ENVIRONMENT AND SOCIAL MANAGEMENT PLAN / SOCIAL-ECOLOGICAL IMPACT EVALUATION FOR EXECUTION OF CONSTRUCTION AND REHABILITATION WORKS OF FLOOD PROTECTION EMBANKMENT ON THE RIVER YAKHSU IN VOSE DISTRICT

"Approved by:
Karimzoda S.R.
Director, PMU, FVWRMP

"Approved by:
Karaev E.
Head of Department of Environmental Protection, Vose district

Dushanbe – 2019
# TABLE OF CONTENTS

1. INTRODUCTION .................................................................................................................. 1
   1.1. Current condition of the Site and substantiation ......................................................... 1
   1.2. Project benefits ............................................................................................................. 1
   1.3. Legal content ............................................................................................................... 1

2. PROJECT PARAMETERS ..................................................................................................... 2
   2.1. Brief description of the Sub Project ............................................................................. 2

2.2. Scheme of technical actions at construction of bank strengthening embankment

3. ENVIRONMENTAL AND SOCIAL EVALUATION OBJECTIVES AND TASKS ................... 3
   3.1. Ecological aspects ....................................................................................................... 3
   3.2. Social aspects ............................................................................................................. 3

4. ASSESSMENT OF THE SITE TERRITORY EXISTING CONDITIONS .................................. 4
   4.1. Brief social and economic characteristic of the Site .................................................. 4
   4.2. Definition of natural disasters main types. Presence of voluntary-rescue groups in the Project area ........................................................................................................ 4
   4.3. Geographical characteristic of the Project area .......................................................... 4
   4.4. Climate ....................................................................................................................... 4
   4.5. Flora ........................................................................................................................... 4
   4.6. Fauna .......................................................................................................................... 4
   4.7. Water environment ..................................................................................................... 4
   4.8. Site assessment ........................................................................................................... 4
   4.9. Establishing of preliminary number of direct and indirect beneficiaries under the Sub Project ................................................................................................................ 4

5. DEFINITION OF THE PROJECT IMPACT ON THE ENVIRONMENTAL AND SOCIAL CONDITIONS, CONSEQUENCES MITIGATION MEASURES ........................................................ 5
   5.1. Definition of socially-ecological risks and impacts ..................................................... 5
   5.2. Actions procedure in case of archeological find detection ......................................... 5
   5.3. Recommended preventive actions and measures on mitigation of potential impacts ... 5

6. MONITORING AND REPORTING ON ENVIRONMENT AND SOCIAL ENVIRONMENT .... 6

7. METHODOLOGY ................................................................................................................. 7

8. GRIEVANCES REDRESSING MECHANISMS (GRM) ......................................................... 8

##ANNEXES

1. Management plan on decrease of negative impact on environment and social environment .............................................................................................................................

2. Ecological monitoring plan for flood protection embankment on Yakhsu river. ...........

3. Social monitoring plan for flood protection embankment on Yakhsu river. .................

4. Duties on social and ecological monitoring. .................................................................

5. Responsibility of contractors .........................................................................................

6. Recommended actions and measures on safety precautions and labor safety at execution of mechanical construction and repair works .................................................

7. Recommended actions and measures on safety precautions and labor safety for execution of manual excavations ..............................................................................
1. INTRODUCTION

Bank strengthening works on the rivers Kafirnigan, Yakhsu, Kyzilsu, Surkhob and Dahanasai in Kulyab, Vose, Kabadiyan and Shaartuz districts are executed within the frames of “Strengthening Critical Infrastructure against Natural Hazards Project, P158298”, Sub Component 2.2. “Strengthening of flood protecting and river ban strengthening infrastructures”

The most frequent natural hazards in the Project districts are high waters, floods and mudflows which destructive actions represent a basic part of the big problem for national economy, social and surrounding environment. Each year floods and mudflows occur in the spring, after heavy rains, gradually destroying riverbank lines.

Rehabilitation actions of the Project are directed on prevention of destruction of flood waters of the bank lines, protection against flooding of the irrigated lands, territories of settlements and safety of ecosystem in the zone of Project implementation.

Project development objectives

- Recipients capacity building strengthening on management of natural disasters risks;
- Stability enhancing of the infrastructures most important sites against natural disasters;
- Response to natural disasters ability increase.

During the Project implementation actions and based on request of the the Government of the Republic Tajikistan, World Bank has additionally added a new Site on which initial social and ecological evaluation was conducted and Environment and Social Management Plan (ESMP) on rehabilitation of destroyed flood protection embankment on the river Yakhsu has been developed. ESMP has been prepared on the basis of the surveys conducted in Project area and was coordinated with corresponding stakeholders structures according to the Draft Frame Document on environment preservation and the Report on social evaluation of the Project districts.

The present document is based on effective policy of the World Bank on safeguarding measures and defines its conformity with requirements and laws of the Republic of Tajikistan at execution of construction and rehabilitation works.

ESMP defines essential positive and negative impacts of the Project and will serve as the management tool, providing appropriate execution of measures on prevention and mitigation of negative impacts on surrounding and social environment. ESMP will be used by contractors and other stakeholders in conformity with stages of Project implementation.

1.1. Current condition of the Site and substantiation

The designed Site is located in Vose district on a section of the right bank of the flood plain of the river Yakhsu, in territory of the settlement "Khaftarkhona" in Jamoat named after K.Rajabov. The total extent of the river flowing through the territory of the settlement makes 2150 meters. The surveyed territory, due to the relief and modern active processes of destruction of rocks, entirely concerns to mudflow prone and risky zone. Despite considerable widespread mudflow and flood phenomena occurrence, the mudflows are studied insufficiently, though they concern to destructive natural disasters processes.
During the period from 2017 to 2018 within the territory of Vose district and within the frames of implementation “Pyanj river basin water resources management Program” bank strengthening works have been conducted on four sections of the river banks of Yakhsu and Surkhob by means of construction of embankments from which 1421 meters pass through the territory of the village "Kaftarkhona". Still the most vulnerable section of the river L=735 meters remains under the unprotected reach and needs carrying out of rehabilitation rehabilitation works. As a result of heavy precipitations and passage of mudflows, absence of appropriate financing and the maintenance bank protection structures, shortage of skilled personnel for operation of systems, has led to the situation when the embankment constructed in 1976 has been completely destroyed. Due to unsatisfactory functioning of bank protection structures, scouring of the irrigated lands, flooding and soil re-salinization are observed. Under the threat of flooding there are settlements in two Jamoats, the social and industrial Sites, existing old embankments and the embankments rehabilitated with support of ADB program’s implementation, transport-network infrastructure, farmlands and other Sites. As a result of mud flows and flooding, the considerable damage has been inflicted to the local economy. Basically, the agricultural lands have suffered most of all that has negatively affected the economic conditions of local population whose main income source is agricultural products.

Areas still remained unprotected
Jamoat Rudaki - villages Mehnatobod, Sari Angur, Ghofilobod, Anoriston with total population – 10490 people, including:
- Lands of agricultural and other purposes - 1649 hectares;
- Households – 1270 nos.;
- Medical institutions-5 nos.;
- Schools – 4 nos.;
- Mosques – 4 nos.

Jamoat K. Rajabov - village Kaftarkhona with total population of 2171 people, including:
- The lands of agricultural and other purposes - 283 hectares;
Dehkan farms – 30 nos.
Households – 280 nos.;
Asphalt plant;
School – 1 no.;
Health center – 1 no.;
Mill – 1 no.;
Mosque – 1 no.;

Rehabilitation of the damaged section of the flood protection embankment on the right bank of the river Yakhsu with the extent of 735 meters, will prevent the water destructive actions and will create optimum conditions for uniform flow of the flood, will stop the banks overall scouring. Carrying out of construction and rehabilitation works will not affect negatively on the agricultural lands and settlement areas of "Kaftarkhona" as the Sub-Project Site is located far away from the settlement and it is the operational site for carrying out of bank strengthening, repair and serving works.

1.2. Project benefits

Implementation of Project flood protection actions in the Project areas will promote achievement of a dual objective of World Bank Group — to eradication of extreme poverty and advancement of common prosperity. Improvement of bank infrastructure conditions allows mitigating or preventing negative consequences of natural disasters, thereby reducing poverty level in the Project area, preventing losses of incomes and livelihoods.

