Initial Environmental Examination

Document stage: Final version
Project Number: 50259-002
December 2021

Uzbekistan: Western Uzbekistan Water Supply System Development Project

Package No. WU-CW-07 “Construction of Mangit Water Treatment Plant”

Prepared by Joint Stock Company “Uzsuvtaminot” for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 1 December 2021)[1]

Currency unit	–	Sum (SUM)
SUM1.00	=	$0.000093
$1.00	=	SUM10,776

ABBREVIATIONS

ADB	–	Asian Development Bank
CSA	–	Agency “Kommunkhizmat”
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
FTU	–	Formazine turbidity units
GIS	–	Geographic Information System
GRM	–	Grievance Redress Mechanism
IEE	–	Initial Environmental Examination
MHCS	–	Ministry of Housing and Communal Services
NRW	–	Non-Revenue for Water
NSR	–	Noise sensitive receivers
OCS	–	Operational Control System
PAM	–	Project Administration Manual
PMC	–	Project Management Consultant
PMC-IES	–	PMC’s International Environmental Specialist
PMC-NES	–	PMC’s National Environmental Specialist
PME	–	Powered Mechanical Equipment
PCU	–	Project Coordination Unit
PPE	–	Personal Protective Equipment
Project	–	Western Uzbekistan Water Supply System Development Project
QST-LLC	–	Qaraqalpaq Suv Taminoti LLC
SAEMR	–	Semi – Annual Environmental Monitoring Review
SCNP	–	The State Committee for Nature Protection
SEE	–	The State Environmental Expertise
SSEMP	–	Site-Specific Environmental Management Plans
SPS	–	ADB Safeguard Policy Statement 2009
Uzsuvtaminot	–	Joint Stock Company Uzsuvtaminot or Executing Agency
WSS	–	Water Supply and Sanitation
WTP	–	Water Treatment Plant

[1] Foreign Exchange (adb.org)

WEIGHTS AND MEASURES

amsl	–	above mean sea level
m^3	–	cubic meter
dBA	–	decibels audible
°C	–	degree Celsius
ha	–	hectare
km	–	kilometer
kph	–	kilometer per hour
kg/cm^2	–	kilogram per square centimeter
lps	–	liters per second
m		meter
mg/l	–	milligram per liter
mm	–	millimeter
%	–	percent
m^2	–	square meter

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EXECUTIVE SUMMARY

Western Uzbekistan Water Supply System Development Project[2] supports the ongoing efforts of the Government of Uzbekistan towards improving the water supply and sanitation services (WSS) in the Republic of Karakalpakstan. The Project is aimed at improving the public health and environment for about 388,000 inhabitants in six districts (Amudarya, Beruni, Nukus, Karauzyak, Kungrad, and Muynak) and 116 rural settlements by providing reliable and safe water supply and improved sewerage and sanitation facilities.

Western Uzbekistan Water Supply System Development Project comprise the following outputs;

Output 1: Water supply infrastructure rehabilitated, expanded and upgraded. This output comprises the (i) construction, rehabilitation and expansion of three water treatment plants (WTPs); (ii) construction and rehabilitation of approximately 300 kilometers of water mains; (iii) construction of four new water distribution centers and rehabilitation of 24 water distribution centers; (iv) construction and rehabilitation of approximately 900 kilometers of water distribution network; and (v) provision of consumer meters.

Output 2: Institutional capacity strengthened. This output includes (i) formulating performance indicator-based reporting; (ii) establishing a training center; (iii) operationalizing a nonrevenue water control system, geographic information system, and hydraulic modeling; (iv) introducing web-based management and reporting systems; and (v) commissioning a grievance redress mechanism.

The objective of the project is to enhance service delivery and improve access to safe, reliable, and sustainable water supply services managed on environmentally sound practices. The project also will focus at increasing operational efficiency of the Qaraqalpaq Suv Taminati LLC (QST-LLC) followed by rehabilitation of existing and construction of new water and wastewater infrastructure.

The project will impact on enhancing climate resilience, public health, and living conditions in the Republic of Karakalpakstan. The project outcome will be improved WSS infrastructure and services in the project area with the following two outputs: (i) water supply infrastructure rehabilitated, expanded and upgraded and (ii) institutional capacity strengthened.

The project activities will address the existing problems of the WSS system in the project area by modernization of water supply infrastructure. The project also includes operation and maintenance capacity development, corporate development, GIS and hydraulic modelling activities, which are aimed at improving overall operational performance of QST-LLC.

Joint Stock Company Uzsuvtaminot is the Executing Agency and Qaraqalpaq Suv Taminati LLC is implementing agency. The Project Coordination Unit (PCU) is responsible for the overall management, implementation and monitoring of the project. There is Project Coordinator set in Nukus city to manage day-to-day project implementation at the subproject/district level.

Mangit WTP subproject is one of the subprojects proposed under Western Uzbekistan Water Supply System Development Project. The existing water supply from Mangit canal is not able to meet the current demand of the Amudarya district. At an intermittent supply rate of 5 hours in a day, current water availability is only about 24 liters per day. Supply is further reduced due to pipe leakages and unsafe due to non-treatment.

Subproject Scope. This document is the Initial Environmental Examination (IEE) Report prepared for Sub-Project WU-CW-07: Construction of Mangit WTP. This IEE is prepared, because the location of the subproject has changed after the original IEE[3] was prepared. The subproject is demand-driven by

[2] 50259-002: Western Uzbekistan Water Supply System Development Project | Asian Development Bank (adb.org)
[3] Western Uzbekistan Water Supply System Development Project: Initial Environmental Examination | Asian Development Bank (adb.org)

QST-LLC, and selected based on transparent criteria, including population growth, poverty index, existing WSS infrastructure, etc. The subproject is formulated to improve water supply service delivery in the district.

The environmental assessment used ADB’s rapid environmental assessment checklists for water supply. The environmental assessment of the Mangit WTP subproject shows it is not likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. Potential impacts are unlikely to affect areas larger than the sites or facilities subject to physical works. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed with uncomplicated measures commonly used at construction sites and known to civil works contractors.

Mangit WTP subproject is classified as Category B per ADB Safeguard Policy Statement (SPS, 2009). This initial environmental examination (IEE) report has been prepared based on conceptual design and following requirements of ADB SPS and applicable local legislation.

Description of the Environment. The subproject is located in Amudarya administrative district of the Republic of Karakalpakstan. Geographically, the subproject area lies in the south boundary of Kipchak town; on the left bank of Amudarya River.

Potential Environmental Impacts and Mitigation Measures. The subproject is unlikely to cause significant adverse impacts that are irreversible, diverse or unprecedented, because (i) the components will involve straightforward construction and operation, so impacts will be mainly localized; (ii) there are no significant sensitive environmental features in the subproject sites except close vicinity of Amudarya River and also careful attention needs to be paid to minimizing disruption to the community; and (iii) predicted impacts are site-specific and likely to be associated with the construction process and are produced because the process is invasive, involving excavation and earth movements.

During construction, impacts will likely arise from the need to soil dispose and the disturbance to residents, businesses, and traffic. These temporary impacts are common for construction activities in populated area. Traffic management will be necessary during pipe laying. Earthworks will be conducted during the dry season. The stockyards will be located away from watercourses. Fuel and lubricant storage areas will be located away from drainage. Precautions will be taken to minimize construction wastes. Measures will be provided to prevent wastewater entering into streams, watercourses, or irrigation channels. Open burning of solid wastes generated from the construction camp will be strictly prohibited.

The operation and maintenance manual including standard operating procedures for operation and maintenance will be developed, imparting necessary training; safety and personal protection equipment for workers, measures to maintain the water supply system efficiency. During WTP operation, the drinking water will be frequently monitored by QST-LLC along with the leak management campaigns.

Environment Management. This IEE included an environmental management plan, which describe and address the potential impacts and risks identified by the environmental assessment, as well as proposed mitigation measures, environmental monitoring and reporting requirements, and performance indicators. The IEE and EMP will be included in bidding documents and civil works contract with specific provisions requiring contractors to (i) comply with all other conditions required by ADB, and (ii) submit and implement site-specific environmental management plan; (iii) implement environmental monitoring plan; and (v) have a budget for implementation of environmental management plan.

Consultation, Disclosure, and Grievance Redress Mechanism. The stakeholders were involved during the surveys and IEE through discussions on site and public consultations. The views expressed by stakeholders were incorporated in the IEE. The IEE will be made available to the public through the ADB website (footnote 2) and the JSC “Uzsuvtaminot” websites.[4] The consultation process will continue

[4] https://uzsuv.uz/uz

during subproject implementation to ensure that stakeholders are fully engaged in the subproject and have the opportunity to participate in its development and implementation. A grievance redress mechanism is described within IEE to ensure that public grievances are addressed.

Monitoring and Reporting. QST-LLC, PCU, and Project Management Consultant (PMC) will be responsible for environmental monitoring. PMC will support contractor in preparation of monthly monitoring reports, whereupon the monthly reports will be consolidated and included in semi-annual environmental monitoring reports (SAEMRs), submitted by PCU to ADB. ADB will post the SAEMRs on its website, the EA -JSC “Uzsuvtaminot” will post on its website the whole report in Russian and summary in Karakalpak.

Conclusions and Recommendations. Mangit WTP subproject will bring a series of benefits to the local population in Amudarya district. Based on the IEE findings, there are no significant impacts, and the classification of the subproject as Category B per ADB SPS is confirmed. To conform to government regulations, permits and clearances will be obtained prior to award of civil works contract. This IEE will be submitted to ADB for concurrence and disclosure.

1. INTRODCTION

1.1. Background

1. Western Uzbekistan Water Supply System Development Project (Project) supports the ongoing efforts of the Government of Uzbekistan towards improving the water supply and sanitation services (WSS) in the Republic of Karakalpakstan. The project is aimed at enhancing environmental sustainability, climate resilience, and liveability in six project districts (Amudarya, Beruni, Nukus, Karauzyak, Kungrad, and Muynak) by providing reliable and safe water supply and improved sewerage and sanitation facilities. The Project will also strengthen the capacity and infrastructure governance of the water utility company managing water and wastewater system in Western Uzbekistan.

2. Western Uzbekistan Water Supply System Development Project comprise the following outputs;

Output 1: Water supply infrastructure rehabilitated, expanded and upgraded. This output comprises the (i) construction, rehabilitation and expansion of three WTPs; (ii) construction and rehabilitation of approximately 300 kilometers of water mains; (iii) construction of four new water distribution centers and rehabilitation of 24 water distribution centers; (iv) construction and rehabilitation of approximately 900 kilometers of water distribution network; and (v) provision of consumer meters.

Output 2: Institutional capacity strengthened. This output includes (i) formulating performance indicator-based reporting; (ii) establishing a training center; (iii) operationalizing a nonrevenue water control system, geographic information system, and hydraulic modeling; (iv) introducing web-based management and reporting systems; and (v) commissioning a grievance redress mechanism.

3. The project is implemented since 2017 and is funded by Asian Development Bank (ADB). During the project design, the Executing Agency was Communal Services Agency “Kommunkhizmat” (CSA) with a designated Project Coordination Unit (PCU). However, the CSA was dissolved in accordance with President Decree No. UP-4883[5] (Article 8, para 1), and the PCU was transferred under the command of the newly established Joint Stock Company Uzsuvtaminot (Uzsuvtaminot) following President Order No. UP-5883[6]. In the meantime, pursuant to Government Resolution No. 169[7] Uzsuvtaminot has been assigned as the Executing Agency of the Project. Following these restructuring, the Implementing Agency (the State Unitary Enterprise Department for Operation of Interregional Water Supply Tuyamuyun-Nukus) was renamed into Qaraqalpaq Suv Taminati Ltd (QST-LLC).

4. PCU is fully staffed and responsible for the overall management, implementation and monitoring of the project. There is a regional project management office to manage day-to-day project implementation at the Republic of Karakalpakstan level.

5. The Project Management Consultant (PMC) and Project Engineer are hired to support the PCU and QST-LLC. PMC is on board since August 2020 and provides comprehensive consultation, assistance, and support in project implementation. The Project Engineer is responsible for

[5] President Decree No. UP-4883, On ensuring the effectiveness of investment projects implemented at the expense of public debt (Article 8, para 1), 06.11.2020

[6] President Order No. UP-5883, On measures to improve the management of water resources of the Republic of Uzbekistan to increase the level of supply of drinking water to the population and improve its quality (Article 5, para 3), 26.11.2019, https://lex.uz/docs/4611203

[7] Article 3a of Government Resolution No. 169, On the establishment of the agency for international cooperation and development under the Ministry of Investment and Foreign Trade of the Republic of Uzbekistan, 30.03.2021, https://lex.uz/docs/5350631

geological and engineering surveys along with preparation of detailed engineering design for selected sub-projects.

6. The project finances the rehabilitation and new construction activities in six project districts under the following eight packages/sub-projects:

- WU-CW-01: WSS improvement in Amudarya district
- WU-CW-02: WSS improvement in Beruniy district
- WU-CW-03: WSS improvement in Nukus district
- WU-CW-04: WSS improvement in Karauzyak district
- WU-CW-05: WSS improvement in Kungrad district
- WU-CW-06: WSS improvement in Muynak district
- WU-CW-07: Construction of Mangit WTP
- WU-CW-08 Rehabilitation of Tuyamuyun pumping station
- WU-CW-09 Extension of Takhiatash WTP
- WU-CW-10 NRW Equipment and OCS.

7. The project’s initial environmental examination (IEE) was prepared in 2017[8] along with the environmental management plan (EMP), outlining the specific environmental measures to be adhered to during the project implementation. The IEE specifies some temporary environmental impacts likely to be caused during construction and rehabilitation activities. Most potential negative impacts (dust, noise, vibration, solid waste, etc.) will be mitigated during project implementation by (i) protecting the sources, (ii) minimizing construction pollution and wastes, and (iii) limiting specific impacts related to the pipeline routes. Considering IEE findings, the project is classified as Environmental Category B in accordance with ADB SPS.

1.2. Purpose of this Initial Environmental Examination Report

8. This document is the Initial Environmental Examination (IEE) Report prepared for Sub-Project WU-CW-07: Construction of Mangit WTP. The scopes of this IEE are to (i) assess the existing environmental conditions of the subproject area; to identify potential impacts from the proposed works, (iii) evaluate and determine the significance of the impacts; (iv) develop an environmental management plan (EMP) detailing mitigation measures, monitoring activities, reporting requirements, institutional responsibilities and cost estimates to address adverse environmental; impacts, and (v) carry-out public consultation to document any issues and to ensure that such concerns are addressed in the subproject design.

