

Машинная подача воды способствовала развитию сельского хозяйства, промышленности, коммунально-бытового обеспечения и других

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ТУП. АБП.

водопотребляющих структур. Поэтому насосные станции, обеспечивающие подачу воды в систему АБМК, являются жизненно важными, стратегическими государственными объектами.

Реабилитация системы АБМК планируется в качестве главной фазы в общей программе модернизации Аму-Бухарской ирригационной системы.

Проектом предусматривается:

- проведение реабилитации основной ирригационной системы;
- обеспечение новыми технологиями и оборудованием для эффективного управления водными ресурсами;
- внедрение эффективных систем управления проектом, водными ресурсами и мониторинга.

Водозабор для АБМК осуществляется двумя подводящими руслами в пойме реки Амударьи и головным сооружением, которое распределяет воду в систему АБМК расходом 320 м<sup>3</sup>/сек и в Туркменский канал Ших-Битык расходом 22 м<sup>3</sup>/сек. Аму-Бухарская ирригационная система строилась в три этапа: Аму-Каракульский канал и две насосные станции — «Алат», и «Каракуль», построенные в 1962 и 63 годах, соответственно. За время эксплуатации насосные агрегаты, гидромеханическое и электротехническое оборудование, кабельное хозяйство полностью исчерпали свои ресурсы. Изношены стальной трубопровод и бетон подземной части зданий насосных станций.

Вторым этапом построена I очередь АБМК, первым подъёмом в каскаде которой является насосная станция «Аму-Бухара-1», введённая в эксплуатацию в 1965 году. Насосная станция подаёт воду на два уровня. В невегетационный период 3 насосных агрегата подают воду в Кую-Мазарское водохранилище, в вегетационный - качает воду в канал Шахруд 60 м<sup>3</sup>/сек из Аму-Бухарского канала и 40 м<sup>3</sup>/сек из водохранилища. За время эксплуатации насосные агрегаты, гидромеханическое и электротехническое оборудование, кабельное хозяйство полностью исчерпали свои ресурсы. Трубопроводы изнашивались полностью. В настоящее время произведена замена 6 напорных трубопроводов.

В связи с быстрым ростом посевных площадей встала необходимость строительства II очереди Аму-Бухарского канала. Насосная станция «Аму-Бухара-2», введена в эксплуатацию в 1974 году с расходом воды 135 м<sup>3</sup>/сек. Насосные агрегаты были изготовлены под условия перекачки Амударьинской воды, но за время эксплуатации насосные агрегаты, гидромеханическое и электротехническое оборудование, кабельное хозяйство полностью исчерпали свои ресурсы, значительно изношен стальной трубопровод. Необходима реконструкция всей насосной станции.

Второй ступенью II очереди Аму-Бухарского канала является насосная станция «Кизил-Тепе» (построена в 1975 году), которая подаёт воду на два уровня: в Шафирканскую ветку 60 м<sup>3</sup>/сек, в Хархурскую ветку - 45 м<sup>3</sup>/сек. За время эксплуатации насосные агрегаты, гидромеханическое и электротехническое оборудование, кабельное хозяйство полностью



исчерпали свои ресурсы, трубопроводы изнашивались полностью. Необходима реконструкция всей насосной станции.

В процессе реализации проекта предусматривается:

- строительство одной новой насосной станции в 500 м от существующей станции «Аму-Бухара-1» и модернизация четырех существующих насосных станций, а так же очистка и ремонт машинного канала;

- увеличение пропускной способности магистрального канала АБИС;

- повышение потенциала по адаптации к изменению климата Бассейнового управления ирригационных систем, Управления ирригационных систем, Ассоциаций водопотребителей и фермерских хозяйств;

- эффективное управление АБИС и проектом.

Учитывая размеры всей ирригационной системы, проект будет направлен на реабилитацию магистральных каналов в системе АБМК. Ожидается что инфраструктура, требующая реабилитации, включает в себя:

- участки каналов, страдающие от поступления большого количества наносов;

- участки каналов с ограниченной пропускной способностью;

- перегораживающие сооружения, акведуки и дюкеры, требующие срочного ремонта. И которые могут быть реабилитированы с разработкой современных проектов на основе лучшей местной и мировой практикой проектирования;

- строительство или реабилитация инспекторских и подъездных дорог на ключевых участках вдоль магистральных каналов;

- улучшенную эксплуатацию Кую-Мазарского и Тудакульского водохранилищ.