*Long-term positive impact from Project actions is expected.*

Rehabilitation of the flood protecting Site, will promote:

- To prevention of the further destruction of bank lines by flood waters, decrease in risk of flooding and inundations;
- To protection against flooding of the adjoining irrigated lands and settlements, prevention of loss of dwellings;
- To improvement of agricultural efficiency of arable lands, increase in their area, increase of productivity of agricultural crops, increase of incomes of farms and households;
- To improvement of possibilities of employment i.e. occupation level insurance (involvement of local labor) and population incomes - use of the local goods and services during carrying out of civil works (rubble, stone, sand, cement, gravel, articles of food etc.); and
- To decrease in level of poverty in rural areas of the Project zone.

1.3. Legal content
Implementation the Sub Project will be conducted according to the legislation of the Republic of Tajikistan and policy of the World Bank, providing measures on protection of the surrounding and social environment. According to the Operational Policy of the World Bank 4.01, the Project concerns Category "B". Implementation the Sub Project will be carried out on the basis of ecological/social evaluations and the Environment Management Plan. Actions will be carried out on the Site under the limited and insignificant impact on the surrounding and social environment.

2. PROJECT PARAMETERS

2.1. Brief description of the Sub Project

Project actions are directed only on construction of new embankments without use of the remaining of the existing destroyed embankments.

Master Plan of flood protection embankment in the left ban of the river Yakhsu, S 1:2000

It is provided, construction of bank strengthening embankment on the section of Kaftarkhona with the extent L=735 m in the right river bank of Yakhsu from CH 14+21 to CH 21+56, construction of sewer pipe in diameter of 1200 mm for dump of water and possible construction of one spur with length to 30 meters.

The bank protecting embankment will be constructed by use of local materials extracted from the inundated ground with an impurity of loam to 16.0% for reduction of a filtration and achievement of the Design durability of a qualitative embankment. Strengthening of pressure head slope of the
embankment is provided from concrete slabs of type BP 2x1x0.20m. Height of the embankment filling is accepted by calculation H=4.0m, formation of pressure head slope - m = 2.0 and a dry slope - m = 1.5. At rehabilitation of the destroyed embankments, dismantled different modular RCC structures (tetrahedrons, large-sized stones and cubes) are used for the apron overload on a longitudinal embankment without Project cost.

Gravel-pebble preparation layer, thickness t=15cm, c fractions d=40-50mm from the inert materials plant is provided under RCC slabs for strengthening of pressure head slope of the embankment.

2.2. The scheme of technical actions at construction of bank strengthening embankment

**Project decisions on soil quarry for a qualitative embankment backfill**
For erection of the designed embankment use of soil quarry in the flood plain of the river Yakhsu between the existing embankments of the left and right bank in the form of the open channel, trapezoid sections in width B = 12m, depth - h = 1.50m and slopes formation - m=1.5 is provided. The quarry slope corresponds the river slope along the extend. The quarry axis (cut-off) is shown in the section plan of BSW.

**Diversion of the Yakhsu river flow during the embankment construction.**
During the construction of bank protection embankments diversion of flow of Yakhsu river towards the left bank is required. The Design provides erection of a time crosspiece with cutoff from CH 14+21 to CH 21+56. According to the hydrological report erection of bank protection embankment can be conducted during the autumn-winter period (August - March).
3. ENVIRONMENTAL AND SOCIAL EVALUATION OBJECTIVES AND TASKS

3.1. Environmental aspects

The main objective of carrying out environmental evaluation consists in consideration of the environmental issues during the development and implementation of the Sub Project, drafting of the Environment Management Plan on activities connected with rehabilitation and improvement of conditions of flood protecting embankments destroyed by flood waters and mudflows.

The primary task of the environment evaluation is revealing of significant impact of the Project on environment (positive and negative) to define corresponding preventive measures and to develop measures on impact mitigation (including corresponding monitoring system), directed on the prevention, minimization or elimination of any expected irreversible consequence.

For overall objective achievement, execution of following tasks is must:

a) Carrying out of the analysis of current environmental situation;
b) Preparation of the concrete Environment Management Plan on the basis of plan model on environment management;
c) Coordination of Draft EMP with stakeholders and corresponding structures;
d) Approval of EMP according to the order established by the legislation of the country;

On the basis the Environmental situation analysis, preparation EMP provides following actions:

Step 1: Description of natural -climatic, socioeconomic conditions of the area attached by the area maps, specification special environmental and water sites, woods, rare or vanishing plants and animals species.

Step 2: Define of potential environmental and social impacts which can result from the Project implementation, and offer measures on their mitigation.

Step 3: Development of EMP on the basis of field researches and the filled sample which will include the reconsidered impacts mitigation measures tables and monitoring actions: under a separate section it is necessary to reflect kinds of carried out works and labor safety methods at execution of such works, and also procedures of first-aid treatment for those suffered during the works. Project beneficiaries will use the EMP and its tables for carrying out of actions for impact mitigation.

Step 4: Arrange access to Draft EMP to receive comments on the offered documents. In the first stage on tables of actions for impact mitigation and monitoring by all interested persons and structures;

Step 5: Environmental evaluation and approval: Preparation of EMP and actions for mitigation of the project impact and monitoring will be coordinated and approved by district environment department. Thus inspectors on environment, as required, will carry out visits to Project site, consider environmental aspects of offered works and will provide conformity of offered measures on impacts mitigation and will control their implementation.
Step 6: Conducting supervision and reporting: As soon as the project implementation starts, the Project environmental specialist and district environmental inspectors will supervise implementation of the Project activities and measures on mitigation of impact during the rehabilitation works and will define, as required, correcting measures. Such information will allow evaluation of impact mitigation success within the limits of the project supervision, and as required to undertake correcting actions. In this respect, EMP defines the monitoring tasks and types, and also their interrelation with impacts and measures for their mitigation. In particular, the EMP monitoring section provides:

(a) Concrete description and technical details of measures on the monitoring implementation, including the measured parameters, used methods, sampling places, measurement frequency; and,
(b) Monitoring and reporting procedures for the purpose: (i) ensuring of early revealing of the conditions, demanding use of concrete measures on impact mitigation, and (ii) providing of the information on course of execution and mitigation results.

3.2. Social aspects.

The purpose of social evaluation is survey carrying out on social and economic situation of the village "Kaftarkhona" and the general indicators of two Jamoats: K. Rajabov and Rudaki of Vose district taking into account identification of existing main types of natural disasters in Sub Project zone, structures on the local communities level involved in prevention and liquidation of emergency situations, establishing of preliminary number of beneficiaries, readiness of the institutional organizations and communities to participate in implementation the Sub Project and definition of levels of Project impact on the population.

Proceeding from the survey objectives, the primary tasks of the social survey were:

➢ Social and economic characteristic of the Project area;
➢ Definition of main types of natural disasters and presence of voluntary-rescue groups (VRG) in Sub project zone;
➢ Establishing the preliminary number of direct and indirect beneficiaries;
➢ Revealing of readiness stakeholders to participate in project implementation, from the point of view of personnel potential, mobilization of communities;
➢ Definition of the project impact level on the social environment (positive and negative) during the implementation of civil works and after rehabilitation.
4. ASSESSMENT OF THE SITE TERRITORY EXISTING CONDITIONS

4.1. Brief social and economic characteristic of the Site

The projected Site is located in Yakhsu agro climatic zone at elevation mark of 464 m over the sea level in territory of the kishlak "Kaftarkhona". Kaftarkhona is one of settlements of Vose district located in Jamoat K. Rajabov. The total area of Kaftarkhona territory makes 283 (hectares), including: the irrigated lands – 199 (hectares), the settlements lands– 46 (hectares), the water fund lands – 28 ha, orchards and mulberries – 1,5 (hectares), the lands under construction – 4 (hectares), etc. According to statistical data provided by Jamoat Khudoyor Rajabov, the total number of population in the village of "Kaftarkhona" as of 01.01.2019 makes 2171 persons, from them 45 persons are in labor migration. From the total population number men are 1081 persons, 49,8% and women 1090 persons that makes 50,2%. 280 households are located within the kishlak territory. The main occupation of the population is agriculture and trade. Number of able-bodied population makes 1540 persons out of them 640 people - working on hiring and 45 are in labor migration.

An asphalt plant is located in the territory of village "Kaftarkhona". Constructed with support of the Government of Japan in 2018,
4.2. Definition of natural disasters main types. Presence of voluntary-rescue groups in the Project area.