9. The construction of a new WTP was aimed to cover the water demand in the Amudarya district. The project district is supplied with water from Mangit canal, which is fed by the Amudarya River. According to the IEE (as of 2017) and Feasibility Study, the new Mangit WTP (Sub-Project WU-CW-07: Construction of Mangit WTP) was envisioned to place within the existing territory of Water Intake VU-2 in Amudarya district. However, QST-LLC noted that there is no water in the Mangit canal during the low water period, which makes ineffective the construction of a new WTP on the Mangit canal. The lowest water level in the Mangit canal was recorded in 2017-

[8] Western Uzbekistan Water Supply System Development Project: Initial Environmental Examination | Asian Development Bank (adb.org)

2018. Therefore, QST-LLC together with the Local Administration of Amudarya District decided to change the place of the new WTP (Mangit WTP) by moving it to the bank of the Amudarya River. Following this decision, the Local Administration issued the Order No. 269 dated 2018 on land allocation for construction of new Mangit WTP. This regulation specifies that the area of new WTP is the reserved lands belonging only to Local Administration of Amudarya District. Due to the significant change in the geographic location of Sub-Project WU-CW-07, this specific IEE was conducted for the new construction site to ensure that Sub-Project WU-CW-07 is environmentally sound, designed to operate in compliance with applicable regulatory requirements, and are not likely to cause significant environmental, health, or safety hazards.

10. The IEE has been conducted for Sub-Project WU-CW-07 through review of secondary information collected from relevant agencies, primary information collected from the field reconnaissance surveys in August and September 2021 and conceptual engineering design prepared by PMC. Public consultations and disclosure were carried out in September 2021. The relevant stakeholders were contacted to verify information collected and also to solicit their concerns. The potential environmental impacts of the Sub-Project WU-CW-07 have been assessed using ADB Rapid Environmental Assessment Checklist for Water Supply (Appendix 1) and in accordance with the requirements of ADB SPS and applicable environmental regulation of Uzbekistan. Based on the analysis of information, the impacts have been predicted, mitigation measures prepared and a monitoring plan has been developed.

11. This Report contains the following ten (10) sections including the executive summary at the beginning of the report:

I. Executive summary;

II. Introduction

III. Policy, legal and administrative framework

IV. Description of the subproject

V. Description of the environment

VI. Anticipated environmental impacts and mitigation measures

VII. Information disclosure, consultation and participation

VIII. Grievance redress mechanism

IX. Environmental management plan

X. Conclusion and recommendation.

2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK AND STANDARDS

2.1. ADB Safeguards Policy

12. ADB requires the consideration of environmental issues in all aspects of ADB’s operations, and the requirements for environmental assessment are described in ADB SPS. The objectives are to ensure the environmental soundness and sustainability of projects with ADB financing, and to support the integration of environmental considerations into the project decision-making process.

13. **Screening and Categorization:** The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project; the sensitivity, scale, nature, and magnitude of its potential impacts; and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impacts, and are assigned to one of the following four categories:

- **Category A:** Projects could have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. An environmental impact assessment (EIA) is required to address significant impacts.
- **Category B:** Projects could have some adverse environmental impacts, but less adverse than those in category A. These impacts are site-specific. In most cases mitigation measures can be designed more readily than for category A projects. The IEE is required.
- **Category C:** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No EIA or IEE is required, although environmental implications need to be reviewed.
- **Category FI.** A proposed project is classified as category FI if it involves investment of ADB funds to or through a Financial Intermediary (FI). The financial intermediary must apply an environmental management system, unless all projects will result in insignificant impacts.

14. **Public disclosure:** The borrower needs to provide relevant environmental information, including IEE and SAEMRS in a timely manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. JSC "Uzsuvtaminot" will post the following safeguard documents on its website (footnote 4) so affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation: i) final IEE, and (ii) SAEMRs submitted by the PCU during project implementation.

15. **Application of International Good Practices:** Following requirements of ADB SPS, Joint Stock Company Uzsuvtaminot and Qaraqalpaq Suv Taminati LLC will apply pollution prevention and control technologies and practices consistent with international good practice as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety Guidelines (EHS Guidelines).[9] For this subproject, both General EHS Guidelines[10] and EHS Guidelines for Water and Sanitation [11] will be applicable. When Government regulations differ from these levels and measures, Joint Stock Company Uzsuvtaminot and Qaraqalpaq Suv Taminati LLC will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, Joint Stock Company Uzsuvtaminot and Qaraqalpaq Suv Taminati LLC will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

[9] *World Bank Group, Environmental, Health, and Safety Guidelines*, April 30, 2007, Washington, USA. Environmental, Health, and Safety Guidelines (ifc.org)

[10] https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=nPtguVM in English. https://www.ifc.org/wps/wcm/connect/be37221a-fc47-4379-b539-eca3fe72c3e6/General%2BEHS%2B-%2BRussian%2B-%2BFinal_.pdf?MOD=AJPERES&CVID=nPtgFKk&ContentCache=NONE&CACHE=NONE in Russian.

[11] https://www.ifc.org/wps/wcm/connect/0d8cb86a-9120-4e37-98f7-cfb1a941f235/Final%2B-%2BWater%2Band%2BSanitation.pdf?MOD=AJPERES&CVID=nPtk0wW In English. https://www.ifc.org/wps/wcm/connect/eedfad60-8972-494c-8f95-34ec51291b5f/Water_and_Sanitation%2B-%2BRussian%2B-%2BFinal_.pdf?MOD=AJPERES&CVID=nPtk1Ek&ContentCache=NONE&CACHE=NONE in Russian.

2.2. National Environmental Regulatory Framework

2.2.1. Environmental Policy, Legal & Administrative Framework

16. The Constitution[12] is the fundamental law of the Republic Uzbekistan (1991). The national environmental and social policy of Uzbekistan is based on the provisions of the country’s Constitution. The following articles of the Constitution specify public obligations towards environment protection:

- Article 50 of Constitution requires citizens to protect the environment;
- Article 54 of Constitution specifies that any property shall not inflict harm to the environment;
- Article 55 of Constitution states that lands, subsoil, flora, fauna, and other natural resources are protected by the state and considered as national wealth;
- Article 100 of Constitution specifies the responsibilities of the local administrations towards environmental protection on the local level.

17. These policies are headed by the President of the Republic of Uzbekistan, who is the executive head of the state and secures efficient coordination of governmental authorities (Article 89 of Constitution). The President issues general, strategic and specific regulations, which shall be binding across Uzbekistan (Article 94 of Constitution). The specific regulatory documents relate amongst other to the implementation of investment projects following loan agreement and other covenants.

18. The President is supported by bicameral Supreme Assembly, named “Oliy Majlis”. The latter has responsibilities of legislature with a power to shape laws. The Oliy Majlis is comprised the Legislative Chamber and the Parliament. The Oliy Majlis defines the national environmental and social policies, approves national environmental programs, develops and adopts national environmental and social legislation, coordinates environmental compliance monitoring actions, defines the rates of environmental charges and establishes respective incentives, etc.

19. The Cabinet of Ministers is the executive institution with the responsibility of securing efficient functioning of the national economy, social and community services, enforcement and enacting national laws and regulations. It comprises the Prime Minister, Deputy Prime Ministers, Ministers, State Committees Chairmen and the Government Executive of the Karakalpakstan Republic (Article 98 of Constitution). The Cabinet of Ministers exercises state control of environment protection and natural resources management along with the State Committee for Nature Protection (SCNP) of the Republic of Uzbekistan and the local governments.

20. On the local level, the Councils of People’s Deputies, or “Kengash”, led by governors known as “khokims”, are the representative of local government authority. They address any issues within their designated service territory (Article 99 of Constitution) and responsible for legal, environment, health and safety, as well as for economic, social and cultural development (Article 100 of Constitution).

21. The environmental mandate of local government includes identification of environmental priorities for the respective territory; approval of local environmental programs; inventory and evaluation of natural resources; inventory of environmentally hazardous facilities; logistical support to environmental actions; environmental permitting; waste management; collection of environmental charges; and environmental control (Law on Nature Protection, No.754-XII of 09.12.1992).

[12] Constitution of the Republic Uzbekistan: https://lex.uz/docs/35869

2.2.2. The Karakalpakstan Republic

22. The Republic of Karakalpakstan is an independent republic constituting a part of the Republic of Uzbekistan according to Article 70 of the Constitution of the Republic of Karakalpakstan. The Republic of Karakalpakstan has its own Constitution[13] (enacted on 9 April 1993), which may not contravene the provisions of the Constitution of the Republic of Uzbekistan (Article 71), that means the law of the Republic of Uzbekistan is binding across Karakalpakstan (Article 72 of Constitution of Republic of Karakalpakstan).

23. As national institution framework, the Constitution of the Republic of Karakalpakstan specifies the “Jokargy Kenes” of the Republic of Karakalpakstan as the supreme power institution and the legislature (Article 68 of Constitution of the Republic of Karakalpakstan).

24. The Chairman of Jokargy Kenes is the highest official of the Republic of Karakalpakstan and responsible for interaction between the legislature and the executive of the Republic of Karakalpakstan and elected by the Jokargy Kenes members (Article 80 of Republic of Karakalpakstan Constitution). The Jokargy Kenes Presidium manages the Jokargy Kenes work and is composed of the Jokargy Kenes Chairman, his deputies, chairmen of the committees and commissions, and other key representatives (Article 84 of Constitution of the Republic of Karakalpakstan).

25. The Council of Ministers of Republic of Karakalpakstan is the government and executive in the Republic of Karakalpakstan (Article 86 of Constitution of the Republic of Karakalpakstan). It is formed by the Jokargy Kenes (Article 87 of Constitution of the Republic of Karakalpakstan) and has responsibility of securing effective functioning of the economy, social and utility services, enforcing national and local laws and regulations. The Council of Ministers is headed by the Chairman who is appointed by Jokargy Kenes (as advised by the Jokargy Kenes Chairman and the President of the Republic of Uzbekistan) and who enters into the Cabinet of Ministers of the Republic of Uzbekistan (Article 88 of Constitution of the Republic of Karakalpakstan).

2.2.3. Environmental Regulators

26. The State Committee for Nature Protection of the Republic of Uzbekistan (National SCNP) is the primary environmental regulator. The National SCNP reports directly to the Parliament and is responsible for the development and enforcement of the national environmental and conservation policy, overseeing environmental compliance, the integrated environmental management across various economic sectors at national, province and district levels.

27. The National SCNP has regional branches and agencies providing scientific and technical support. Karakalpakstan has its own State Committee for Nature Protection (RK SCNP), which is part of National SCNP and reports to it. The RK SCNP oversees the environmental compliance of all projects at construction and operation phases.

28. There are some other government institutions with responsibilities related to environment protection and control including Ministry of Agriculture and Water Resources, State Committee for Land Resources, Surveys, Cartography and the State Cadaster, State Committee for Geology and Mineral Resources, Centre of Hydro-meteorological Service, Ministry of Health, Ministry of Housing and Utility Services, etc. Their responsibilities include facilitation in setting up and maintaining a robust system of state environmental control, development and implementation of environmental programs, strategies, and action plans to address conservation and sustainability issues.

[13] Constitution of the Republic of Karakalpakstan: https://karakalpakstan.uz/ru/page/show/27

29. The national institutional and administrative framework is mirrored in the Republic of Karakalpakstan. So, the national government institutions have their offices operating in Republic of Karakalpakstan and reporting to the central office of the respective institutions in Tashkent.

2.2.4. National EIA Procedure

30. The Regulation on State Environmental Expertise (SEE), approved by Decree No.491 of the Cabinet of Ministers on 31 December 2001 and amended in 2005 and 2009, defines the legal requirements for EIA in Uzbekistan. SEE is a review procedure undertaken by the SCNP SEE Center, depending on the project category.

31. According to the Regulation on SEE (No.541[14]) all projects are screened for their expected environmental impacts, and are assigned to one of the following four categories:

- Category I – projects with high risks
- Category II – projects with moderate risks
- Category III – projects with low risks and
- Category IV – projects with local Impact.

2.2.5. EIA Procedure Required for the Subproject

32. Regulation on SEE[15] provides project category depending on its activity. Since the project objective is a construction of WTP, the project is defined as Category II (item 26, Category II, Annex 2, of the Regulation on SEE) with moderate risks of environmental impacts. The project of Category II is subject for the SEE to be undertaken by SEE Center following Article 10 of Regulation on SEE (No.541). SEE is mandatory and commercial procedure paid by the applicant. The SEE evaluates the project in terms of the following provisions:

- nature and level of all possible environmental impacts relate to the project implementation;
- risk level associated with project and its possible or existing impact on the environment, economy, and public health;
- social priorities;
- sustainable use of natural resources;
- relevance and feasibility of proposed mitigation measures aiming to protect the environment and ensure.

33. Pursuant Section 3 of Regulation on SEE (No.541), the submission of the Category II project related materials for the SEE is electronic, through http://www.eco-service.uz/. These materials shall include:

- Application with concept statement on environmental impact (para (a), Article 24 of Regulation on SEE, No.541) specifying:
  - environmental baseline conditions;
  - justification of the project site and land use;

[14] Regulation of the Cabinet of Ministers of the Republic of Uzbekistan "On the further improvement of environmental expertise", No. 541, 07.09.2020, https://lex.uz/docs/4984499

[15] Appendix 2 to the Regulation of the Cabinet of Ministers of the Republic of Uzbekistan "On the further improvement of environmental expertise", No. 541, https://lex.uz/docs/4984499#4986854

- findings of public consultations;
- findings of the surveys and their sources;
- geographical landmark, information on adjacent recreation areas, settlements, irrigation and reclamation systems, agricultural lands, power supply lines, transport routs, water and gas pipelines and other communications;
- analysis of main and auxiliary facilities, equipment, technology, natural resources, materials, fuel and their impact on environment and planned construction;
- type and annual capacity of the WTP;
- expected emissions, wastewater, and solid wastes in terms of composition, volume, and impact on environment with corresponding mitigation measures;
- proposed construction methods, technology, plant and equipment;
- risk assessment;
- forecast of environment changes and environmental consequences due to the project;
- information on pollution sources, their types, limits, intensity and period;
- water demand of the Amudarya district.

- Detailed statement on environmental Impact (para (b), Article 24 of Regulation on SEE, No.541) with findings of:
  - environmental assessment of the project site based on the engineering and geological surveys, modeling, etc.;
  - environmental analysis of technology used in the project site;
  - public consultations;
  - justification of selected mitigation measures.
- Statement on environmental consequences incorporating (para (в), Article 24 of Regulation on SEE, No.541):
  - recommendations and comments provided by SEE Center experts;
  - justification supporting materials;
  - environmental standards applicable to the project;
  - measures for the protection of the environment and the rational use of natural resources and principal conclusions.

34. The QST-LLC received approval of SEE for the original subproject on 10 July 2018 (Appendix 22) from the Qaraqalpak Republican Environmental Committee. Following Uzbek regulation, the SEE is issued for a period of three years. In cases where the implementation of the project takes more than 3 years from the date of the SSE approval, the SEE is extended for two more years. In order to extend SEE by regulator the applicant submits application for SEE extension supported by brief description of the project status to the regulator (Qaraqalpak Republican Environmental Committee). After reviewing the application, the regulator may require additional documents or information. However, if regulator considers the provided information is sufficient, it agrees to extend SEE for two years and provide the corresponding letter with approval to the applicant.

35. In case the civil works has not started within the period stipulated by the project, the applicant shall provide clarifications together with the project status report. The SEE extension or renewal remain with environmental regulator, upon considering the provided information.