Основной разделительной линией между подводящим и магистральным каналами являются шлюзовые затворы на головном сооружении, расположенные в 10,97 км от первого распределительного сооружения АБМК, находящегося на границе Узбекистана и Туркмении. Ширина канала на этом участке составляет 70 — 80 м. Проблемой головного сооружения является плохое состояние затворов, требующих ремонта и реабилитации всего электромеханического оборудования и несущих конструкций. Проектом рекомендован ремонт затворов, предусмотрены сороудерживающие решетки с моторизованной системой удаления мусора.

В Амударье высокое содержание наносов, по данным проекта среднее значение концентраций взвешенных частиц составляет  $2,3 \text{ кг/м}^3$  в подводящем канале и  $0,89 \text{ кг/м}^3$  в АБМК на 152 км. Производительность удаления наносов имеющимся флотом земснарядов составляет от 130 до  $160 \text{ м}^3/\text{час}$ . Земснаряды изношены и требуется заменить их на новые. **Проектом предлагается более эффективное с точки зрения затрат решение проблемы наносов путём строительства донного сооружения для снижения поступления крупных фракций песка и ила, а так же**



**большого отстойника для отложения мелких фракций песка и ила. Размещение отстойника планируется на прямом участке существующего канала.**

На проектной территории имеются два основных водохранилища – Куюмазарское, общим объемом 320 млн м<sup>3</sup> (в том числе полезный объем 275 млн м<sup>3</sup>), и Тудакульское, общим объемом 1,200 млн м<sup>3</sup> (полезный объем 700 млн. м<sup>3</sup>). Оба водохранилища получают воду из системы АБМК и используются для хранения и компенсации стоков на орошение. В каждое водохранилище поступают значительные объемы наносов вместе с перекачиваемой водой, которые накапливаются и не очищаются. Вода Тудакульского водохранилища плохого качества и имеет концентрацию солей в три раза превышающую концентрацию в воде, забираемой из Амударьи. Проектом рекомендована оценка водно-солевого баланса системы для определения источника и степени засоления водохранилища.

Проектом предлагается так же разработать структурные решения по дренажу для снижения участков засоления и заболачивания, повышения урожайности и снижения неэффективного и безвозвратного водопотребления.

В процессе проведения ремонтно-восстановительных работ на каналах и коллекторах будут образовываться три основных вида отходов:

- отходы-наносы при очистке русел каналов и коллекторов, состоящие из водной растительности, минеральных солей и органических веществ;
- отходы в виде разрушенного бетона, образующиеся при ремонте облицовки каналов;
- отходы от разработки грунта в сечении каналов и коллекторов при расширении и углублении их.

На следующем этапе проектирования следует определить удобные и экологически оправданные площадки для временного хранения отходов и разработать пути их повторного использования.

Для снижения возможных негативных последствий воздействия планируемых работ на окружающую среду в проекте ЗВОС разработан план смягчающих мер на период проведения работ, планы мониторинга и управления за состоянием окружающей среды.

**На следующем этапе проектирования следует разработать проекты оценки воздействия на окружающую среду для реконструкции и строительства конкретных гидротехнических сооружений, насосных станций, очистки и укрепления берегов каналов.**

Государственная экологическая экспертиза проекта показала, что представленные на рассмотрение материалы содержат информацию, достаточную для принятия решения о допустимости реализации проектных предложений. Предусмотренные проектом действия должны улучшить экологическую ситуацию на контрактной площади и привести к более эффективному и бережному использованию водных ресурсов.

На следующем этапе разработки проекта Заявления воздействия на окружающую среду следует представить план природоохранных мероприятий и план мониторинга окружающей среды на проектируемых участках, в котором необходимо:

- **представить результаты общественных опросов (слушаний), проведенных среди жителей ближайших жилых зон на предмет проведения данной деятельности;**
- предусмотреть проведение проектируемых работ строго в дневное время;
- разработать маршрут транспортировки строительных материалов и отходов, обеспечивающий проезд техники на расстоянии не ближе 50-100 м от жилых построек;
- **предусмотреть проведение пылеподавление отвалов и на подъездных дорогах;**
- рассмотреть размещение рабочих площадок и площадок для стоянки и обслуживания техники следует в соответствии с ПКМ РУз №174 от 7.04.1992г. (Положение о водоохранных зонах водохранилищ и других водоемов, рек...);
- разработать мероприятия по снижению шума и вибрации при проведении строительных работ, а также представить план-график по измерению шума вблизи населенных зон.

Госкомприроды Республики Узбекистан **согласовывает** материалы оценки воздействия на окружающую среду реабилитации Аму-Бухарской ирригационной системы в Бухарской и Навоийской областях (на этапе предварительного экологического обследования).