At occurrence of natural disasters of various characters, the local population is the most vulnerable side. According to representatives the Unit of ES and CD and representatives of Jamoats Rudaki and K. Rajabov the most frequent and significant natural disasters in Project area are mud flows which, annually occur in the spring, after heavy rains. During the current year, Jamoat "Guliston" of Vose district was the main location suffered from the mud flow consequences. Damages were inflicted to auxiliary structures (72) and to auxiliary sections (105). Nine households from which five have been completely destroyed and 4 - partially have suffered. In Jamoat K. Rajabov, mainly the agricultural lands have been damaged.

«This year, after torrential rains severe mudflows occurred on the territory of Vose district. Our personnel, together with representatives of SILRI, ES and CD and employees of Asphalt plant, carried out patrolling on the destroyed sections of embankments near to settlement Kafirkhona from March to May and executed bank strengthening works. The river Yakhsu flows towards ours Jamoat and in case of embankment break, 4 villages under Jamoat Rudaki will be damaged.

Ibodullo Nematzoda, Chairman of Jamoat Rudaki, Vose.

More detailed analysis on dynamics of the most dangerous natural phenomena occurrence in Project districts is reflected in the document-report on “Social assessment of SCINHP”.

---

<table>
<thead>
<tr>
<th>Vose district, Khatlon province</th>
<th>Jamoat</th>
<th>Rudaki</th>
<th>K. Rajabov</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total area (hectare)</td>
<td>1649</td>
<td>8864,8</td>
<td></td>
</tr>
<tr>
<td>Population – total (thousand)</td>
<td>10490</td>
<td>27237</td>
<td></td>
</tr>
<tr>
<td>Including (%): men</td>
<td>49,5</td>
<td>49,5</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>50,5</td>
<td>50,5</td>
<td></td>
</tr>
<tr>
<td>Nationality structure (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tajiks</td>
<td>97</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Uzbeks</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Number of labor migrants</td>
<td>250</td>
<td>645</td>
<td></td>
</tr>
<tr>
<td>Number of villages</td>
<td>4</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Households</td>
<td>1270</td>
<td>3481</td>
<td></td>
</tr>
<tr>
<td>Mahalla committees</td>
<td>6</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Dehkan farms</td>
<td>275</td>
<td>435</td>
<td></td>
</tr>
<tr>
<td>Educational institutions</td>
<td>4</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Medical institutions, including:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>health centres, first-aid posts, hospitals</td>
<td>5</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Water Users Associations</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Mosque</td>
<td>4</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>
For assistance and support to the state structures for prevention and elimination of emergency situations at level of local communities/villages, Voluntary Rescue Groups (VRG), as a local territorial subsystem, are created according to the order of chairmen of Jamoats. Within the frames of implementation of DIPECHO-10 Project, Voluntary Rescue Groups (VRG) have been established by OXFAM in 8 Jamoats and 8 villages of Vose districts, which were equipped with a package of special stock and tools for carrying out of rescue actions. Such VRG were created in Jamoat K. Rajabov, village "Pakhtakor" and Jamoat A.Rudaki, village "Mehnatobod" by local population, living near to dangerous sites. Each group is created from 20 - 40 persons with a Head of the Group. On the basis of VRG Regulation, the head of group, is considered as the chairman of Mahalla committee i.e. he/she is selected from among officials, responsible and active local residents. Members of voluntary groups are local residents, specialists of different branches: heads of Dehkan farms, teachers, medical workers, drivers, temporarily jobless. Selection of VRG members is done taking into account the necessity factor, i.e. by professions, which are most needed and from those people who are not in need to leave for labor migration.

The created VRG under the Project are exemplary model and using their methodology other similar groups are created in all districts and in each village of the country. According to Order of the Chairman of Committee for Emergency Situations and Civil defence under the Government of RT (26/08/2017, No.157), Regulation on formation of Voluntary Rescue Group at level of village within the limits of Uniform State System is approved. However, mostly, due to absence of financial support, i.e. without equipment and special preparation, the groups actually exist only on a paper.

"Our village is located near to the destroyed section of the embankment. We actually do not have any tools, there is no experience and corresponding knowledge. At emergency situation occurrence, we cannot organize the qualified rescue operations even on elementary level. We have to use any available tools and to wait for help from outside. To organize and support a rescue group in our village is a burning issue.

Bobokhonov Nurullo, Leader of village "Kafortkhona", Jamoat K.Rajabov, Vose

4.3. Geographical characteristic of the Project area

The site of bank strengthening works is a part of Yakhso valley. The river Yakhso is the left inflow of the river Kyzylsu which takes its beginning from ridges of Hazrati Shoh (which is named Mognakiyon in upper reach), southwest spurs of the Darvaz ridge. The length of the river makes 160km, the catchment area 2710 km². Source of the rivers is mixed, mainly the snow source. The high waters occur in the period from March to May, the maximum level in May, the minimum level is in August. The river is characterized by development of subsurface waters.

The plain part of the Yakhso valley is the result of erosion-accumulative activity of the river and represents a series alluvial and alluvial-proluvial terraces. The river Yakhso flows in to the river Kyzilsu in its middle reach. The river channel laid in loams, silted and the banks are steep. During the high waters the river bears a considerable quantity of the suspended deposits. Water is muddy. The amplitude of fluctuation of the river level makes-1,99-3,4m.
4.4. Climate

The climate of Vose district is characterized by a considerable quantity of solar energy, dryness and it is sharply continental. The thermal mode of territory has positive mid-annual air temperature. In July the monthly average temperature as per the long-term data of the area makes + 30.5°C. Precipitations in the form of snow do not form a steady snow cover. The maximum precipitations are in March. In the summer period rains happen rarely. According to the meteorological station of Vose, the winter temperature for December and January makes -2.7°C. The quantity of precipitation within the afore mentioned sites of works makes – 260 mm. The major part of precipitations in the form of rain and snow occur in spring – winter period. The basic winds are of northeast, the hot wind named "the Afghan" blows in the area bearing a considerable quantity of dust. Average wind speed fluctuates from 0.4 km/s to 7 m/s.

4.5. Flora

During development of the given territory for irrigated agriculture the protogenic vegetative cover radically has changed. The modern vegetative cover in the territory of Sub Project is presented by agricultural lands of various sown crops and plantations of orchards. In settlements and private homesteads, various fruit and decorative plantings and vegetable crops are widely cultivated.

In early spring the valleys and foothills are covered with a bright carpet of flowers: poppies, buttercups, and bluebells. Saksaul (haloxylon), wormwood, artemisia, camelsthorn (alhagi camelorum), and numerous types of saltwort (salsola) add their green to the picture. River flood-plains are filled with dense bushes composed of tamarisk, reed, thorny of Central Asian oleaster, and Asian poplar. Delights to the eye include the deep-green crowns of pistachio trees hawthorn, wild almond, maple, walnut, and juniper. Such valuable trees as wild pomegranate and fig can also be found occasionally.

Sites along bank structures are covered by natural herbage and used for grazing of livestock. On agricultural fields where the close location of ground waters and salinization of soils takes place, the unproductive grassy vegetation grows. Choked collectors frequently are grown with reed and other unproductive vegetation.

According to Department of preservation of the environment, there is no rare vegetation or endangered species.

4.6. Fauna

While Tajikistan is the home for a wide variety of animals and birds, the biodiversity of wild fauna in the Project zone is poor. Foxes, hares, eagles, small rodents etc. inhabit in Vose district. According to the information provided by local department of preservation of the environment rare and vanishing species on the Site is not present.

Common kinds of birds inhabit in the district territory: chick-weed, small dotterel (Charadrius), bank swallow, brown and ordinary dipper, white wagtails and a considerable number of river terns and migrating birds: black stork (Ciconia nigra) and white stork (Ciconia ciconia), the black martin (Apus apus), shrike (Lanius schach), pink starling (Pastor roseus), Egyptian vulture
(Neophron perenopterus) and saker falcon (Falco cherrug). The falcon (Falco cherrug) which can be considered as rare feathery, has the hunting area, usually in deserts, but it also can be found in project territory. According to the information provided by local department of preservation of the environment, important, rare, being under the threat of disappearance or protected kinds of birds or places of their dwelling are not registered.