36. Considering that the project SEE expired on 10 July 2021 (SEE approval was issued under #3-287/01 by regulator on 10 July 2018), the QST-LLC submitted application, project status report and description of the Sub-Project WU-CW-07 “Construction of Mangit WTP” to the Qaraqalpak Republican Environmental Committee in September 2021 to seek extension of the project SEE and clearance for the Sub-Project WU-CW-07 “Construction of Mangit WTP”. On 12 November 2021, the Qaraqalpak Republican Environmental Committee issued SEE approval and extended SEE for the project and Sub-Project WU-CW-07 “Construction of Mangit WTP” by the letter No.02-01/18-11-2446 for two more years (Appendix 23), i.e., until November 2023. The change of the sub-project location was approved by the regulator during considering extension of the project SEE.

2.2.6. Environmental Policy and Strategies

37. The environmental regulatory framework of Uzbekistan is based on a number of laws and regulations. However, the key national environmental law is the Law on Nature Protection[16] (1992), the principal legal instrument regulating nature conservation. It establishes the legal, economic and institutional framework for environment protection and sustainable use of natural resources. According to the law, any potential environmental impact associated with economic activities is limited by corresponding environmental norms and quality standards, guaranteeing the environmental and natural resources protection.

38. There are other laws regulating environmental and social policies in Uzbekistan, including:

- Law on Ambient Air Protection (1996)

  The law specifies requirements for ambient air protection, including ambient air quality standards, requirements for fuels and lubricants, emission requirements for vehicles and machinery, as well as obligations of enterprises, institutions and organizations toward the ambient air protection, and payment policy for air pollution.

- Law on Water and Water Management (1993)

  The law specifies requirements for rational use of waters for needs of the population and industries, protection of waters from pollution, improvement of water objects, and also protection of the rights of the companies, organizations, farmer, and individuals regarding the water relations.

- Land Code (approved on 30.04.1998, as amended on 04.01.2011))

  The law specifies regulation of land relations in terms of lands protection and rational use, soils fertility improvement, environment conservation and improvement, and establishing legal base for land use.

- Law on Wastes, No.362-II of 05.04.2002 (as amended on 04.01.2011)

  The law specifies regulation of waste management, prevention of wastes impact on environment and public health, reducing formation of wastes and ensuring their rational use in economic activities.

- Law on Archaeological Heritage Management and Protection, No. ZRU-229

  The law specifies regulation of relations in archaeological heritage protection and use and also specifies exclusive ownership right of the state for archaeological heritage. The

[16] Law on Nature Protection (1992), No.754-XII, https://www.lex.uz/acts/7065

law also requires protection and conservation of the objects of archaeological heritage in accordance with the applicable legislation.

- Law on Protected Natural Areas, No.710-II of 03.12.2004

  The law establishes the regulation of relations in the field of organization, protection and use of protected natural areas. The main objectives of the law are the preservation of typical, unique, valuable natural objects and complexes, the genetic fund of plants and animals, prevention of the negative impact of human activities on nature, the study of natural processes, monitoring of the natural environment, improvement of environmental education and upbringing.

- Law on Local Government Authorities No.913-XII of 02.09.1993 (as amended on 31.12.2008)

- Law on State Sanitary Supervision No.657-XII of 03.07.1992 (as amended on 03.09.2010)

- Criminal Code, Section 4. Environmental Crimes, approved on 22.09.1994 (as amended on 04.01.2011)

- Law on Subsoil No.2018-XII of 23.09.1994 (as amended on 04.01.2011)

- Law on Protection and Use of Flora No.543-I of 26.12.1997 (as amended on 04.01.2011)

- Law on Protection and Use of Fauna No.545-I of 26.12.1997 (as amended on 04.01.2011)

- Law on State Cadasters, No.171-II of 15.12.2000 (as amended on 04.01.2011)

- Decree of the Cabinet of Ministers of Uzbekistan on the Red Book of the Republic of Uzbekistan, No.109 of 09.03.1992

- Decree of the Cabinet of Ministers of Uzbekistan on Restricted Water Use in Uzbekistan No.385 of 03.08.1993 (as amended on 02.04.2010)

- Decree of the Supreme Council of Uzbekistan on Reinforcement of the Protection of Valuable and Endangered Species of Flora and Fauna and Harmonization of their Use No.937- XII of 03.09.1993

- Other regulations.

39. Moreover, Karakalpakstan has developed a series of laws specific to the region:

- Law on Nature Protection (03.03.2006)

- Law on Ambient Air Protection (16.08.1997)

- Law on Protected Natural Areas (29.08.2005)

- Law on Water and Water Management (24.12.1993)

- Law on Subsurface Resources (29.08.2006)

- Law on Environmental Expertise (05.10.2007)

- Land Code (29.08.2006)

40. Other regulatory documents in Uzbekistan have a wide range of names such as “strategy”, “program”, “measures”, “action plan” or “plan”, as well as a number of special clearly defined terms that are used in territorial planning or industry improvement, whereas the environmental management, conservation and natural resource management are integral parts.

2.3. Environmental Standards Applicable to the Subproject

41. The environmental monitoring under the Sub-project WU-CW-07 will include the soil, water, and ambient air testing and noise and vibration measurement. The ADB SPS requires that the project applies pollution prevention and control technologies and practices consistent with international good practice. When national standards differ from corresponding international standards, the borrower is required to achieve whichever is more stringent.

42. The national standards for aforementioned environmental indicators in comparison with international standards are the followings:

2.3.1. Standards for the drinking water

43. Uzbek Standard for Drinking Water No. O’zDST 950:2011 “Hygienic requirements and quality control” and Hygienic Criteria for Centralized Drinking Water Quality Monitoring in Uzbekistan No. 0211-06[17] specify the requirements for water quality indicators and methods for their control. This includes monitoring of microbiological and toxicological indicators (benzene, benzo(a)pyrene, polyacrylamide and pesticides), parasites, and chemical elements (15 chemical elements) in the water.

44. The corresponding international standards for the drinking water quality include the following:

- World Health Organization’s Guidelines for Drinking-water Quality [18] (in terms of instrumental monitoring, regulation stipulates provision of microbial water quality and chemical water quality tests);
- EU Council Directive 98/83/EC on the quality of water intended for human consumption[19] (regulations specifies performance of drinking water monitoring of microbiological parameters and chemical parameters including pesticides; monitoring is carried out on a case-by-case basis of substances and micro-organisms for which no parametric value has been set by regulation).

45. The Table 1 below provides comparison on certain standards of national and international regulations. It also specifies the standard to be applied for environmental, health and safety monitoring on certain indicator within the frame of sub-project. The following are indicators commonly used by utility operators for frequent and rapid drinking water quality monitoring:

Table 1 Standards for the drinking water

No.	Indicator	Requirement of National Regulations	Requirement of International Regulation		Standard applicable to the Sub-project
1		2 grade	Water should be free of tastes and odours that	WHO Guidelines for Drinking-water Quality	Water is free of odour (WHO

[17] Hygienic Criteria for Centralized Drinking Water Quality Monitoring in Uzbekistan No. 0211-06, https://lex.uz/ru/docs/1934624

[18] Guidelines for Drinking-water Quality: fourth edition incorporating the first addendum, ISBN 978-92-4-154995-0, World Health Organization 2017, https://apps.who.int/iris/bitstream/handle/10665/254637/9789241549950-eng.pdf

[19] Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, Official Journal of the European Communities, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31998L0083&from=EN

No.	Indicator	Requirement of National Regulations	Requirement of International Regulation		Standard applicable to the Sub-project
	Odour at 20 and 60 °C		would be objectionable to the majority of consumers		Guidelines for Drinking-water Quality)
			Acceptable to consumers and no abnormal change	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
2	Taste	2 grade	Water should be free of tastes and odours that would be objectionable to the majority of consumers	WHO Guidelines for Drinking-water Quality	Water is free of tastes (WHO Guidelines for Drinking-water Quality)
			Acceptable to consumers and no abnormal change	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
3	Colour	25 units[20]	Drinking-water should ideally have no visible colour	WHO Guidelines for Drinking-water Quality	Water has no visible colour (WHO Guidelines for Drinking-water Quality)
			Acceptable to consumers and no abnormal change”	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
4	Turbidity	2.0 mg/l (mg/dm^3)	none to exceed 1 NTU	WHO Guidelines for Drinking-water Quality	Water turbidity is none exceed **1 NTU** (WHO Guidelines for Drinking-water Quality)
			Acceptable to consumers and no abnormal change	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
5	pH	6.0-9.0	6.5 – 8.5	WHO Guidelines for Drinking-water Quality	Water pH range is **6.5 – 8.5** (WHO Guidelines for Drinking-water Quality)
			≥6.5 and ≤ 9.5	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
6	Total hardness Σ (Ca+Mg)	7.0 (10.0) mg-eq./l ($mg\text{-}eq/dm^3$)	no guideline values are proposed	WHO Guidelines for Drinking-water Quality	Total hardness of water is **7.0 mg-eq./l** (Uzbek Standard for Drinking Water No. O’zDST 950:2011 “Hygienic requirements and quality control”)
			-	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
7	Alkalinity (HCO_3)	3.0 mg-eq./l ($mg\text{-}eq/dm^3$)	-	WHO Guidelines for Drinking-water Quality	Water alkalinity is **3.0 mg-eq./l** (Uzbek Standard for Drinking Water No. O’zDST 950:2011 “Hygienic requirements and quality control”)
			-	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
8	Chloride		200 – 300 mg/l	WHO Guidelines for Drinking-water Quality	Chloride concentration in the

[20] The color of water is determined visually or using spectrophotometer or colorimeter with following conversion of the results to a colour scale in the Platinum – Cobalt system (i.e. comparing the colour of the sample with the colour of the conventional 1000-degree color scale of water prepared from a mixture of potassium dichromate $K_2Cr_2O_7$ and cobalt sulfate $CoSO_4$).

No.	Indicator	Requirement of National Regulations	Requirement of International Regulation		Standard applicable to the Sub-project
		250 (350) mg/l (mg/dm^3)	250 mg/l	EU Council Directive 98/83/EC on the quality of water intended for human consumption	water is **250 mg/l** (Uzbek Standard for Drinking Water No. O’zDST 950:2011 “Hygienic requirements and quality control”)
9	Oxygen demand	5.0 mg/l (mg/dm^3)	-	WHO Guidelines for Drinking-water Quality	Oxygen demand in the water is **5.0 mg/l** (Uzbek Standard for Drinking Water No. O’zDST 950:2011 “Hygienic requirements and quality control”)
			-	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
10	Sulphate	400 (500) mg/l (mg/dm^3)	-	WHO Guidelines for Drinking-water Quality	Sulphate concentration in the water is **250 mg/l** (EU Council Directive 98/83/EC on the quality of water intended for human consumption)
			250 mg/l	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
11	Iron	0.3 mg/l (mg/dm^3)	below 0.3 mg/l	WHO Guidelines for Drinking-water Quality	Iron concentration in the water is **0.2 mg/l** (EU Council Directive 98/83/EC on the quality of water intended for human consumption)
			200 µg/l	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
12	Copper	1.0 mg/l (mg/dm^3)	2 mg/l	WHO Guidelines for Drinking-water Quality	Copper concentration in the water is **1.0 mg/l** (Uzbek Standard for Drinking Water No. O’zDST 950:2011 “Hygienic requirements and quality control”)
			2 mg/l	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
13	Fluoride	0.7 mg/l (mg/dm^3)	between 0.5 and 1 mg/l	WHO Guidelines for Drinking-water Quality	Fluoride concentration in the water is **0.7 mg/l** (WHO Guidelines for Drinking-water Quality)
			1.5 mg/l	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
14	Total dissolved solids (TDS)	1000 (1500) mg/l (mg/dm^3)	600 – 1000 mg/l	WHO Guidelines for Drinking-water Quality	Total dissolved solids is **600 - 000 mg/l** (WHO Guidelines for Drinking-water Quality)
			500−15000 mg/ L	EU Council Directive 98/83/EC on the quality of water intended for human consumption	
15	Number of Escherichia coli	Not more than 3 number/$1cm^3$	Escherichia coli provides conclusive evidence of recent faecal pollution and should not be	WHO Guidelines for Drinking-water Quality	**Zero** Escherichia coli is in the water (WHO Guidelines

No.	Indicator	Requirement of National Regulations	Requirement of International Regulation		Standard applicable to the Sub-project
			present in drinking water. Must not be detectable in any 100 ml sample		for Drinking-water Quality)
			Escherichia coli (E. coli): 0	EU Council Directive 98/83/EC on the quality of water intended for human consumption	

TDS = total dissolved solids; NTU = Nephelometric Turbidity Units, whereas 1 NTU = 0.58 mg/dm^3 (https://docs.cntd.ru/document/1200140391); WHO = World Health Organisation; EU = European Union

2.3.2. Standards for the surface water

46. Public Health Regulation No. 0200-06 21 “Sanitary standards of water sources hygienic assessment, definition of surface water and groundwater sources classes, and their selection for drinking water supply” and Public Health Regulation No.0318-15[22] “Hygienic and anti-epidemic requirements for the protection of water in reservoirs on the territory of the Republic of Uzbekistan” stipulates requirements for the surface water quality (Table 2). The EHS Guidelines (footnote 9) does not have specific surface water quality standard. The national standards will be applied for the Subproject.

Table 2 Standards for surface water (National Standard)

No.	Indicator	Unit	Standard
1	Color	degree	Not more than 30
2	Turbidity	mg/l (mg/dm^3)	Not more than 20
3	pH	-	Within the range of 6.5 - 8.5
4	BOD	mgO_2/l (mgO_2/ dm^3)	Not more than 5 (II class)
5	Acid capacity (permanganate)	mgO_2/l (mgO_2/ dm^3)	Not more than 7
6	Total hardness	Mg-equiv/l (mg-equiv/ dm^3)	Not more than 7
7	Dry solid	mg/l (mg/dm^3)	Not more than 1000
8	Iron (Fe^{+2})	mg/l (mg/dm^3)	Not more than 0.3
9	Chlorides (Cl)	mg/l (mg/dm^3)	Not more than 250
10	Sulphates (SO_4^{+6})	mg/l (mg/dm^3)	Not more than 400
11	SS	mg/ dm^3	< 0.75
12	COD	mgO_2/ dm^3	< 15.0

TDS = total dissolved solids; BOD = biochemical oxygen demand; COD = chemical oxygen demand; SS = suspended solids; IFC = International Financial Institution

2.3.3. Standards for the ambient air

47. Public Health Regulation No. 0293-11 23 “Hygienic standard: List of pollutants maximum allowable concentrations in ambient air of populated areas in Uzbekistan” stipulates requirements for ambient air quality.

48. The corresponding international standards for ambient air quality monitoring include the following:

[21] https://www.lex.uz/acts/1933428
[22] https://ssv.uz/ru/documentation/sanpin-ruz-0318-15gigienicheskie-i-protivoepidemicheskie-trebovanija-k-ohrane-vody-vodoemov-na-territorii-respubliki-uzbekistan
[23] http://med.uz/documentation/detail.php?ID=47545

- WHO global air quality guidelines. Particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide[24] (regulation specifies air quality levels for the ambient air quality monitoring in outdoors and indoors environments).