Заклучение государственной экологической экспертизы о допустимости реализации проекта не подменяет и не отменяет необходимость получения соответствующих разрешительных документов в установленном законодательством порядке.

**Бухарскому и Навоийскому областным комитетам по охране природы необходимо взять под контроль соблюдение природоохранного законодательства при выполнении работ по реабилитации Аму-Бухарской ирригационной системы, обратив особое внимание на своевременную рекультивацию нарушенных земель, недопустимость незаконной добычи строительных материалов и вырубki деревьев.**

Заместитель председателя

Р.Файзиев



Бекмуратов Б.тел. 236-13-05



## STATE COMMITTEE FOR NATURE PROTECTION

13 October 2016

No. 18/1659z

### CONCLUSION

#### State Ecological Expertise

Subject: EIA under Amu-Bukhara Irrigation System Rehabilitation Project

Client: PIU for Amu-Bukhara Irrigation System Rehabilitation Project

Designer: JV Temelsu Sheladia

G. Kasimov, Acting PIU Manager

cc: Mr. A. Niyazov, Chairman, Bukhara Nature Protection Department

Mr. Sh. Khudoykulov, Chairman, Navoi Nature Protection Department

First Stage EIA materials were submitted to the State Ecological Expertise under Amu-Bukhara Irrigation System Rehabilitation Project to be implemented in Bukhara and Navoi regions.

Amu-Bukhara Main Canal (ABMC) is the major component of Amu-Bukhara Irrigation System (ABIS), having a length of 383.8 km and 315,000 ha of total command area. ABMC is one of the most important project in the country, as it provides water to Bukhara, and partially, Navoi regions, covering 1.6 million residents. ABMC takes from Amu Darya 5.3 Mm<sup>3</sup>/year, including 4.7 Mm<sup>3</sup>/year for Bukhara, and 60Mm<sup>3</sup>/year for Navoi.

Pumping irrigation promoted the development of agriculture and DMI consuming Amu Darya water. Therefore, pump stations providing water to the ABMC have a vital importance for the country's strategy.

ABIS rehabilitation is expected as a main phase in the overall ABIS rehabilitation project.

The Project will provide:

- Rehabilitation of the main irrigation system
- New technologies and equipment for efficient water resources management
- Introduce efficient project management systems, including water resources management and monitoring systems

ABMC intake includes two intake canals and intake structure, which distributes 320 m<sup>3</sup>/s to ABMC, and 22m<sup>3</sup>/s to Shikh-Bityk Canal in Turkmenistan.

ABIS was constructed in three phases. First phase included Amu-Karakul Canal, and Alat and Karakul pump stations constructed in 1962 and 1963 respectively. During long operation, all pump units, mechanical and electrical equipment, cabling exceeded their life span. Steel pipelines and pump stations substructure's concrete are worn out as well.

The second phase included ABMK I with Khamza I PS commissioned in 1965. This pump station pumps water to two levels. During off-irrigation season 3 pumps supply water to Kuyu-Mazar reservoir, and in vegetation season it pumps 60 m<sup>3</sup>/s from ABMK to Shokhrud Canal, and 40 m<sup>3</sup>/s from the reservoir. During long operation, all pump units, mechanical and electrical equipment, cabling exceeded their life span. Pipelines are completely worn out. Currently 6 pipelines have been replaced.

Due to rapid grow of crop area, a necessity occurred to construct ABMK II. Khamza II PS was commissioned in 1974 with the discharge of 135 m<sup>3</sup>/s. During long operation, all pump units, mechanical and electrical equipment, cabling exceeded their life span. Steel pipelines are heavily worn out. Complete rehabilitation of the pump station is required.

Kizil-Tepa PS is the second lift pump station of ABMK II (commissioned in 1975). It supplies water to Shafirkan Canal (60 m<sup>3</sup>/s) and Kharkhur Canal (45m<sup>3</sup>/s). During long operation, all pump units, mechanical and electrical equipment, cabling exceeded their life span. Steel pipelines are heavily worn out. Complete rehabilitation of the pump station is required.

The Project outputs to achieve project outcome and impact comprise:

- One new PS built located 500 m away from the existing Amu Bukhara I PS and four existing PSs modernized and rehabilitated along with dredging and repair of the main canal;
- Conveyance efficiency in the ABIS main canal increased
- The capacity of Basin irrigation system administration (BISA), Irrigation system administrations (ISAs), water consumers' associations (WCAs), and farmers to adapt to climate change increased
- Project and ABIS managed efficiently

Considering the sizes of the overall irrigation system, the project will provide rehabilitation of the ABIS main canals.