4.7. Water environment

Marinka (Schizothorax) representing the carp (Cyprinidae) fish family prevails in the local rivers. Four kinds of fish are registered in the Red Book of Tajikistan. None of those species inhabit in the Project area.

The conducted surveys have shown the following:
− No rare and vanishing species of plants presented in Project territory;
− No no reserves of the wild nature, sites of cultural and historical heritage;
− No rare, being under the threat of vanishing or protected kinds of wild animals and birds and also places of their inhabiting;
− No water-marsh or other essential boggy lands included into Ramsar Convention in the Project area.

4.8. Site assessment

To develop ESMP it was necessary to conduct Site sections assessment. Field researches, meetings and information gathering on Project territory have been held for this purpose. The main kind of rehabilitation works in the Sub Project is complete rehabilitation of an embankment section in the extent \textbf{L-735} meters. The destroyed section is located on the right side of the river Yakhsu and is a part of the main embankment which total length makes \textbf{L-3335} meters and it passes through the territory of two Jamoats: Rudaki and K.Rajabov. The embankment constructed back during the Soviet times has been put in operation in 1976. As a result of mudflows, inadequate financing and maintenance service, the embankment was partially, in some places completely was destroyed. Some sections have been rehabilitated by Management on construction of the governmental Sites (1200 meters) and by ADB program (1400 meters). Due to shortage of the financial means, the destroyed section of the Embankment in the extent of \textbf{L-735} meters has not been rehabilitated. Land areas under crops and settlements in this location are under the threat of flooding.

The selected Project Site located in Yakhsu river flood plain is included into balance sheet of the local state water economic organization functioning in capacity of operational unit for carrying out of bank strengthening, repair and maintenance works. There is no vegetative cover on the site of prospective construction. In a distance of one kilometer from the Project site there are the settlement "Kaftarkhona" and nine Dehkan farms the population of which are engaged in cultivation of orchards, vegetable, melons, cotton and grains. Within a close distance from the Site there is a functional Asphalt-concrete plant having great value and importance for social and economic development of the Kulyab zone, which provides jobs for local population.
Land strips along the bank protection structures are special zones intended for execution of operational and maintenance works. According to long-term practice, at execution of construction and rehabilitation works, local materials are mainly used as construction materials.

Licenses, permissions and admissions for implementation of the Project activities are not required. The given section of the Sub Project is under jurisdiction of the Department of preservation of the environment of Vose district.

4.9. Establishing of preliminary number of direct and indirect beneficiaries under the Sub Project

Beneficiaries are the people or groups who will directly receive benefit from the Project activities. Project actions cover the territory of village "Kaftarkhona", Jamoat K. Rajabov in where the designed Site is located. In case of failing to implement the Sub Project, i.e. rehabilitation of the destroyed sections of the embankment, four villages under Jamoat Rudaki will be damaged as the current of mud flows is directly focused to their locations. Preliminary number of beneficiaries, the population who directly or indirectly will receive benefit from implementation of the Sub Project actions, along with total number of Jamoats, villages and the population covered by the Project, are shown in the table below.

<table>
<thead>
<tr>
<th>District</th>
<th>Jamoat</th>
<th>Village</th>
<th>Households in Project villages</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vose</td>
<td>K.Rajabov</td>
<td>Kaftarkhona</td>
<td>280</td>
<td>2171</td>
</tr>
<tr>
<td></td>
<td>Rudaki</td>
<td>Mehnatobod</td>
<td>502</td>
<td>4364</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anoriston</td>
<td>356</td>
<td>911</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sari Angur</td>
<td>52</td>
<td>4023</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ghofilobod</td>
<td>163</td>
<td>1192</td>
</tr>
<tr>
<td>Total:</td>
<td>2</td>
<td>5</td>
<td>1353</td>
<td>12661</td>
</tr>
</tbody>
</table>

As it is seen from the Table, the total number of beneficiaries in the Sub Project makes **12661** persons. In addition, the information on location of beneficiaries of the Sub Project, extents of the Site which is subject to rehabilitation and other infrastructure of the location which will be protected or will be less subject to danger at occurrence of threat of natural disasters, after implementation of Project actions are shown in the preliminary Scheme below.
5. DEFINITION OF THE PROJECT IMPACT ON THE ENVIRONMENTAL AND SOCIAL CONDITIONS, CONSEQUENCES MITIGATION MEASURES

This Section covers the potential environmental and social consequences which can result from implementation the Sub Project which includes a stage of the contractor mobilization (creation of temporary small townships, time roads etc.), a stage of civil work and operation. It also considers the recommended preventive actions and the measures directed on mitigation and reduction of revealed consequences to technically realizable minimum.

It is supposed that the major part of adverse effects on the surrounding and social environment can arise mainly at stage of construction which will be insignificant and have the nature of temporality.

Finally, all offered measures on prevention or mitigation of the possible adverse consequences, concerning construction, will be included in the tender or contract documentation, becoming, thus, obligatory elements of contracts for execution of civil works and implementation of supervision of construction activities.

5.1. Definition of social and environmental risks and impacts
The conducted researches have shown that Project impacts on social and environmental conditions of the selected zone will be positive. Project actions, basically, provide the mechanized work on rehabilitation of bank protection structures. As a result of rehabilitation activities, waste representing danger to water sites and environment as a whole, will not be created. Construction of bank protecting structures will prevent destructive actions of water and will create optimum conditions for uniform and smooth course flow of high waters, will halt processes of the overall banks scouring. Thus operation of bank protection infrastructures, water security of farmlands, and also conditions of protection of the lands against mud flows will be improved. Project actions are directed on improvement of water resources management and will not render negative potential impact on Site’s flora and fauna.

The Project provides opportunities for employment of local population at which the factors of involvement of categories of socially-vulnerable strata and ethnic minorities to the Project benefits will be taken into account. The special attention will be attached to gender aspects, wider participation of women in a rehabilitation works.

Project actions will not affect land tenure since all works will be conducted on existing Site.

The Site is located outside of settlement and cannot directly affect the population safety and health.

Actions for implementation the Sub Project will not involve any physical moving, also it will not cause any negative impact on inhabited, industrial, transport and other infrastructure.

There are no natural reserves, sites of a cultural and historical heritage in the Project territory, there are no objects which have value for local population (mosques, cemeteries etc.), thereupon any impact on cultural resources are not expected.

Civil works on the selected Project site will not impact on local landscape, also it is not expected any negative impact on orchards or kitchen gardens.

Within the Project territory there are no rare wild species of animals and plants which are under the vanishing threat.

During the Project actions implementation, risks and adverse effects on the surrounding and social environment can arise at construction stage, during the functioning of labor camps and while using of access roads. At the mentioned stage, basically, the dust and exhaust gases emission from construction and transport machineries, and the problems connected with noise, liquid dumps, gathering and storage of waste may occur. Further, additional risks can be connected with inflow of considerable number of manpower from the outside for carrying out of civil works and discrimination of ethnic minorities in access reception to the Project benefits. However, the risk is minimum, considering experience of the Project Implementation Unit (PMU, FVWRMP) and the requirements of the local authorities considering the interests of local population. Mainly the local labors, approximately 30 workers, will be involved for construction works, as the Site is small in size. Involvement of local labor will prevent any conflict situations as the local traditions are based on mutual respect and social local conflicts are not admitted. As, the basic structure of workers will be employed at local level, the temporary construction camp is meant by the site for storage and maintaining of machineries. The detailed information will be provided after carrying out of Bidding procedures and hiring of a contract organization.
The table below shows the potential risks and project impacts on environment of the bank protection structures during the execution of rehabilitation works and their operation.