49. The Table 3 below provides comparison on certain standards of national and international regulation. It also specifies the standard to be applied for environmental, health and safety monitoring on certain indicator within the frame of sub-project. The following indicators of the ambient air are essential for public welfare and environmental safety.

Table 3 Standards for the ambient air

No.	Indicator	Requirement of National Regulation	Requirement of International Regulation		Standard applicable to the Sub-project
1	Sulfur dioxide	0.05 mg/m^3 (annual mean) 0.2 mg/m^3 (24-hour mean)	40 µg/m^3 (24-hour mean)	WHO Global air quality guidelines	**0.04 mg/m^3** (24-hour mean) (WHO Global air quality guidelines)
2	Nitrogen dioxide	0.04 mg/m^3 (annual mean) 0.06 mg/m^3 (24-hour mean)	10 µg/m^3 (annual mean) 25 µg/m^3 (24-hour mean)	WHO Global air quality guidelines	**0.025 mg/m^3** (24-hour mean) (WHO Global air quality guidelines)
3	Ozone	0.1 mg/m^3 (daily)	100 µg/m^3, 8-hour daily maximum	WHO Global air quality guidelines	**0.1 mg/m^3** (daily) (Public Health Regulation No. 0293-11 “Hygienic standard: List of pollutants maximum allowable concentrations in ambient air of populated areas in Uzbekistan”)
4	Carbon monoxide	5.0 mg/m^3	4.0 mg/m^3	WHO Global air quality guidelines	**4.0 mg/m^3** (WHO Global air quality guidelines)
5	PM 2.5	0.15 mg/m^3 (annual mean) 0.35 mg/m^3 (24-hour mean)	5 µg/m^3 (annual mean) 15 µg/m^3 (24-hour mean)	WHO Global air quality guidelines	**0.015 mg/m^3** (24-hour mean) (WHO Global air quality guidelines)
6	PM 10	0.05 mg/m^3 (annual mean) 0.3 mg/m^3 (24-hour mean)	15 µg/m^3 (annual mean) 45 µg/m^3 (24-hour mean)	WHO Global air quality guidelines	**0.045 mg/m^3** (24-hour mean) (WHO Global air quality guidelines)

WHO = World Health Organisation; PM = particulate matter

2.3.4. Standards for noise and vibration

50. Public Health Regulation № 0325-16[25] “Sanitary standards for acceptable noise levels at workplace” of 1 February 2016 and Public Health Regulation No. 0267-09[26] “Sanitary standards on permissible noise in residential and public buildings and nearby area” of 19 June 2009 specify the following requirement to the noise level.

[24] WHO global air quality guidelines. Particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide, ISBN 978-92-4-003422-8 (electronic version), World Health Organization 2021, https://apps.who.int/iris/bitstream/handle/10665/345329/9789240034228-eng.pdf?sequence=1&isAllowed=y

[25] https://ssv.uz/ru/documentation/sanpin-ruz-0325-16-sanitarnye-normy-dopustimyh-urovnej-shuma-na-rabochih-mestah

[26] https://www.lex.uz/acts/1765725

51. The corresponding international standards for ambient air quality monitoring include the following:

- WHO Guidelines for Community Noise[27] (regulation presents the WHO guideline values to specific environments);
- Protection of workers against noise and vibration in the working environment28 (among other the regulation provides limits for noise and vibration levels).

52. The Table 4 below provides comparison on certain standards of national and international regulation. It also specifies the standard to be applied for environmental, health and safety monitoring on certain indicator within the frame of sub-project. The following indicators, provided in the table below, are applicable for the noise monitoring within the frame of the sub-project.

Table 4 Standards for noise and vibration

No.	Indicator	Requirement of National Regulation		Requirement of International Regulation		Standard applicable to the Sub-project
1	Area adjacent to the residential buildings	55 dB (7 am – 11 pm) 45 dB (11 pm – 7 am)	Public Health Regulation No. 0267-09 "Sanitary standards on permissible noise in residential and public buildings and nearby area"	55 dB (daytime, 16 hours) 45 (night time, 8 hours)	WHO Guidelines for Community Noise	**55 dB** (7 am – 11 pm) **45 dB** (11 pm – 7 am) (Public Health Regulation No. 0267-09 "Sanitary standards on permissible noise in residential and public)
2	Schools	40 dB (during class)	Public Health Regulation No. 0267-09 "Sanitary standards on permissible noise in residential and public buildings and nearby area"	35 dB (during class)	WHO Guidelines for Community Noise	**35 dB** (during class) (WHO Guidelines for Community Noise)
3	Hospitals	35 dB(7.00 am – 11 pm) 25 dB (11 pm – 7 am)	Public Health Regulation No. 0267-09 "Sanitary standards on permissible noise in residential and public buildings and nearby area"	30 dB (8 hours, daytime and evenings)	WHO Guidelines for Community Noise	**30 dB** (8 hours, daytime and evenings) (WHO Guidelines for Community Noise)
4	Industrial, commercial shopping and traffic areas, indoors and outdoors	60 dB	Public Health Regulation No. 0267-09 "Sanitary standards on permissible noise in residential and public buildings and nearby area"	70 dB (24 hours)	WHO Guidelines for Community Noise	**60 dB** (24 hours) (Public Health Regulation No. 0267-09 "Sanitary standards on permissible noise in residential and public buildings and nearby area")

[27] Guidelines for Community Noise, April 1999, World Health Organization, https://www.who.int/docstore/peh/noise/Comnoise-1.pdf

[28] Protection of workers against noise and vibration in the working environment, International Labour Office, Switzerland, 1984, ISBN 92-2-101709-5,third edition, https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/normativeinstrument/wcms_107878.pdf

No.	Indicator	Requirement of National Regulation		Requirement of International Regulation		Standard applicable to the Sub-project
5	Noise level at the working places	91 dB – 95 dB (during work with noisy equipment)	Public Health Regulation № 0325-16 “Sanitary standards for acceptable noise levels at workplace”	85 dB (daytime) ; no more than 90 dB	ILO “Protection of workers against noise and vibration in the working environment”	**85 dB** ILO “Protection of workers against noise and vibration in the working environment”

WHO = World Health Organisation; ILO = International Labour Organisation

2.3.5. Standards for the soil

53. Public Health Regulation № 0183-05 [29] "Hygienic requirements for the quality of soil in populated areas in the specific natural climatic conditions of Uzbekistan" of 10 January 2005 and Public Health Regulation № 0191-05 [30] “Maximum permissible concentrations and approximate permissible concentrations of exogenous harmful substances in the soil” of 5 November 2005 stipulates requirement for the soil quality. The corresponding international standards for ambient air quality monitoring include the following:

- FAO Global Soil Partnership: Standard Operating Procedures[31] (provides methods for soil monitoring);
- WHO permissible limits for heavy metals in plant and soil[32] (specifies maximum levels of elements in soils).

54. The Table 5 below provides comparison on certain standards of national and international regulation. It also specifies the standard to be applied for environmental, health and safety monitoring on certain indicator within the frame of sub-project. The following indicators, provided in the table below, are essential for public welfare and environmental safety.

Table 5 Standards for the soil

No.	Indicator	National Standard	Requirement of International Regulation		Standard applicable to the Sub-project
1	pH	6-9	6.0 - 7.5	FAO Global Soil Partnership	**6.0 – 7.5** (FAO Global Soil Partnership)
2	Copper	3 mg/kg	36 mg/kg	WHO permissible limits for heavy metals in plant and soil	**3 mg/kg** (Uzbek Public Health Regulation № 0191-05 [33] “Maximum permissible concentrations and approximate permissible concentrations of exogenous harmful substances in the soil”)

[29] https://nrm.uz/contentf?doc=368500_predelno_dopustimye_koncentracii_(pdk)_i_orientirovochno_dopustimye_koncentracii_(odk)_ekzogennyh_vrednyh_veshchestv_v_pochve_(sanpin_ruz_n_0055-96)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_22_07_1996_g_)&products=1_vse_zakonodatelstvo_uzbekistana

[30] https://ssv.uz/ru/documentation/perechen-utverzhdennyh-sanitarnyh-norm-pravil-i-gigienicheskih-normativov-sanpin-respubliki-uzbekistan

[31] FAO Global Soil Partnership: Standard Operating Procedures, Volume 2.1 pH, https://www.fao.org/global-soil-partnership/glosolan/soil-analysis/sops/volume-2.1/en/

[32] WHO permissible limits for heavy metals in plant and soil, WHO (1996), https://www.omicsonline.org/articles-images/2161-0525-5-334-t011.html

[33] https://ssv.uz/ru/documentation/perechen-utverzhdennyh-sanitarnyh-norm-pravil-i-gigienicheskih-normativov-sanpin-respubliki-uzbekistan

No.	Indicator	National Standard	Requirement of International Regulation		Standard applicable to the Sub-project
3	Lead	32 mg/kg	85 mg/kg		**32 mg/kg** (Uzbek Public Health Regulation № 0191-05 34 “Maximum permissible concentrations and approximate permissible concentrations of exogenous harmful substances in the soil”)
4	Zinc	23 mg/kg	50 mg/kg		**23 mg/kg** (Uzbek Public Health Regulation № 0191-05 35 “Maximum permissible concentrations and approximate permissible concentrations of exogenous harmful substances in the soil”)
5	Nitrate	130 mg/kg	-	-	**130 mg/kg** (Uzbek Public Health Regulation № 0191-05 36 “Maximum permissible concentrations and approximate permissible concentrations of exogenous harmful substances in the soil”)

2.3.6. Other regulations

- Public Health Regulation No. 0212-06[37] "Sanitary rules and norms of hygienic assessment of the degree of soil pollution of different types of land use in the specific conditions of Uzbekistan", 7 July 2006
- Engineering Standard KMK 2.04.02-97 “Water supply. External networks and facilities"[38], 1997
- Public Health Standard No. 0244-07 “Design and operation of sanitary protection zones of drinking water sources and pipelines”[39], 29 December 2007

3. DESCRIPTION OF THE SUBPROJECT

3.1. Existing Situation

55. **Location.** The subproject is located in Karakalpakstan, a semi-autonomous area in the Western Uzbekistan. The subproject area borders with Turkmenistan in the south, the Khorezm Province in the south-east and Beruni district of Republic of Karakalpakstan in the east and Kazakhstan in the north. Western Uzbekistan Water Supply System Development Project covers six districts – Nukus, Amudarya, Karauzyak, Kungrad, Muynak, and Beruni districts (**Figure 1**).

[34] https://ssv.uz/ru/documentation/perechen-utverzhdennyh-sanitarnyh-norm-pravil-i-gigienicheskih-normativov-sanpin-respubliki-uzbekistan
[35] https://ssv.uz/ru/documentation/perechen-utverzhdennyh-sanitarnyh-norm-pravil-i-gigienicheskih-normativov-sanpin-respubliki-uzbekistan
[36] https://ssv.uz/ru/documentation/perechen-utverzhdennyh-sanitarnyh-norm-pravil-i-gigienicheskih-normativov-sanpin-respubliki-uzbekistan
[37] https://lex.uz/docs/1932321?query=%D0%A1%D0%B0%D0%BD%D0%9F%D0%B8%D0%BD
[38] https://mc.uz/gradostroitelnye-normy/
[39] https://lex.uz/docs/1921690

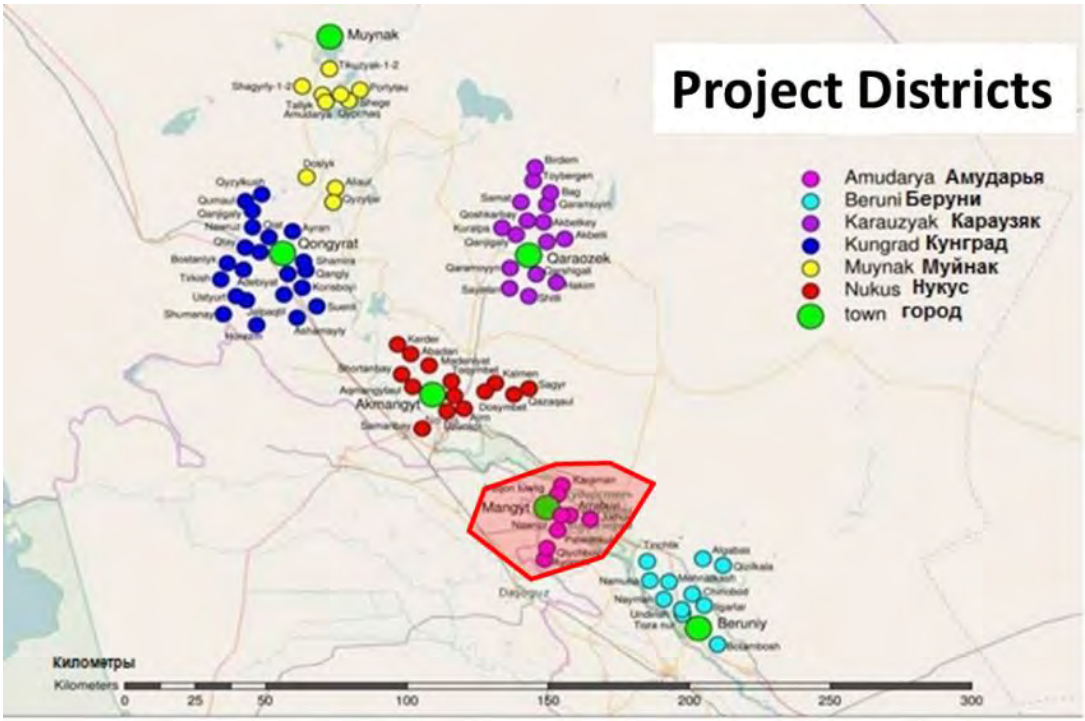


Figure 1 Project Location: Amudarya administrative district

56. Sub-Project WU-CW-07 locates in the Amudarya administrative district with the main city Mangit. Mangit city was established on 18 December 1957, as of the merger of Kipchak and Mangitsky districts. Nowadays the Amudarya district has some four towns (Jumurtau, Kipchak, Kilichbay, and Khitoy) and more than fifteen villages (Amir Temur, Buzyap, Durmon, Bobur, Kanly, Klichbay, Khtay, Kuyuk-Kupir, Nazarkhan, Ok Oltin, Orta-Kala, Tulkin, Kholimbeg, and Chaykol, etc.).

57. **Local Communities.** The nearest settlement to the Sub-Project Site is Kipchak town (**Figure 2**) located to the west and has population of 30,711 (15,433 are males and 15,278 are females) as of September 2021. Kipchak is divided by highway and its Tulkin aul[40] is the closest community to the subproject site.

[40] Aul is a traditional settlement in Karakalpakstan and means the same as makhalla in Uzbekistan.