The infrastructure to be rehabilitated is expected to include:

- Canals' sections affected by the sedimentation;
- Canals' sections with restricted flow capacity;
- Cross regulation structures, aqueducts and siphons required urgent rehabilitation, and which could be rehabilitated by development of the state-of-the-art designs according to the best national and international practice;
- Construction/rehabilitation of inspection and access roads in key reaches along the main canals;
- Improved operation of Kuyu-Mazar and Tudakul water reservoirs.

Main borderline between the intake canal and main canal are sluice gates at the headwork located in the border between Uzbekistan and Turkmenistan, 10.97 km from the ABIS first division structure. The canal's width at this reach is 70-80 m. The major problem of the headwork is a poor condition of sluice gates, requiring repair and rehabilitation of all electrical and mechanical equipment and bearing constructions. The project recommends to repair the gates, and provide trash racks with motorized trash cleaning machine.

Amu Darya's water has high sediment content. According to the project data, average concentration of suspended load in the intake canal is 2.3 kg/m<sup>3</sup>, while in ABMC this value is 0.89 kg/m<sup>3</sup> at the km 152. The capacity of existing dredgers is 130 to 160 m<sup>3</sup>/h. However, the dredgers are worn out and are to be replaced. **Cost-effective sediment removal is**



**proposed by the project with construction of bottom sediment structure to reduce inflow of coarse sand and silt fractions, and large sediment basin to deposit fine sand and silt fractions. The location of sediment basin will be at the straight reach of the existing canal.**

Within the project area there are two main water reservoirs, Kuyu-Mazar with total storage capacity of 320 Mm<sup>3</sup> (including 275 Mm<sup>3</sup> of useful capacity), and Tudakul with total storage capacity of 1.2 Bm<sup>3</sup> (700 Mm<sup>3</sup> of useful capacity). Both reservoirs receive water from the ABIS system and are used for storage and compensation of the irrigation flows. Significant volumes of sediments inflow to the reservoirs with the pumped water, which are accumulated and not removed. Water in Tudakul reservoir has poor quality with salt concentration three times more than concentration in Amu Darya water. The project recommends to estimate water and salt balance of the system to determine the source and level of the reservoir mineralization.

Also, the project recommends to work out structural drainage improvements to reduce areas affected by salinity and water-logging, thus increasing crop yield and decreasing inefficient and non-return water consumption.

During the rehabilitation work on the canals and drains, three main types of wastage will be generated:

- Sediments during dredging of the canals and drains, including weeds, mineral salts and organic matters;
- Demolished concrete during repair of the canal lining;
- Excavated soil during widening and deepening of the canals and drains.

During the next design stage, suitable and environmentally justified waste disposal areas and ways of waste re-use should be determined.

To reduce possible negative environmental impact of the expected activities, mitigation measures, monitoring and EMP have been developed under IEA.

**During the next design stage, EIAs should be prepared for rehabilitation and construction of certain hydraulic structures, pump stations, cleaning and strengthening of the canal banks.**

Ecological expertise showed that the materials submitted for the review have sufficient information to make a decision on acceptability of the design proposals. The expected activities will improve the environmental situation in the project area and result in more efficient and rational use of water resources.

During the next design stage, IEA should have EMP and monitoring plan for the construction sites, which are to include:

- **Outcomes of public consultations with the local communities in respect of specific activities;**
- Provisions for construction activities during the daytime only;
- Transportation routes for the construction materials and waste, so that the vehicle traffic is not closer than 50-100 m from houses;
- **Dust control at the dump areas and access roads;**

- Location of the work and parking and maintenance areas in accordance with Government Resolution No. 174 of 7.04.1992 (regarding water preservation areas of reservoirs and other water bodies, rivers etc...);
- Provisions for noise and vibration control during the civil works, along with noise measurement plan nearby the residential area.

The State Committee for Nature Protection of Uzbekistan hereby **approves** the EIA materials prepared under ABIS Rehabilitation Project to be implemented in Bukhara and Navoi regions.

This Conclusion shall not replace or supersede the requirement to obtain other respective permissions in accordance with the regulations.

**Bukhara and Navoi Nature Protection Departments** should control over the compliance with the nature protection legislation during rehabilitation of the ABIS, with special attention to timely restoration of the damaged lands, and **prohibition of illegal extraction of construction materials and cutting of trees.**

**R. Fayziev**

**Deputy Chairman**