<table>
<thead>
<tr>
<th>Section</th>
<th>Impact</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Duration</td>
</tr>
<tr>
<td>I. Rehabilitation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water quality</td>
<td>leak of oil products using technology</td>
<td>Short term</td>
</tr>
<tr>
<td>Air quality</td>
<td>Dust, produced by the movement of vehicles and heavy machineries on the roads, seasonal dust. Exhaust fumes from vehicle and equipment</td>
<td>Instant action</td>
</tr>
<tr>
<td>Noise</td>
<td>Significant noise increase is expected during construction work and from vehicles</td>
<td>Short term</td>
</tr>
<tr>
<td>Soil quality</td>
<td>Reduction of salt content in soil, improving its structure and fertility</td>
<td>Long</td>
</tr>
<tr>
<td>Land reclamation condition</td>
<td>Lowering of ground waters, decreasing of salt content and prevention of secondary salting</td>
<td>Long</td>
</tr>
<tr>
<td>Solid waste</td>
<td>Solid waste produced during the construction period are old pipes and wires, the remains of building materials, loose sanding, stones, concrete and household waste.</td>
<td>Short term</td>
</tr>
<tr>
<td>Biological diversity</td>
<td>Construction work does not affect the biological diversity of the project area</td>
<td>Long</td>
</tr>
<tr>
<td>Natural habitat</td>
<td>Project works improve natural habitat</td>
<td>Long</td>
</tr>
<tr>
<td>Public healthcare</td>
<td>Project activities will have a positive impact on improving the public healthcare situation.</td>
<td>Long</td>
</tr>
<tr>
<td>II. Operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank protection embankments</td>
<td>Scouring, destruction and subsidence</td>
<td>Short term</td>
</tr>
<tr>
<td>Pilot ditch</td>
<td>Sediment fouling. Sediment accumulation and edge destruction.</td>
<td>Short term</td>
</tr>
</tbody>
</table>

The data in these tables shows that the potential impacts during the rehabilitation and operation phases are mainly short-term, local and moderate.

5.2. Actions procedure in case of archeological find detection

Construction contracts connected with carrying out of excavations usually include an order of situations regulations when physical subjects having cultural value are casually found out. After casual revealing of subjects the Contractor has to suspend physical works, inform the client, local authorities and the archeology department. Archaeological sites found during the work must be processed in accordance with national law.

5.3. Recommended preventive actions and measures on mitigation of potential impacts

Based on conducted field researches and site area assessment, identifying the above mentioned potential risks and impacts on environment and social environment, measures developed aimed for their prevention, minimization, reduction and mitigation, that may occur during implementation of project activities.
In environmental and social management negative impact decrease management plan (ESMP) a list of potential impacts on environment and public health, with the measures on mitigation is provided. (annex 1.).

ESMP defines these measures in accordance with the stages of the project implementation, in which potential impacts are most likely to occur, these are:

- **Stage of rehabilitation works, which includes actual construction works funded in frame of the project on the rehabilitation of bank protection structures; and**
- **Stage of operation, covering the rest of the project after completion of actual rehabilitation works.**

6. **MONITORING AND REPORTING ON ENVIRONMENT AND SOCIAL ENVIRONMENT**

Monitoring of the environment and social environment is an important aspect during the entire period of the subproject implementation, which should be carried out by the implementing agency PMU/ALRI. The PMU will provide information on the basic protection aspects during execution of the rehabilitation works, especially their environmental/social impact and the efficiency of mitigation measures taken. For tracing of requirements and obligations on maintenance of protection measures, it is also necessary to prepare Social and Ecological Monitoring Plans, which includes the following key elements:

- What is monitored?
- Where does monitoring take place?
- How will monitoring be done? (type of monitoring equipment)
- When and how often monitoring necessary and most effective?
- Why is one or another parameter is being monitored? (what does it tell us about the ecological impact?)

Such information allows to evaluate the success of mitigation as part of project supervision and take corrective actions as necessary (annex 2,3.).

7. **METHODOLOGY**

To achieve the objectives, qualitative research methods were used: semi-structural interviews with the following key informants of the Vose region:

1. Kholov Sherali – Deputy Chairman of the State Executive Body;
2. Azimov Suhrob – Head of Economic Development and Trade sector;
3. Usmonov Subhon – Head of the District Department of CoES and Civil Defense;
4. Ibodullo Nematzoda – Chairman of the jamoat Rudaki;
5. Sitamov Amirhon – Secretary of the jamoat H. Rajabov;
6. Bobohonov Nurullo – Kaftarhona village leader;
7. Karaev Emomali – Head of the District Department of Environmental Protection.

8. **GRIEVANCES REDRESSING MECHANISMS (GRM)**

For informing and the account of opinions of communities and the persons subject to impact of the Sub-Project, information addressing system will be introduced which was developed by the specialists from SCINHP: “Grievances Redressing Mechanisms and other types of addressing”, including feedback mechanism, as a component of GRM.
Main objective: reception of the operative and objective information, consideration of references, which are received from beneficiaries at all stages of the Sub-Project implementation and their assessment for the further works improvement.

Kinds of references: the grievances/claims, offers, inquiries, positive responses / gratitude.

The references directly connected with the Sub-Project implementation, where their conformity to eligibility criteria will be defined, are subject to consideration. All references will be registered in the grievances and offers register book, distributed by categories and resolved according to target dates. (More detailed information is reflected in WB document “Grievances and Offers Redressing Mechanisms”).

For local population informing and awareness, information boards, boxes for receiving of grievances, offers and other kinds of references along with contact information will be installed on the construction site.
**Annex 1. Management Plan on Decrease of Negative Impact on Environmental and Social Environment (ESMP)**

<table>
<thead>
<tr>
<th>Social elements</th>
<th>Impact and risks</th>
<th>Impact mitigation proposed measures</th>
<th>Institutional responsibility for measures implementation</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONSTRUCTION PERIOD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Common of socio-ecological elements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Noise (Temporary) | During the performance of construction works the sources of temporal noise are the working construction and road machinery. | ➢ Works will be conducted on the greatest possible distance from inhabitants’ premises.  
➢ The machinery will work in the afternoon in certain hours. Works will not be conducted at night.  
➢ During the construction period within the territory of works execution sound level should not exceed the value recommended by established norms. | Contract organization.  
Criteria and specifications for entering into the tender and contract documentation. | PMU specialists: the supervision engineer, the ecologist, the sociologist |
| Dust (Temporary) | Dust, produced by the movement of vehicles and heavy machineries on the roads, seasonal dust.  
Exhaust fumes from vehicle and equipment | The basic construction works will be conducted during the low water period, in autumn-winter period, with precipitations in the form of rain and snow. Nevertheless, for prevention or minimization of dust spreading, the overhead sprinkling method should be used.  
➢ Equipment transporting bulk materials will be covered by removable awnings;  
➢ Delivery of cement to construction sites is carried out only in packaged airtight bags;  
➢ Use of dust masks and other protective clothing;  
➢ Operation vehicles with a defective fuel system, which is in excess of emission control standards is not allowed;  
➢ Burning of construction and household wastes on the working site is not allowed. | Contract organization | PMU specialists: the supervision engineer, the ecologist, the sociologist |
| Soil and water pollution | Soil and water pollution by oil products, formation of household waste. | ➢ Avoid a leakage of fuel and oil from vehicles. Conduct daily inspections of equipment for oil leaks; use a designated place for this. Prohibit washing vehicles on construction site. Strongly keep up to sanitary regulations and norms, i.e. human activities wastes from construction camps; | Contract organization | PMU specialists: the supervision engineer, the ecologist, the sociologist |
| Movement of construction machinery, transportation of loads (Temporary) | Increased movement of heavy vehicles that are transporting building materials, equipment, increasing the risk of traffic accidents and injuries among workers and the local population, inconvenience on inter-farm roads during excavation and concrete works on banks and other protection embankments. | ➢ Basic appropriate construction standards and standards utilized during construction;  
➢ Removing topsoil;  
➢ Site improvement in accordance with the project. | Contract organization | PMU specialists: the supervision engineer, the ecologist, the sociologist |
|---|---|---|---|---|
| Safety of workers and inhabitants | Industrial traumas | ➢ Observance of safety precautions regulations;  
➢ Carrying out of repair and profiling of access roads to embankments with watering of the traffic sections is provided.  
➢ Regulation of movement of machinery for unobstructed and safe internal movement of local population.  
➢ Posters, special signs for local people warning the danger. | ➢ Local bodies and local population will be informed on forthcoming project activities in appropriate way.  
➢ All works should be carried out observing the security measures and by use of individual protection means (protective helmets, gloves, masks, belts at necessity and footwear);  
➢ Site platforms should be equipped by information boards and the indexes notifying workers about construction rules and norms of works.  
➢ Observance of safety precautions and creation of sanitary conditions. Instructions on safety precautions.  
➢ Before the beginning of the construction works, all personnel of the contractor should pass a course on protection and safety of works.  
➢ Construction camps should be provided by the first-aid medical set. | Contract organization | PMU specialists: the supervision engineer, the ecologist, the sociologist |
| Construction sites Organization and dismantling, construction waste (Temporary) | Elimination of possible violations.  
Occurrence of disputes with local population | ➢ Construction site protection;  
➢ Ensuring of corresponding management of transportation means on access roads to the site platforms;  
➢ Installation of information boards and safety signs;  
➢ Posters, special signs for local people warning the danger. | ➢ Criteria and specifications for entering into the contract organization | PMU specialists: the supervision engineer, the ecologist, the sociologist |
- It is necessary to establish and observe norms of behavior of workers;
- Contractor should respect and observe local customs and traditions;
- Contractor should respect local women and their private life;
- After construction end, platform dismantle, with corresponding restoration of the territory to its initial condition (export of waste, machinery removal) should be made.
- The contractor should dispose of unnecessary materials only in designated areas. Introduce a ban on open burning of construction waste. On the basis of an agreement with a local company, organize the collection and disposal of waste from the construction site to an officially authorized waste field.