Figure 2 Boundaries of the new Mangit WTP and nearest settlement, Kipchak town

58. Following the Local Administration Regulation No. 269 dated 2018, 12.8 ha of land were allocated for construction of Mangit WTP on the territory of Kipchak town (Amudarya district) and has the following geographical coordinates:

- Point 1: latitude 42 ° 12'26.71 "N; longitude 60 ° 5'55.62" E
- Point 2: latitude 42 ° 12'30.46 "N; Longitude 60 ° 6'3.80" E
- Point 3: latitude 42 ° 12'20.99 "N; longitude 60 ° 6'12.00" E
- Point 4: latitude 42 ° 12'14.51 "N; longitude 60 ° 6'17.01" E
- Point 5: latitude 42 ° 12'11.66 "N; longitude 60 ° 6'12.80" E
- Point 6: latitude 42 ° 12'14.64 "N; Longitude 60 ° 6'6.93" E
- Point 7: latitude 42 ° 12'16.93 "N; Longitude 60 ° 6'3.76" E

59. To determine the proximity of the subproject site to the nearest settlement five points were selected. The distance to the nearest Kipchak households is calculated using Google Earth application.

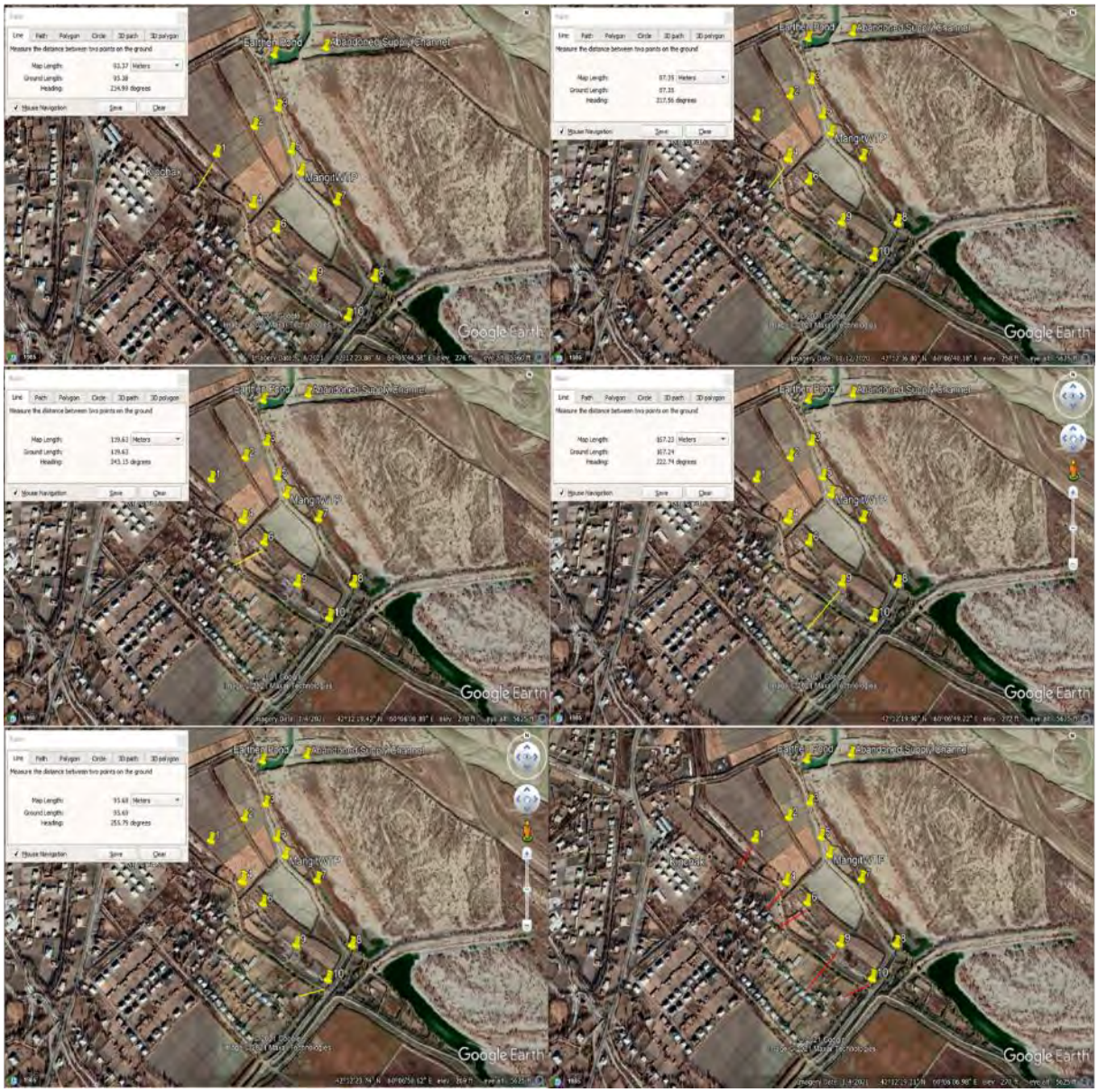


Figure 3 Proximity of the Sub-Project Site to Kipchak town

60. The average distance between the selected households and the subproject site is calculated as 112.66 m (Figure 3). However, the closest household is at 87.35 m from the construction site boundaries (Table 6).

Table 6 Distance from the construction site to the selected household

Selected household	Distance from the site to the selected household
1	93.38 m
4	87.35 m
6	119.63 m
9	167.24 m
10	95.69 m

61. Kipchak town has three secondary schools, one music schools, one community college, one outpatient clinic, and one private medical center. All these institutions are noise sensitive receivers (NSRs), but they are located far enough from the construction site. The existing two medical institutions are located at a distance of more than 2.6 km from the construction site **(**Figure 4**)**. Therefore, no direct negative impact would be on NSR. The closest educational

institution is a community college, which is 706.34 m from the subproject site; while other schools are more than 1.7 km away (Figure 5).

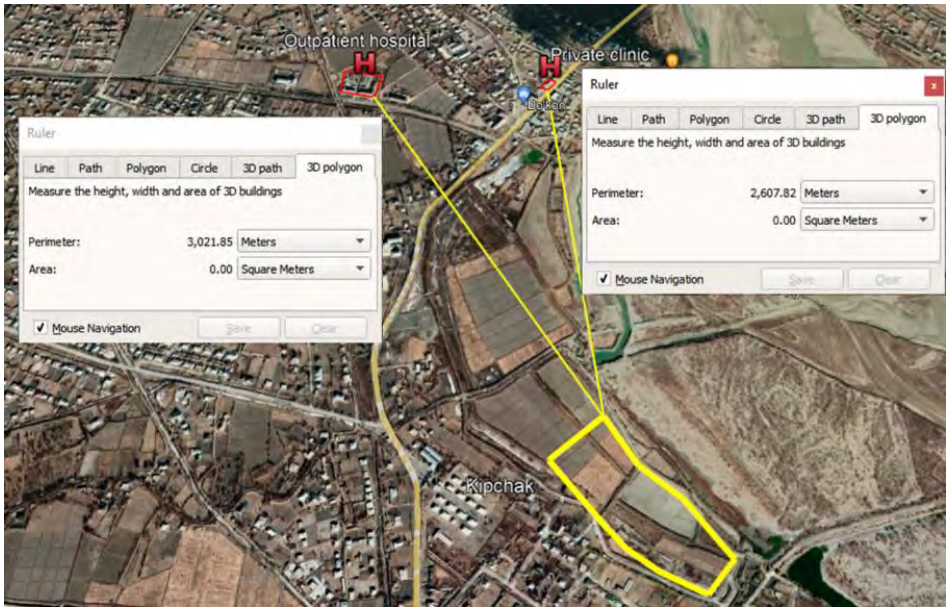


Figure 4 Distance between the Sub-Project Site and Medical Institutions

Figure 5 Distance between the Sub-Project Site and Educational Institutions

62. **Neighboring agricultural activity.** The proposed site is in close vicinity to agricultural fields under cotton, rice, corn, etc., as well as adjacent to the existing irrigation pumping station and abandoned water intake infrastructure previously used for irrigation. These old facilities include a fed channel from a river and an earthen pond. Both of them are good enough to be used for the construction of a new system.

63. **Railway Project.** There is a current construction of a railway station in the northwest and railway lines along the western border of subproject site. The approximate area of the railway construction project is shown in Figure 6. The railway construction is carried out on the territory between the Site and the Kipchak town.

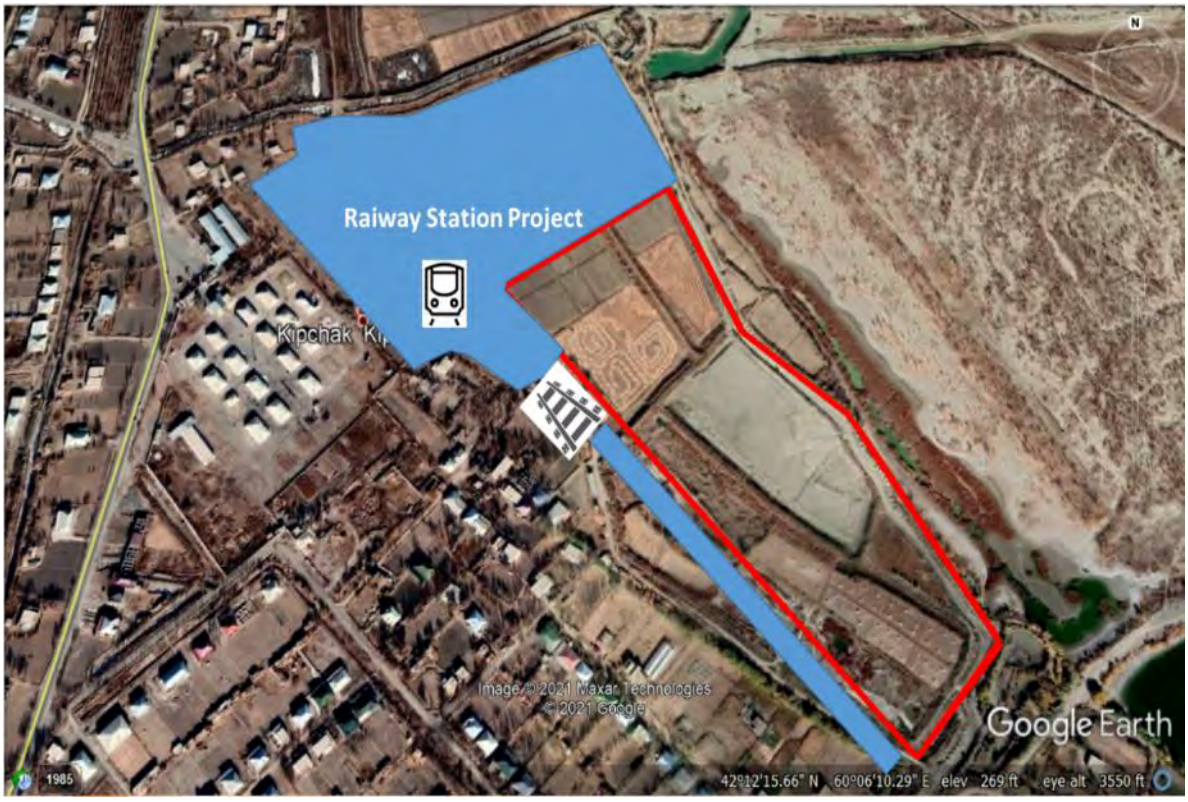


Figure 6 Railway Construction Area

64. The existing railway construction is a government Shavat - Gurlen - Jumurtau – Kipchak Project aimed at the construction of 413 m long bridge over the Amudarya River and 79 km long railway to connect Shavat administrative district (Shavat station) of Khorezm Province with Karauzyak administrative district (Kipchak station) of Karakalpakstan. As shown in Figure 7, the railway route (blue line) runs through the project area and in particular, near the Mangit WTP. The project is being implemented by Uzbekiston Temir Yullari JSC. It has started in 2020 and now is in its active phase – during the field visits in August-September 2021, land leveling works and earthmoving equipment and machinery was noted on the territory intended for railway station construction.

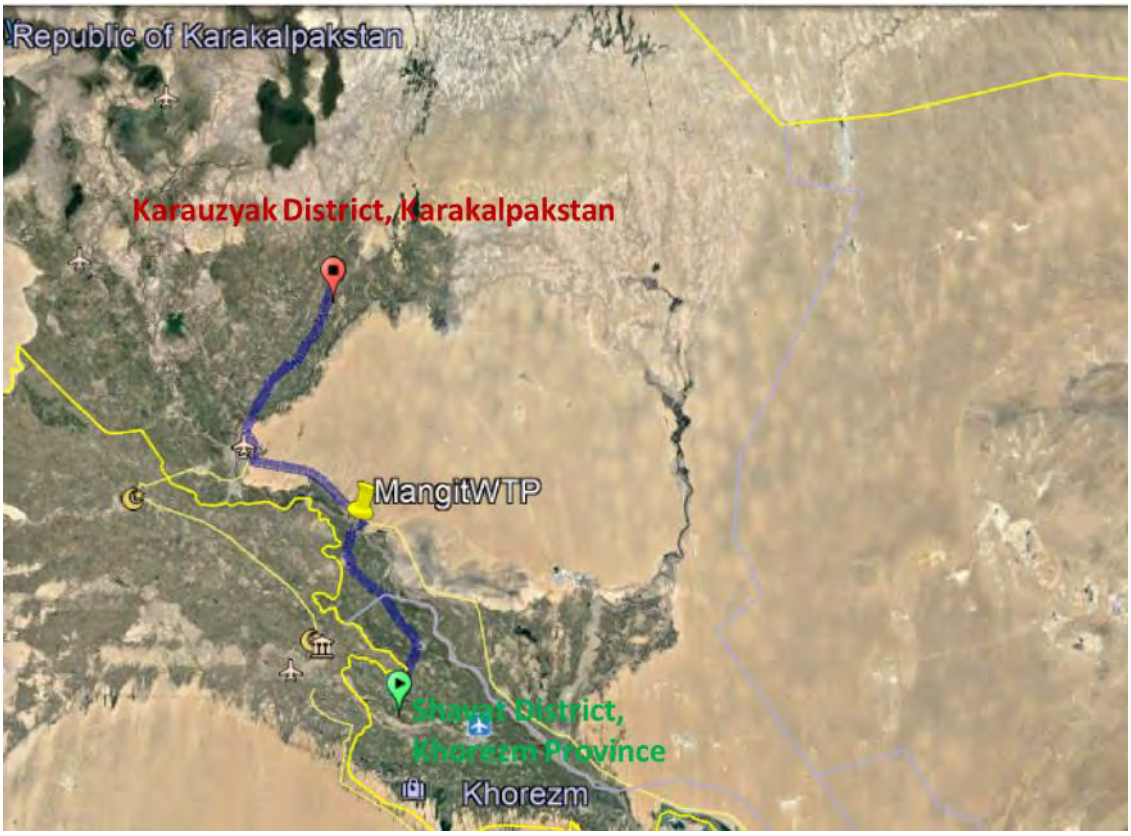


Figure 7 Railway Route: Shavat – Gurlen – Jumurtau – Kipchak

65. During discussion of the new railway and water mains routes in the project district, the Local Administration of the Amudarya district informed that the new railway would cross the new water supply networks at two locations in Kipchak towns (Appendix 2). Therefore, the PMC and the contractor will consider corresponding pipe covers to prevent their damage by railway transport.

66. **Water Supply**. Following the data provided by QST-LLC, the population of Amudarya district is accounted to 200.6 thousand people as of 1 January 2021 (Appendix 19). However, only 81,800 (i.e., 40.8% of the total Amudarya district population) people have access to the centralized water supply system, which is provided through a direct connection to the household (94.4% of the connected to the water supply system) and a street bulk water supply point (4.6% of the connected to the water supply system). There are still 118,800 (i.e., 59.2% of the total Amudarya district population) people, who use alternative drinking water sources, including 92,900 people (78.2% of the alternative water source users) use wells and 25,900 people (21.8% of the alternative water source users) is supplied water by trucks.

67. According to the recent data on the population living in Amudarya district, the required calculated gross water demand is 25,042 m³/day for regular consumption and 33,000 m³/day as maximum consumption. The water supply of Amudarya district is established on Mangit canal fed by Amudarya River. The water treatment facilities include two surface-water intakes – VU-1 (Figure 8**)** and VU-2 **(**Figure 9) (Figure 11), whereas only VU-1 water intake is operational; 1st-lifting pumping station (without pumps); three ground ponds of 60,000 m^3 as total capacity; two reservoirs for treated water (1,000 m^2 each); 2nd-lifting pumping station with four pumps; chlorination facilities; pipes, etc. VU-2 was constructed to cover the needs of local textile companies in Mangit town. It was handed over to QST-LLC in 2013 to cover the technical water needs. However, VU-2 is not operational due to the lack of water treatment facilities and pumping equipment.

Figure 8 Current location of VU-1 Water Intake in Mangit

Figure 9 Location of VU-2 Water Intake in Mangit

68. According to the feasibility study, VU-1 water intake has no fencing; some administrative and auxiliary buildings and premises as well as engineering infrastructure require rehabilitation. VU-2 water intake is 1 km far from the VU-1 water intake. Both water intakes (VU-1 and VU-2) are located in Mangit city, while the new Sub-Project WU-CW-07 site is located between Tulkin aul settlement of Kipchack town and Amudarya River. There are approximately 11 km between VU-1 and VU-2 water intakes and new site of Mangit WTP.

Figure 10 Distance between VU-1 and VU-2 Water Intakes in Mangit

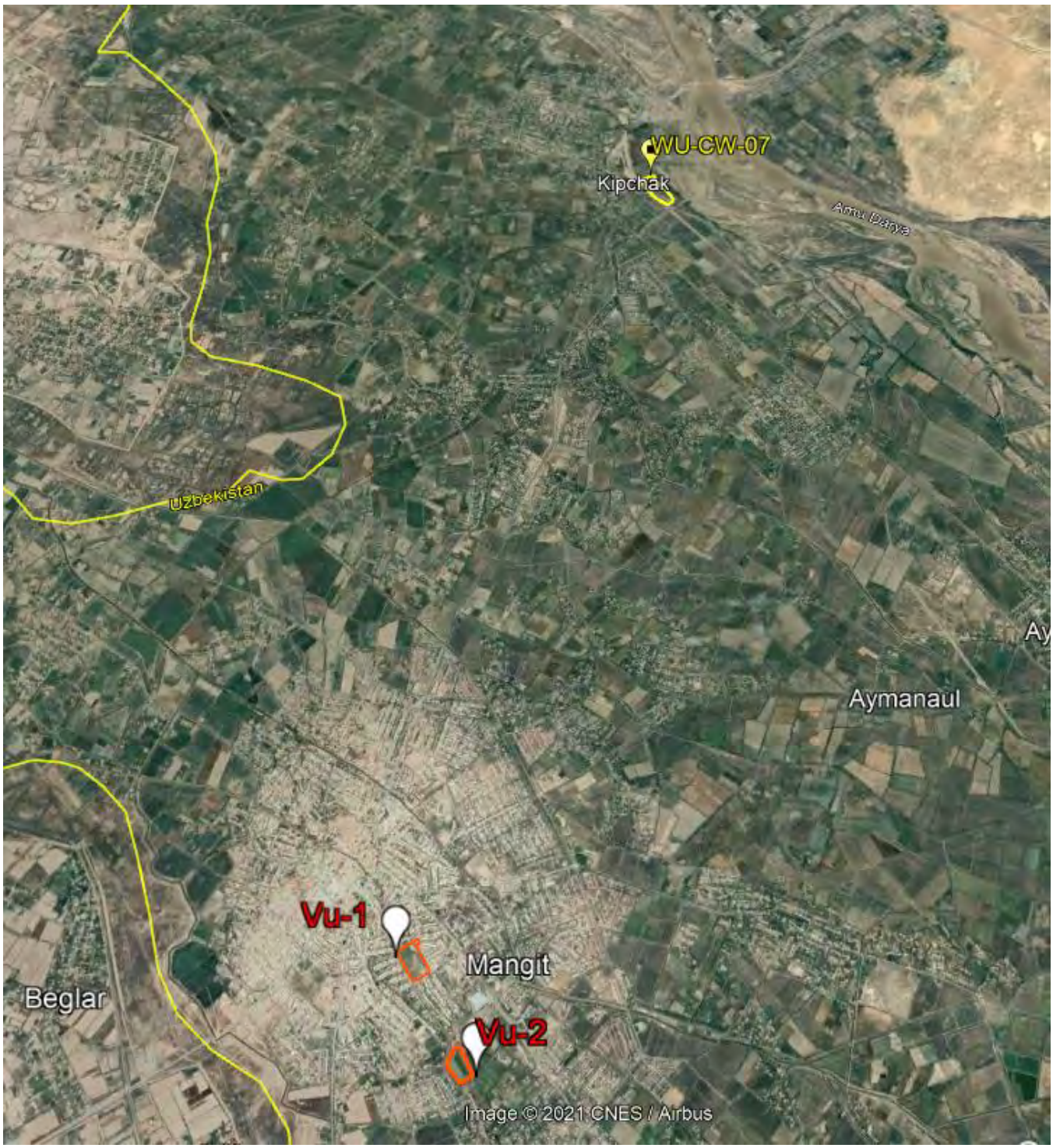


Figure 11 Location of VU-1, VU-2 Water Intakes in Mangit and proposed subproject site (WU-CW-07)

69. The current Amudarya district water supply infrastructure on the Mangit canal is not able to meet the increasing water demand in the Amudarya district due to the existing and forecasting population growth (Table 7).

Table 7 Target Year Population in Amudarya district

Population	2017	2023	2033	2043
Urban	34,652	38,232	45,038	53,050
Urban-type	14,359	15,842	18,663	21,980
Rural	136,690	150,811	177,661	209,291
Total	185,701	204,885	241,362	284,321

70. The construction of a new WTP is aimed to cover the water demand estimated by QST-LLC as 30,000-33,000 m^3 (Table 8).

Table 8 Water Demand

Classification	Population	Lpcd	Coverage	Daily Average Water Demand (m^3/d)
Urban	53,050	160	Mangit WTP	8,488
Urban-type	21,980	140	Mangit WTP	3,077
Rural	209,291	105	Mangit WTP	13,477
			Wells	8,498
Total	284,321	---	---	**33,540**

71. According to the feasibility study, the construction of new Mangit WTP would be on the existing territory of VU-2 water intake. However, QST-LLC noted that there was no water in the Mangit canal during the low water period, which makes ineffective the construction of a new WTP on the Mangit canal. The lowest water level in the Mangit canal was recorded in 2017-2018. Considering the inefficacy of engineering design approved in the project feasibility study of 2018, QST-LLC together with the Local Administration of Amudarya District decided to change the Mangit WTP place by moving it to the bank of the Amudarya River. Corresponding decision on new allocation of Mangit WTP Sub-Project was approved by Local Administration of Amudarya District (Appendix 3). The new area of the Sub-Project WU-CW-07 is 12.8 ha.

72. Nevertheless, the water of Amudarya still is the only source for sustainable water supply of the project district and the placement of the new WTP on the bank of the Amudarya River is the most correct engineering decision. The permission for water intake from Amudarya River under the new site of Sub-Project WU-CW-07 was provided by Amudaryo Tuman Suv Tarmoklari on 4 May 2020 (Appendix 4).

73. The main institution involved in water supply and sanitation in the subproject area is Qaraqalpak Suv Taminati. However, the water supply system does not cover the entire territory of the district and many settlements use artesian wells for water extraction.

Figure 12 Artesian well in Tulkin community (Kipchak, Amudarya district, 23 September 2021)

74. **Wastewater management practices**. There is no wastewater system in Kipchak town. Wastewater from individuals is managed inside the house. The households use pit holes toilets. There is no wastewater treatment plant in the municipality to treat domestic sewage/septage. The survey shows that 99% of sampled households are interested in improving sewage management system and in paying for it.

75. **Solid management practices**. There is no proper system of solid waste collection and disposal in the Kipchak town. 88.57% of households dispose of solid waste in the pit around the house while about 7.14% have private collectors for collecting solid waste. It was observed that the respondents have sufficient knowledge about improperly managed solid waste that may affect public health and the surrounding environment.

76. **Power supply**. There is permanent power supply in Kipchak town and neighboring villages. During the public consultations in Tulkin community, participants (Appendix 16) expressed no complaints on the power supply.

3.2. Project Components

77. According to the conceptual design prepared by PMC, the proposed Sub-Project WU-CW-07 includes rehabilitation of abandoned supply channel and earthen pond and construction of new WTP (Figure 13).

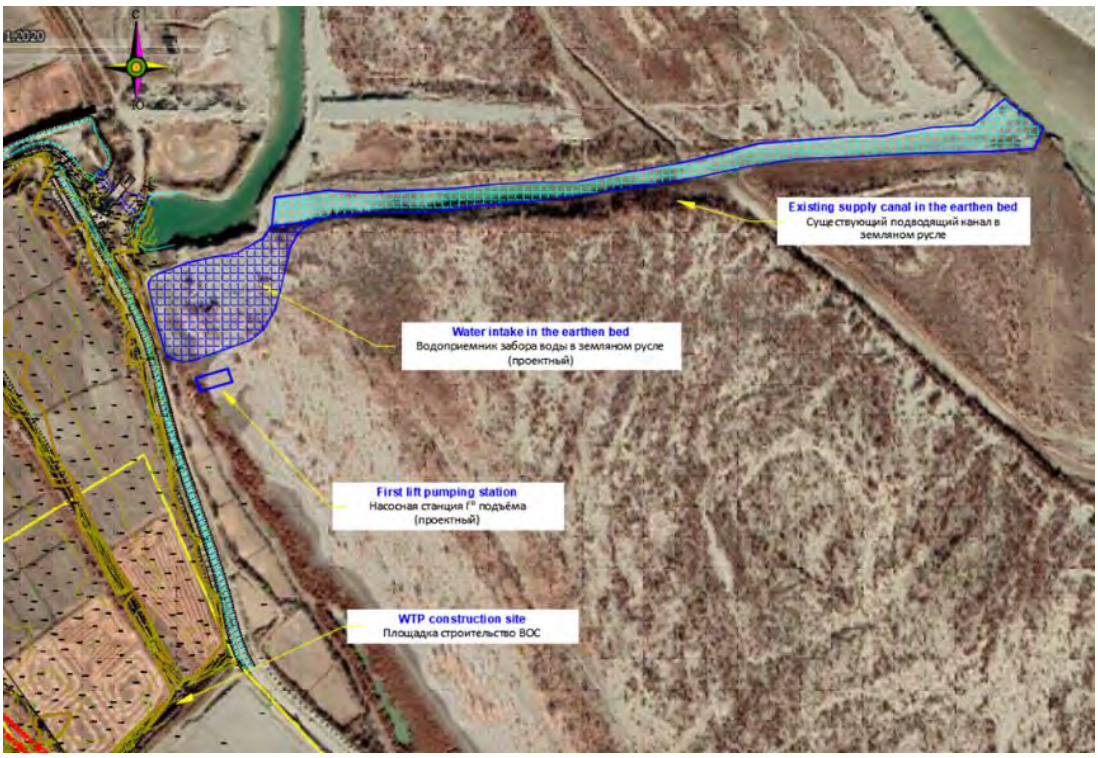


Figure 13 Sub-Project WU-CW-07: Key Components (Conceptual design of Sub-Project WU-CW-07, 2021)

78. The Sub-Project WU-CW-07 comprises the following main components:

a) Detailed design of Mangit WTP and auxiliary facilities

The brief requirements are provided in Appendix 7 (Summary of Planned Works under Sub-Project WC-07) and in conceptual design prepared by PMC.

b) Construction of water treatment facilities including administrative and operative buildings and infrastructure

The brief requirements are provided in Appendix 7 (Summary of Planned Works under Sub-Project WC-07) and in conceptual design prepared by PMC.

c) Connection of new WTP with water supply system of Amudarya district is specified in Figure 14.

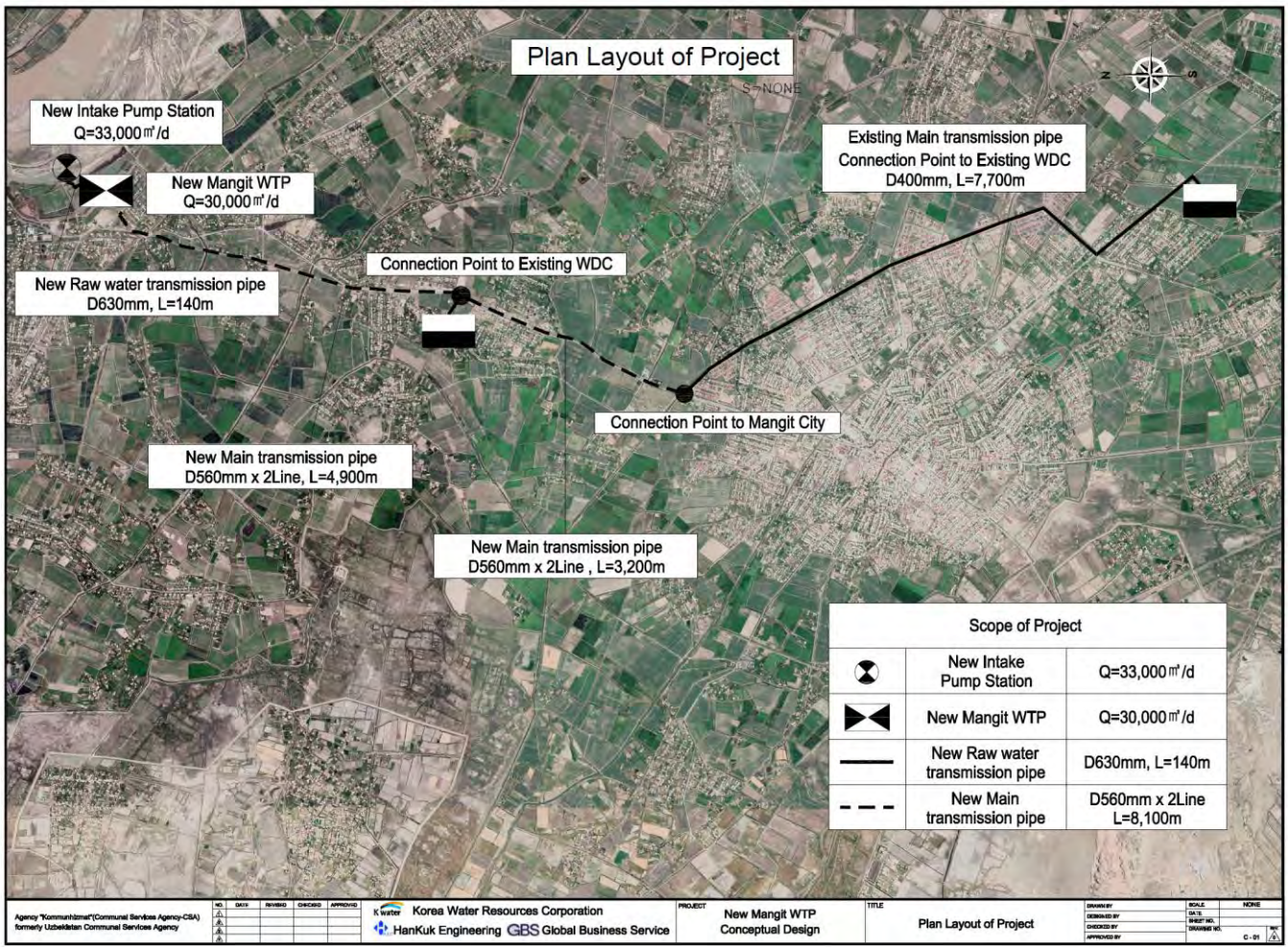


Figure 14 Plan of Sub-Project WU-CW-07 (Conceptual design of Sub-Project WU-CW-07, 2021)

d) Construction of reservoir for water intake with restoration of the supply channel