<table>
<thead>
<tr>
<th>Aesthetics and landscape</th>
<th>No essential additional changes of landscape, orchards and cultivated fields due to construction are expected.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural heritage. Archeological discovery</td>
<td>No impact on cultural resources is expected. There are no nature reserves, objects of cultural and historical heritage on the project territory, no objects of value to the local population. After casual revealing of subjects the Contractor has to suspend physical works immediately and to notify the appropriate local authorities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human community, poverty</td>
</tr>
<tr>
<td><strong>Labour attraction</strong></td>
</tr>
<tr>
<td>Contract organization</td>
</tr>
<tr>
<td>PMU specialists: the ecologist, the sociologist</td>
</tr>
<tr>
<td><strong>Gender quota</strong></td>
</tr>
<tr>
<td>Contract organization</td>
</tr>
<tr>
<td><strong>Child labour use</strong></td>
</tr>
<tr>
<td>Observance of these positions will be traced during</td>
</tr>
</tbody>
</table>
supervision of construction work.

<table>
<thead>
<tr>
<th>Land acquisition and the involuntary resettlement</th>
<th>Project activities will not cause any physical or economic displacement. There will be no land acquisition, and no temporary or permanent restriction of land user rights as all works will be carried out on existing Site within the exclusion zone.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflicts /Grievances and other appeals</td>
<td>Occurrence of conflict situations during execution of construction works and issues of economic, social, ecological and other nature among the beneficiaries. Introduction of the mechanism of grievances and proposals consideration for prompt reaction to all kinds of appeals and their efficient control, i.e. maintaining records of appeals and taking corresponding actions for their resolution. (More detailed information is provided in the document “Mechanisms for consideration of grievances and offers”.)</td>
</tr>
<tr>
<td>Operative period</td>
<td>Observance of positions of the document. PMU Consultant on social aspects. The contract organization.</td>
</tr>
<tr>
<td>PMU specialists: Project Coordinator, Sociologist.</td>
<td></td>
</tr>
</tbody>
</table>

**OPERATING PERIOD**

<table>
<thead>
<tr>
<th>Flood protecting Embankments</th>
<th>Scouring, destruction and subsidence</th>
<th>Conducting training on the proper maintenance of protection embankments, ensuring the sustainability and duration of the object facility. Implementation, as necessary, of activities on stabilization and prevention of river shore cutting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digging</td>
<td>Sediment fouling. Sediment accumulation and slope destruction.</td>
<td>ALRI and its districts subdeparments, CoES, jamoat</td>
</tr>
<tr>
<td>Public safety</td>
<td>Protection of the surrounding settlements and land from floods</td>
<td>EPC site inspection</td>
</tr>
</tbody>
</table>

➢ Timely implementation of preparatory measures during notification of expected floods and the implementation of necessary work during their passage.
➢ Conducting scheduled repair and restoration work after the flood.

Annex 2. Ecological Monitoring Plan for flood protection embankment on Yakhsu river
<table>
<thead>
<tr>
<th>Project stages</th>
<th>Parametre</th>
<th>Location</th>
<th>Method, equipment</th>
<th>Frequency</th>
<th>Objective</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Rehabilitation / construction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Embankments and protection by RCC slabs</td>
<td>Cleaning of silt and sediments; Garbage removal</td>
<td>Rehabilitation sections of the river bed</td>
<td>Inspection of sites of soil laying on embankments from bank and leveling of the top part</td>
<td>Once: to, during: and after project end</td>
<td>To provide observance conditions</td>
<td>PMU Contractor</td>
</tr>
<tr>
<td>Complete rehabilitation of bank protection embankment</td>
<td>Condition of soil laying and their leveling . Non-admission of spreading of sediment on roads and other communications</td>
<td>Rehabilitation site</td>
<td>Field visual research. Reports on ecological inspection, application of norms of environment and observance.</td>
<td>Once a month during execution and after end.</td>
<td>To define quality of management of Rehabilitation and guarantee of public health.</td>
<td>PMU, Contractor CPE</td>
</tr>
<tr>
<td>river-training works (cut-off the rivers)</td>
<td>Cleaning of silt and sediments; Safety of work.</td>
<td>Rehabilitation site</td>
<td>Visual inspection. Reports on ecological inspection, application of norms of environment and observance</td>
<td>Once: to, during: and after project end</td>
<td>To provide observance of Conditions and terms</td>
<td>PMU Contractor CPE</td>
</tr>
<tr>
<td></td>
<td>Emissions in atmosphere</td>
<td>Ground roads</td>
<td>Reports on ecological check and observance of nature protection requirements</td>
<td>Time in the beginning of construction work</td>
<td>To define quality of emissions</td>
<td>PMU Contractor CPE</td>
</tr>
<tr>
<td></td>
<td>Production risks</td>
<td>Rehabilitation site</td>
<td>Data MH about accidents</td>
<td>Periodically</td>
<td>To reveal quantity of accidents</td>
<td>PMU Contractor CPE</td>
</tr>
<tr>
<td><strong>II. Operation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flood protecting Embankments</td>
<td>Scouring, destruction and subsidence</td>
<td>Rehabilitation site</td>
<td>Daily detour and survey</td>
<td>After end of works</td>
<td>To define any destructions of sites</td>
<td>Laboratories of CPE; ALRI</td>
</tr>
<tr>
<td></td>
<td>Roads</td>
<td>Operational roads to lengthways embankments</td>
<td>Analysis of reports management of land reclamation and irrigation , laboratories of CPE</td>
<td>Once a quarter</td>
<td>Monitoring of embankments and road</td>
<td>Laboratories of CPE</td>
</tr>
</tbody>
</table>

Annex 3. **SOCIAL MONITORING PLAN FOR FLOOD PROTECTION EMBANKMENT ON YAKHSU RIVER**
<table>
<thead>
<tr>
<th>Which parameter is to be monitored</th>
<th>Aim</th>
<th>Where does monitoring take place</th>
<th>How will monitoring be done</th>
<th>When?</th>
<th>Responsible person</th>
</tr>
</thead>
<tbody>
<tr>
<td>The quantity of hired labor at the local level, with the number of women recruited</td>
<td>▪ A review of labor agreements, production workbook and time sheet for determining the number of workers hired in local level. ▪ Control over the influx of labor from outside.</td>
<td></td>
<td>visually</td>
<td></td>
<td>Sociologist, monitoring specialist</td>
</tr>
<tr>
<td>Determination of the quantitative composition of the project beneficiaries, by gender</td>
<td>Organization and conduction of meetings with the leadership of local Hukumats, jamoats, villages to collect information about the population affected by the project.</td>
<td>Organization of targeted meetings, visually</td>
<td></td>
<td></td>
<td>Monitoring specialist, sociologist</td>
</tr>
</tbody>
</table>

### Indicators

#### Observance of terms of the information component of the “Management Plan on Decrease of Negative Impact on the Social Environment”
Overview of the implementation of the recommendations: the presence of an information board near the construction site and its corresponding design (indicating the name of the project and the donor and contracting organizations, L and deadlines)

#### Handling management
The presence of a box for complaints and suggestions, indicating contact details.

#### Observance of working and rest terms
The presence of temporary trailers for rest and a place of food for workers.

#### Safe handling
Review for warning signs and fencing.

#### Safety for workers and locals. Production risks.
▪ Determine the availability of personal protective equipment (masks, helmets, gloves, etc.), first aid kits, safety instructions and notes on the training of personnel.  
▪ Identify cases of workplace injuries.