The preliminary scope of earthworks will include a cleaning the existing supply channel, which estimates as 0.5 times volume of design capacity of WTP, and construction of a reservoir for water intake (estimated to 1.5 times volume of design capacity of WTP).

e) Procurement of equipment for cleaning the existing supply channel and reservoir

f) Procurement and installation of pumping stations equipment

79. Design and installation of power supply infrastructure for Mangit WTP (electricity transmission/distribution line) will be constructed under the subproject). Based on the results of consultations with Kapakalpakelektroset (Karakalpak Power Supply), the main source for power supply of Mangit WTP will be Kipchak Power Station (tap-off from the nearby support of the 35 kV line), while the Nazarkhan Power Station will be used as a reserve (backup) source. The proposed route for power supply of Mangit WTP is provided in Figure 15.

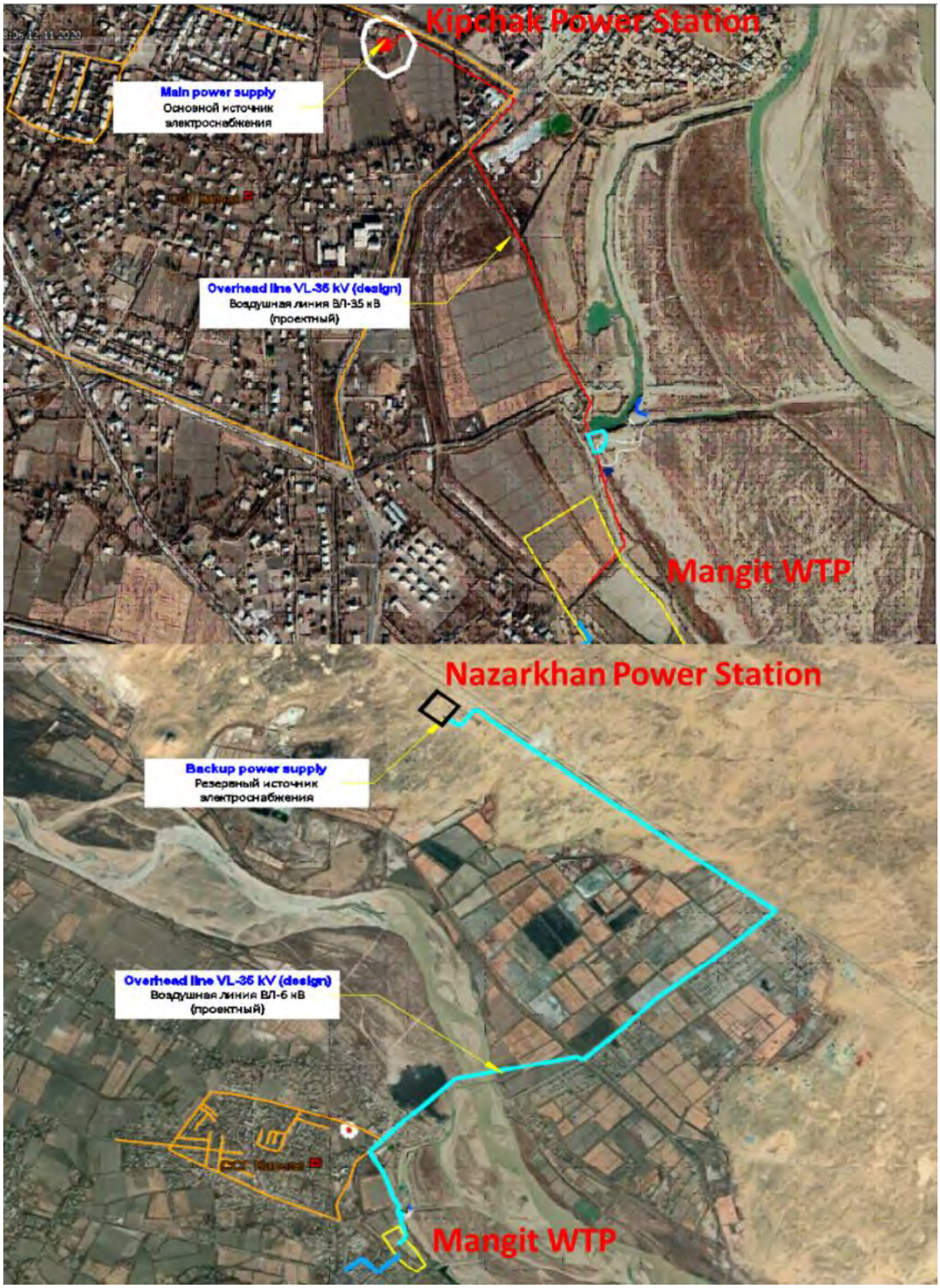


Figure 15 Power Supply Sources for Mangit WTP (Conceptual design of Sub-Project WU-CW-07, 2021)

80. During the detailed design, the contractor will foresee the followings:

- Construction of a high-voltage overhead line of 35 kV overhead line, about 2 km long (the main source of power supply).
- Installation of a 35/6 kV step-down transformer substation;

- Construction of a high-voltage overhead line VL-6kV, length about 12 km (backup power supply).
- Install a 6/0.4 kV transformer substation according to the calculation, including all the necessary devices for the operation of the power supply system of objects.
- Install a 6/0.4 kV transformer substation according to the calculation, including, if necessary, a charging distribution device (ZRU), a switchgear (RU) and all the necessary elements for the operation of the power supply system of objects.

81. The following electrical works also will be foreseen by the contractor during detailed design:

- HV closed switchgear for the 6kV main switchboard and 4 No. 6kV ring main units.
- Power transformers for a 6/0.4 kV system.
- Motor control centres.
- All motors for process drives and pumping plant.
- All HV and LV power, control, instrumentation and monitoring cabling required to provide a complete operational system.
- All safety and instrumentation earthing and equipotential bonding.
- Building internal lighting, emergency lighting, area, road and security lighting.
- Ventilation.
- Fire detection.
- Small power distribution.
- Heating.

82. Electricity distribution will be by overhead line whenever possible and by underground cable only if unavoidable. Distribution switchgear will be connected to overhead lines by short lengths of underground cable. Underground cables will be suitably protected for the site soil conditions. Cables with XLPE (cross-linked polyethylene) will be used. The outer insulation layer will be treated by the manufacturer against biting animals. Cables which are not treated will be rejected.

83. The conceptual design also stipulates the following criteria to power transformers:

Table 9 Criteria to power transformers

Criteria	Description
Quantity	4
Locations	In purpose built substation enclosures.
Type	Oil filled, outdoor pattern, hermetically sealed
Rated output	Each unit shall be rated to meet the maximum duty load.
Voltage ratio	10000/400 volts (Nominal at no-load)
Secondary voltage at rated output	380 volts, 3 phase, 50 Hz
Vector group	Dyn 11
Cooling method	ONAN
Tap changer	Off-circuit, +/- 5% in 2.5% steps.
Transformer fittings	Standard fittings plus winding temperature indicator and pressure relief device
Primary and secondary circuit cable terminations	Enclosed non-filled (dry) metalclad cable boxes
Earthing facilities	External bushing and terminal assemblies for independent transformer frame and secondary winding neutral point earthing

84. Location of transformers and substances will be proposed by the contractor in a detailed design. The Contractor will ensure that substations are located as to minimize route length of the LV cables from the transformer secondary to the nearest Motor Control Centre.

85. In addition to the main components, the Sub-Project WU-CW-07 requires provision of equipment coordinated with future SCADA system, which is supposed to be implemented upon completion of the WTP.

86. The summary of the planned works in relation to the Sub-Project WU-CW-07 is provided in Appendix 7 (Summary of Planned Works under Sub-Project WU-CW-07).

4. DESCRIPTION OF THE ENVIRONMENT

4.1. Physical Conditions

4.1.1. Climate

87. Karakalpakstan is located in the desert zone of the Central Asian region and has extreme continental desert climate with low precipitation and high evaporation. Most of the territory is occupied by the deserts of the Usturt and Kyzyl-Kum plateaus. There are draining Aral Sea, a delta of the Amudarya River and new Aralkum desert between these plateaus. Such location of the project area results in hot summers and cool winters. Summer temperatures often surpass 40°C. Winter temperatures average is about −2 °C, but may fall as low as −40°C. The coldest month is January with minimum temperature of -20°C ÷ -27°C. The hottest month is July with maximum temperature of +42°C. The Project areas are quite arid, with average annual rainfall is not exceeding 100 mm during last three years (Figure 16), and occurring mostly in winter and spring. The wind direction is mostly north-east and north.

4.1.2. Geology

88. Uzbekistan earthquake hazard is classified as high according to the historical and forecasting data. It is characterized by the presence of the Tien-Shan and Pamir orogenic belts, whose tectonic regime is determined by the convergence of the Indian and Eurasian plates. However, the instrumental data of earthquakes with 8.6 (the minimum energy level of the regional catalog) is few in Karakalpakstan. Meanwhile, considering the presence of historical earthquakes, the local scholars[41] believe that the occurrence of strong and moderate earthquakes in the project area is possible. Therefore, the project area refers to the six and seven seismic zones, on various sources (Figure 17).

[41] Complex of general seismic zoning maps OSR-2017 of Uzbekistan, Institute of Seismology under the Academy of Science of Uzbekistan, https://www.sciencedirect.com/science/article/pii/S1674984720300239#fig1

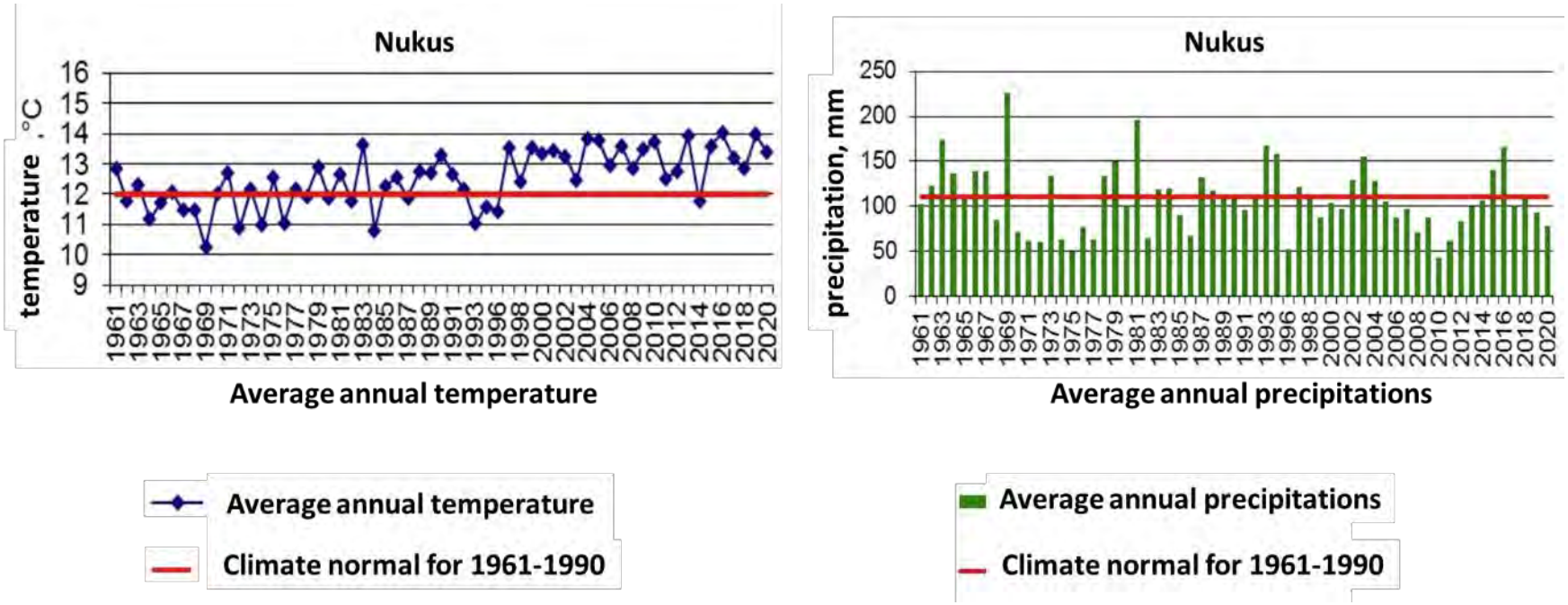


Figure 16 Climatic normal on temperature and precipitations

Source: Center of Hydrometeorological Services of Uzbekistan, http://hydromet.uz/ru/node/41