#### Noise and dust
Compliance with the ESMP.

#### Using child labour
Identify cases of child labor at a construction site

#### Vulnerable populations and ethnic minorities
To identify the presence of persons or groups in a vulnerable or disadvantaged positions and do not allow any bias attitude or discrimination regarding gaining benefits from the project.

### Construction

Contractor, Supervisor, Sociologist
Annex 4. Roles and duties on execution of Socio-Ecological Monitoring (SEM)

PMU should inspect a site before, during and after end of rehabilitation work for the purpose of ensuring of full conformity with requirements of the contract and ESMP. Final payment to Contractor will be made after Final review with special attention to the requirement of returning the site to its initial condition after end of rehabilitation works.

Monitoring of sites will include survey and as far as possible quality checks of embankment and roads in territory of a site of rehabilitation work; attraction of safeguards specialist will help with development of regular monitoring and keep to socio-ecological measures on sites of rehabilitation work.

PMU will bear responsibility for monitoring of appropriate execution of preventive actions and measures on mitigation that is required within the limits of ESMP. It means carrying out of periodic visiting of sites for the purpose of check of execution of appropriate preventive actions or measures on impact mitigation. PMU will conduct also any assessment of project sites for the purpose of definition of efficiency of the accepted measures and impact of project activities on socio-ecological environment.

Submission of reports. In regular (semi-annual) reports on implementation of projects PMU should provide information on conformity position by the co-ordinated measures on impact mitigation on the socio-ecological environment. PMU will keep account results of monitoring and project supervision, and to store them during all period of implementation of the project. PMU will inform on results of the program of monitoring in regular reports on a course of execution of the project, represented in WB; WB supervision missions will consider results of the program of monitoring on a regular basis.

Terms of ESMP should be included in contracts on selected bank protecting structures both in specifications, and in amounts of works. It will be necessary for contractor to include these expenses in the financial offers. All contracts should be include socio-environmental aspects and answer to requirements of the legislation of the Republic of Tajikistan and WB procedures.

Annex 5. Responsibility of contractors
Executors of works bear responsibility for following actions for environment protection:

I. As far as possible to preserve a natural landscape at production of works, and also to conduct them so that not to do much harm to environment. There, where is necessary protective measures for prevention of damages of trees, young plantings, and also bushes should be provided. In case of inevitable damages to take corresponding measures for restoration of original conditions.

II. Washers and places of maintenance service of machineries and vehicles is necessary to equip with mud settlers and oil cleaners; to spill the used oil and technical liquids in special containers with their subsequent sending for rehabilitation; to exclude leak of oil products at their transportation, all waste of operational materials of maintenance service to collect and store in specially taken away places with the subsequent cleaning when due hereunder.

III. Actions of contractors should be executed so that to prevent casual spillage of the infected substances, construction garbage, etc. pollutants in reservoirs or penetrating in underground waters. A raw sewer and sanitary waste, trailer wastes, combustive-lubricating materials enter into such pollutants. That water waste which arise from processing and concrete mixing, should not get to canals without special sedimentation in embankments (basins), without passage from the special gravel filters and other processings not to worsen quality of water and not to do much harm to water inhabitants. Contractor should guarantee corresponding disposal from waste materials and garbage. That waste which are subject to a burial place or burning, also should not affect negatively air, soil and to inflows of ground waters.

IV. Contractor should lower to a minimum pollution spreading by air and water. At transportation or processing with the substances forming a dust, cement the Contractor should reduce to a minimum their spreading by means of overhead sprinkling or other methods.

V. During works of vehicles noise impacts should be reduced to a minimum, and organize work of the noisy equipment in working hours established by the legislation.

VI. Contractor should plan in advance, where and how sites will be located such as, working camp, warehouse and territory of storage of machineries which will be dismantled without damage to environment after end of works. These sites should be located so that to a maximum possible to keep natural environment (trees and other vegetation).

VII. Potential impacts and standard measures on mitigation of consequences for the construction work, connected with rehabilitation of structures include the prevention from accidents during construction: Executors should accept all necessary safety measures on types of works. Dismantle old unusable of bank protection structures, can cause pollution of bank by construction garbage. To avoid the given impacts, is necessary to make the following: (a) to replace damaged sites with new constructions, (b) during dismantle of old structures to avoid accidents in the organized order on construction sites; (c) to transport and bury them in the wastes established by local bodies. They should be executed with participation of local ecological and the health inspector, by signing of the special document on this subject; And (d) at work with asbestos sheets, workers should carry the special closed clothes, gloves and respirators;

VIII. The contractor, in order to avoid any troubles, must involve labor at the local level. Involvement of the local population in to construction works should be gender-sensitive and involving socially vulnerable population groups. The contractor should not infringe on the interests of ethnic minorities living in the project area.

Annex 6. Recommended actions and measures on safety precautions and
labor safety at execution of mechanical construction and repair works

At occurrence of dangerous working conditions on a construction site people should be immediately evacuated, and dangerous places fenced.

At approach to lines of underground communications; land works should be conducted under supervision of the executor of works or masters, and in immediate proximity from the cables which are energized, besides, and under supervision of workers of the power sector.

For excavations with slopes more abruptly than natural slopes of the given land the limiting distance of the thrown out land from the edge should be specified by calculations.

At the mechanized management of excavations it is necessary to check up serviceability of vehicles and machineries, presence at them protective protections and safety adaptations. To work with faulty vehicles is not permitted.

For avoiding traumas members of the mechanized team should know accurately and strictly carry out safety precautions regulations at work with digging machineries, and also at technical maintenance and repair.

The workers serving the machinery and functioning it, should be supplied by the instruction containing:

- Rules of operating of machinery and maintenance of workplace;
- Requirements under safety precautions;
- Instructions on system of signals;
- About maximum loads and speeds of machineries;
- About measures which should be accepted to the worker in case of failure or malfunction of machineries.

To operation of vehicles the persons passed special training and having the certificate on the right of operating of vehicles are allowed.

Before the beginning of work the operator is obliged to check up:

- Condition of working platform;
- Serviceability of the engine and machineries;
- Reserve cables and their serviceability;
- Condition of working bodies;
- Presence of fire-prevention means and the first-aid set.

On machineries with hydraulic management check hydrosystem of the oil pump and hoses, by cable-operated vehicles serviceability of drums, frictional clutches or brake tapes of winch.

Before the beginning of work the operator is obliged to establish correctly the moment of ignition corresponding to conditions of start-up of the engine. Early ignition, as a rule, knocks out reverse motion of a cranked shaft of the engine and the handle that can damage the hand of the operator. Before start of the engine it is necessary for operator to be convinced of absence of extraneous subjects on rotating parts (the fan, the water pump, etc.).

At starting the engine by means of the handle it is not allowed to take it in a grasp: all fingers of a hand should be on the one hand handles, and the thumb is pressed to the index. It is not allowed to rotate the handle round. The shaft of the starting engine should be turned short jerks. It is not allowed to get over Dusted engine as in this case there can be a return blow.

At starting of the engine by means of cord it is not allowed to reel up it on a hand as thus the cranked shaft can rotate in other party and injure a hand. During start-up of machineries join only after 2—
3 minutes of work of the engine empty. The malfunctions which have been found out thus, eliminate immediately. All rotating details of the digging machinery — cogwheels, chain and time transfers, fans, flywheels, etc. should be protected casings. To include machineries at the removed protections it is forbidden.

Survey, adjustment, pulling up of bolts, greasing and preventive repair of digging machineries during their work are forbidden.

In places of work of digging machineries production of any other works and a finding of people on ways of their movement are inadmissible. At detection in a developed land of large stones, stubs or other subjects everything is necessary to stop and remove the machinery that can cause failure.

At overcoming of the digging machineries of abrupt, descents and lifting it is forbidden to include the running mechanism. To move vehicles on slopes with a steepness of more admissible it is forbidden. Working serving vehicles and machineries, should be dressed in suits without the hanging down ends.

Digging machineries establish and fix in the steady position excluding their overturning or spontaneous displacement, both under the impact of own weight, and from the engine. In a time off, and also during cleaning and repair digging machineries should be in the position excluding possibility of their start-up by extraneous persons for what starting arrangements should be protected from extraneous access.

It is forbidden to the operator of the digging machinery:

- During the functioning time of the machinery and its movement to leave a workplace or to transfer control of machinery to other person, to suppose strangers of persons or ancillary workers to starting of the engine, to sit down on caterpillars, to put on them clothes or other subjects;
- To stop the digging machinery under wires of the air electric system or 15 m from a transmission line are closer. Work and Displacement of digging machineries near to a transmission line are executed out under a direct management of the technical personnel. Technical officers should be present necessarily at digging machineries in functioning time and at Displacement of units.

At work by digging machineries it is necessary to observe following fire-prevention actions for the prevention and fire liquidation:

- In offices of operators there should be constantly a fire extinguisher in good repair;
- It is forbidden to store gasoline, kerosene and other inflammable materials in cabins of machineries. Fuel and lubricants should be stored in specially equipped places on distance not less than 20 m from machineries;
- At refueling of vehicles by fuel and lubricants, at survey of fuel blocks, and also for Dusting during winter time of internal combustion engines it is not allowed to use an open flame (torches, fires, blowtorches, etc.);
- It is forbidden to open canisters with gasoline blows on a stopper metal subjects;
- At fuel ignition to extinguish a flame follows only foamy - the fire extinguisher, sand, canvas or; clothes. To fill in fire with water, it is forbidden.
- At refueling of machineries by fuel It is not allowed to smoke and bring close fire; fill the engine in the afternoon, avoiding refueling at illumination. After refueling machinery fully rub off tanks. For engine start-up during winter time in a radiator fill in the warmed-up water, and in carter the warmed-up oil. It is forbidden to warm up the engine by a torch.

Excavators during the functioning time are placed on the planned platform and in order to avoid spontaneous Displacement fix portable support. It is forbidden to enclose under caterpillar tapes or
rollers of caterpillars of a board, a log, stones and other subjects for the prevention of displacement 
of the excavator during the functioning time.
At time cessation of work or at excavator repair the last should be moved to distance not less than 
2 m from the edge of slope.
During the movement of single bucket excavator its arrow should be set strictly in a course 
direction, and the bucket raised over the land by 0.5—0.7 m.
It is strictly forbidden for the operator of the excavator:
• To change the arrow angle of inclination at the lifted bucket;
• To include the rotary mechanism before the termination of filling of the bucket and its 
separation from the ground;
• To use machineries of turn and movement of the excavator for land cutting.
It is not allowed to move soil by the bulldozer on raise or under a slope of more than 30 °. At work 
on abrupt slopes, high embankments and at deepening in order to avoid overturning and slipping it 
is not allowed to do sharp turns.
Bulldozer work in radius of action of load-raising is not allowed. The operator of the bulldozer can 
start to work about the excavator after the excavator bucket will be lowered on the land, and the 
crane arrow is turned in the opposite side in relation to a site on which work should be executed out. 
Installation and dismantle of bulldozer on a tractor should be conducted under the direction of the 
mechanical specialist.
At work of the bulldozer with hydraulic management the oil temperature in hydraulic system should 
not rise more than on 60 °, oil should be absolutely pure.
The safety valve of hydraulic system should be adjusted by the mechanical specialist on a 
manometre on the greatest size of pressure and is sealed up.
During the functioning time the bulldozer driver should continuously observe the dumping area s of 
a blade;
At a short-term stop of the bulldozer the clutch couplings should be on, and the diesel engine should 
be on small turns, and levers of switching of speeds - in neutral position. Bulldozer descent under a 
slope should be only on the first speed. At a stop on a slope it is necessary to brake the bulldozer.
At work of the cable-operated bulldozer it is necessary to check regularly serviceability winch and 
cable systems. In the course of work watch the condition of winch, without allowing an overheat 
of its drums, tapes of brakes and friction clutches.
It is forbidden to work without a protective casing of drums of wench and a protective casing 
(pipe) for a cable, and also in the presence of 10 % and torn more cut wires from the total number 
as per 1 m-of canal. Greasing, adjustment and bulldozer repair should be undertaken at the 
switched off motor and the lowered blade.

Annex 7. Recommended actions and measures on safety precautions and labor safety for 
execution of manual excavations

A. General safety requirements:
1. Excavations should be executed out only taking into account safety precautions requirements. At 
approach to lines of communications excavations should be executed out under supervision of
the executor of works or masters, and in a security zone of functioning communications - under supervision of representatives of the organizations maintaining these constructions.

2. All organizations having around works of construction, should not later than 5 days prior to the beginning of excavations be in writing notified on forthcoming works and for days their representatives to a place of works for specification of a site of structures belonging to them and the coordination of the measures excluding damages of structures are caused.

3. During the execution of excavations on a traffic line or streets the organization making these works, should make and co-ordinate the scheme of protection of place of work and arrangement of traffic signs with bodies of the State traffic inspectorate.

4. To soil excavations persons not younger than 18 years, received instructing, trained in safe methods of work, examination of rules according to Position about order of training and examination on labor safety of heads, experts and the working enterprises, establishments and the communication organizations are allowed.

5. Workers should pass instructing on the workplace. The result of conducting of instructing, surname, date of conducting and the signature of the instructed worker are registered in special log.

6. Work is executed out by a team as a part of not less than two persons.

7. At excavation of soil occurrence of following dangerous and harmful production factors are possible:
   - danger to be the filled up by ground.
   - electrical shock.
   - adverse weather conditions (low temperature, high humidity).

8. Each worker should be warned about necessity of observance of rules of the internal labor schedule.

9. Supply workers with protective equipment/clothing and training for their use (protective helmets, vests, gloves, shoes, eye protection, etc.). In turn the workers should be responsible for maintenance and wearing them.

10. Workers should be trained on ways of rendering of the first pre-medical help.

**B. Safety requirements before the work beginning:**

1. To receive the task for execution of work from the foreman or the head.

2. To pass instructing on a workplace taking into account specificity of executed out works (Instructing is conducted by the foreman of sites).

**C. Safety requirements during the functioning time:**

1. By working out of soil workers should know and remember that land working out in excavations with vertical walls without fastening is supposed on depth no more, m:
   - 1 - in bulk sandy and big-fractured soils;
   - 1,25 - in sandy loams;
   - 1,5 - in loams and clays.

2. Land dismantling in excavations should be executed out in layers, it is not allowed to make these works as "undermining", with formation of "peaks".

**D. Safety requirements in emergencies:**

1. At occurrence of situations which can lead to accidents, it is recommended: Immediately to stop works and to inform the direct head. Operatively to take measures on elimination of causes of accident or the reasons which can lead to accidents.

2. At detection of unmarked on drawings of underground communications excavations should be stopped before finding-out of character of the found out communications and reception of the permission from the corresponding organizations on continuation of works.

3. In case of detection of any items of archeological or cultural significance, work will be stopped and national authorities responsible will be contacted in accordance with the chance find procedures described in the EMP Matrix (Table 5.2, above).
4. Construction contracts connected with carrying out of excavations, usually include an order of situations regulations when physical subjects having cultural value (FSCV) are casually found out. After casual revealing of subjects the Contractor has to suspend physical works immediately and to notify EPC on the case. The Contractor is obliged to adhere to the conventional international practice and to fulfill all corresponding requirements of the Government of the Republic of Tajikistan concerning preservation of historical and cultural values, including the requirement of all corresponding local authorities. In case of unexpected detection during works of cultural or historical artefacts (movable or immovable), the Subcontractor takes all necessary measures for protection of the items and notifies the Contractor, representatives of Institute of History, Archeology and Ethnography and Committee on affairs of youth, sports and tourism. If continuation of works endangers the found items works under the project will be suspended until acceptance of the co-ordinated decision concerning the found artefacts.

5. At casual damage of any underground construction the executor of works is obliged to stop immediately works, to take the measures providing safety of workers, to report the matter to the head and in emergency service of the corresponding organization.

6. At occurrence in slopes of excavations of signs of shift or slipping of soil workers should stop immediately execution of works and to leave the dangerous zone before execution of the actions providing stability of slopes.

7. It is necessary to inform on victims direct to the foreman sites or the head of the organization to inform in a first-aid post and to take urgent measures on rendering of the necessary first pre-medical help.

E. Safety requirements upon termination of work:
1. To clean and put in order the workplace.
2. The tool, equipment and other adaptations applied in work to clear of soil and to deliver to the basic place of work.
3. After the arrival to the basic place of work to remove overalls, special footwear and other means of individual defense, to clear and clean in the place intended for their storage.
4. On all lacks or malfunctions during work execution to inform the foreman or the head.