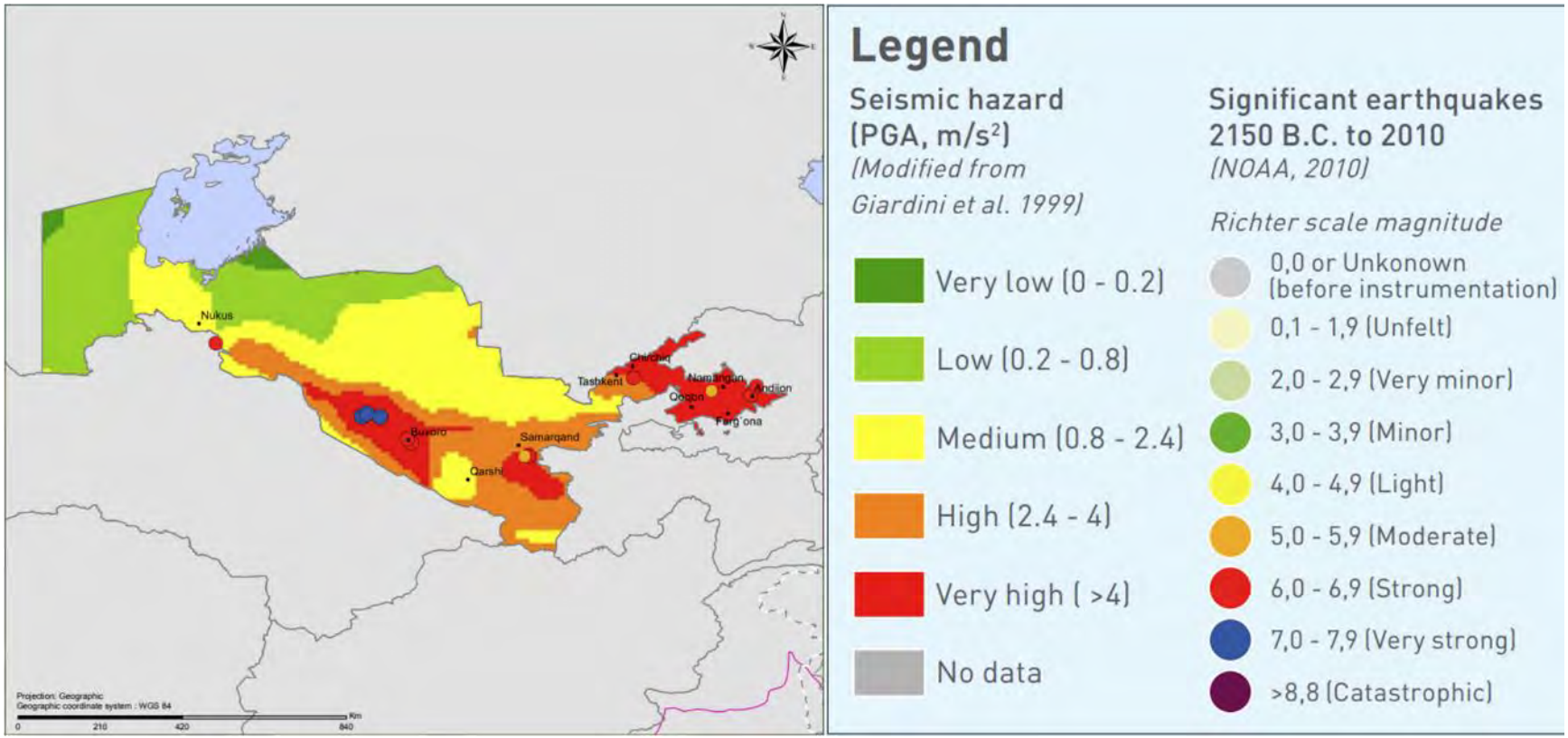


Figure 17 Uzbekistan seismic hazard map

Source: World Health Organization, https://www.euro.who.int/__data/assets/pdf_file/0008/430694/14_Uzbekistan.pdf

89. The entire territory of Kipchak town is densely planted with gardens. There is a large network of canals and collectors. However, there is no well-developed road network in the area.

90. The location of the new water intake and water treatment facilities was selected considering the topographic, hydrogeological and geological design conditions and requirements for the quality and uninterrupted water supply in the Amudarya region. The engineering surveys were conducted by Royal Dizayn Loyiha LLC (Uzbekistan), having mandate of Project Engineer.

91. The project area is a plain descending from south to north. Absolute elevations range from 82 m to 86 m. According to the survey findings, the geomorphological structure of the soils are loess-like loams interbedded with lenses of sand and some gravel. The geological section presented on Figure 18 shows presence of sandy loam, loam, silty sand and fine sand. During the engineering survey, some hidden underground infrastructure and communication lines were revealed. Within the planning boundaries of the site power supply route, the following were identified: gas pipes, communication cables, low-voltage network cable and water pipes.

92. In terms of geomorphology, the site belongs to the alluvial-deltaic plain of the Amudarya River. No visible deformation of the earth's surface is observed nearby the subproject site. The soil genetic type is alluvial deposits of the quaternary age. In lithological terms, the area is composed of loams and sands to the explored depth of up to 10.0 m. The soils in the study area are non-saline.

4.1.3. Hydrogeology conditions (Ground Water)

93. During the survey, groundwater was discovered at a depth of 0.34 - 3.18 m from the earth's surface. According to the data of long-term monthly average observations, the minimum groundwater level is observed in October - February, whereas the maximum groundwater level is registered from March to September.

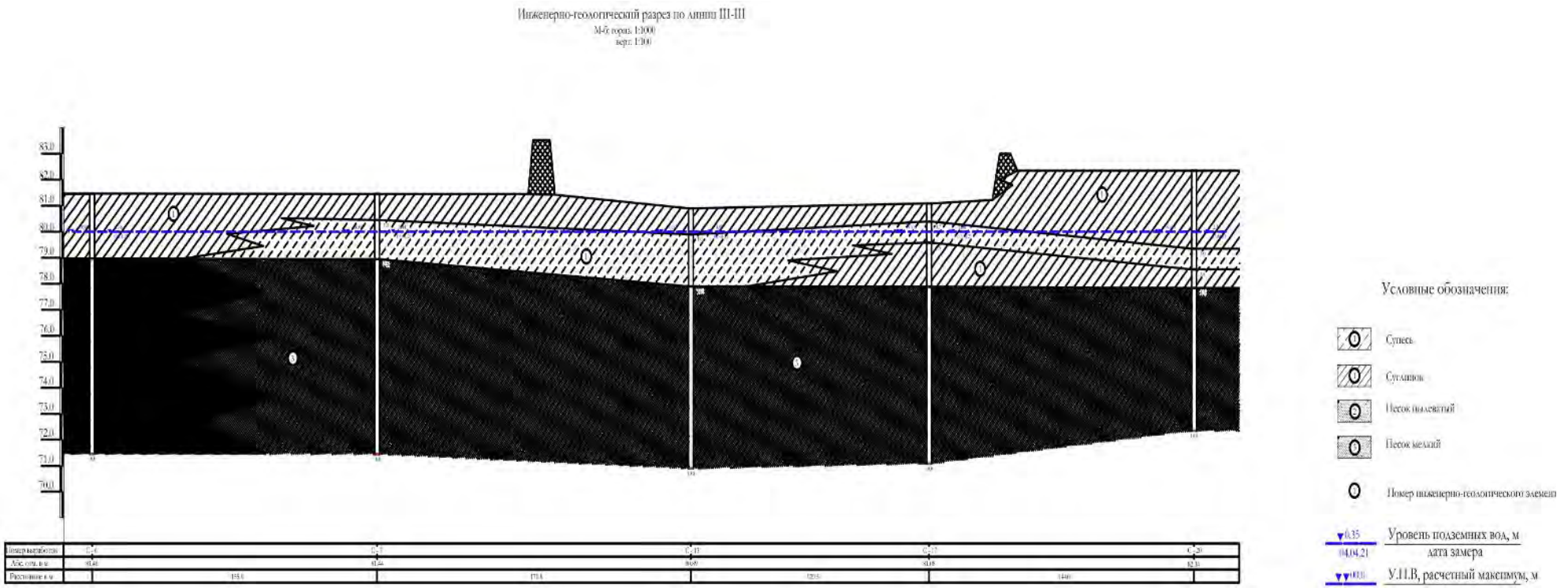


Figure 18 Subproject site: geomorphological structure

Source: Engineering geological survey for Sub-Project WU-CW-07, “RUSTAM GEOLOG” Private Firm, 2021

4.1.4. Hydrogeology conditions (Surface Water)

94. The project area of Mangit WTP is located on the left bank of Amudarya River and between two WTPs along the river, Tuyamuyun WTP in the southeast and Takhiatash WTP in the northwest. Moreover, there are a number of agricultural water intakes along the river, spending the major flow of Amudarya River for irrigation. The water withdrawal from the Amudarya River is regulated by Interstate Commission for Water Coordination of Central Asia[42].

95. The Amudarya Basin Water Management has four departments for the operation of water intake facilities, hydroelectric facilities, and interstate canals with Turkmenistan. The corresponding agreement between Uzbekistan and Turkmenistan was last updated on 6 March 2017[43].

96. Considering morphological and geographical features, the Amudarya river basin is divided into three sections: the upper basin is used by three countries, Uzbekistan, Tajikistan and Kyrgyzstan; the middle river basin (between the Kelif and Tuyamuyun) and the lower river basin are used by Turkmenistan and Uzbekistan mostly for irrigation and small part for drinking water.

97. The lower river basin management controls all water withdrawals in the 283 km section from the Kipchak monitoring station to the Aral Sea. According to the Project Feasibility Study, the annual water withdrawal is no more than 30,000 m^3/day.

98. There are various monitoring stations along the Amudarya River (Figure 19). Some of these stations carry out water discharge and quality monitoring, while others are used only for water quality monitoring. The monitoring station are marked as red flags on the map. One of such monitoring stations is located in Kipchak town, near the new Mangit WTP, and used for water discharge and quality monitoring.

99. QST-LLC states that the water of Amudarya River meets the requirements set for surface water sources intended for drinking water production. However, there are some key indicators, which shall be addressed correspondingly.

[42] https://www.riob.org/fr/file/289949/download?token=0daTemHO

[43] Agreement on Water Management Cooperation between Ministry of Agriculture and Water Resources of Uzbekistan and Ministry of Agriculture and Water Resources of Turkmenistan, Ashgabat, 6 March 2017, http://extwprlegs1.fao.org/docs/pdf/bi-175286.pdf

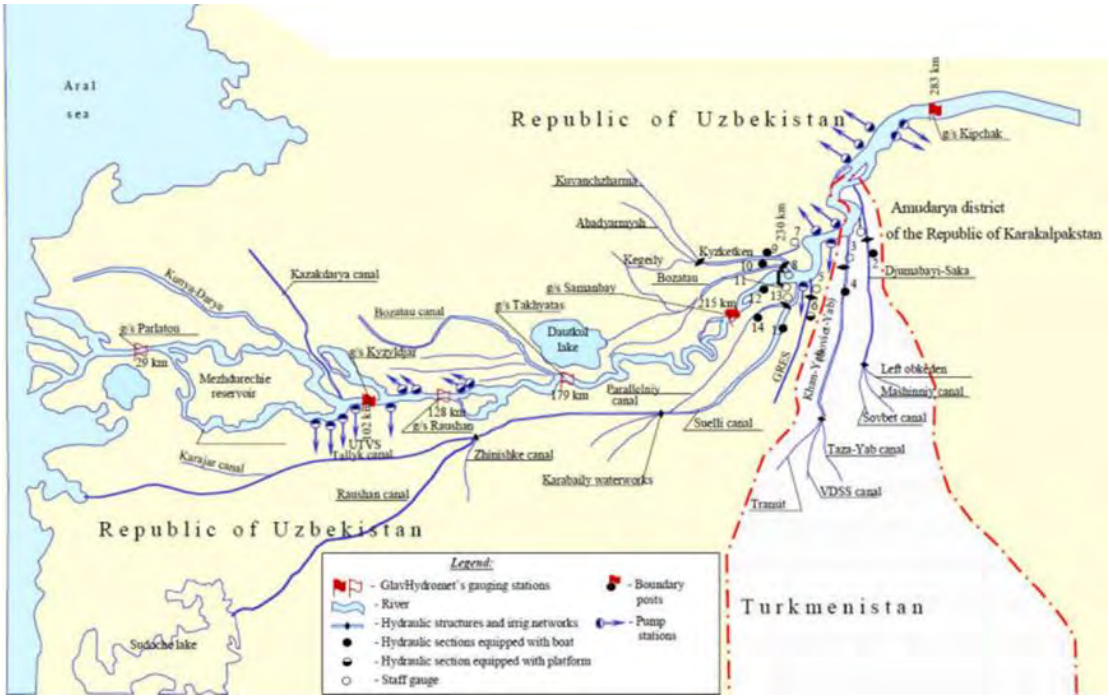


Figure 19 Monitoring stations across the Amudarya River in Karakalpakstan

100. The turbidity indicator of Amudarya River is high and ranks the river first in Central Asia and one of the first in the world. Turbidity is the clarity of water and it is an important water quality indicator. Material that causes water to be turbid include clay, silt, very tiny inorganic and organic matter, algae, dissolved colored organic compounds, and various microscopic organisms. QST-LLC and other water utilities in Uzbekistan still use water quality monitoring standard established by Soviet Union in 1974, GOST 3351-74[44] “Drinking water. Methods for determination of odour, taste, color and turbidity”. Following this standard, the water turbidity is reported in formazine turbidity units (FTU) and the findings are described as physical observations (for example, low turbidity, high turbidity, etc.), while comparing the sample with a standard (i.e., distilled water). Excessive turbidity in drinking water is aesthetically unappealing, and may also represent a health concern. Turbidity can provide food and shelter for pathogens. If not removed, the causes of high turbidity can promote regrowth of pathogens in the water, leading to waterborne disease outbreaks. Therefore, World Health Organization[45] (WHO) recommends that filtered water turbidity shall be no more than 1 NTU (nephelometric turbidity unit) and none to exceed 5 NTU.

101. Another challenge of the Amudarya River is the increase of mineralization[46]. The major salt contributors to the river flow are the effluents from the agricultural drainage collectors accumulating chemicals and saline soils. There are national Public Health Regulation No. 0200-06[47] and Public Health Regulation No. 0256-08[48], which specify certain concentration limits for nitrates, nitrites, polyphosphates, sulfates, chlorides, and other substances in the water. The

[44] GOST 3351-74 “Drinking water. Methods for determination of odour, taste, colour and turbidity”, https://docs.cntd.ru/document/1200008322

[45] Guidelines for Drinking Water Quality, fourth edition, World Health Organization, 2017, https://apps.who.int/iris/bitstream/handle/10665/254637/9789241549950-eng.pdf

[46] Analysis of the water quality parameters in the Amudarya River, Analytical Report, The impact of climate change on surface water quality in the Amu Darya basin Project, Germany, 2019, https://www.carececo.org/juan/Water_Quality_Analysis_Amudarya-%D1%81%D0%B6%D0%B0%D1%82%D1%8B%D0%B9.pdf

[47] Public Health Regulation No. 0200-06, “Sanitary standards of water sources hygienic assessment, definition of surface water and groundwater sources classes, and their selection for drinking water supply”, 15.05.2006, https://www.lex.uz/acts/1933428

[48] Public Health Regulation No. 0256-08 “Hygienic requirements for water treatment processes intended for centralized drinking water supply in Uzbekistan”, 17.10.2008, https://www.lex.uz/acts/1820174

water quality tests conducted by QST-LLC and its subsidiaries confirm compliance of treated water with the requirements set in applicable legislation.

102. To obtain the data on existing surface water quality around the Sub-Project WU-CW-07 site, Amudarya District Branch of Karakalpakstan Environmental Committee specified the following three certain geographical coordinates (Appendix 13) for water sampling and testing. Location of the sampling points is provided in Figure 20:

- Sampling point No.1: 42°12'40.22"N 60° 6'35.50"E (Amudarya River)
- Sampling point No.2: 42°12'35.57"N 60° 6'4.62"E (an abandoned water reservoir previously used for irrigation)
- Sampling point No.3: 42°12'16.42"N 60° 6'20.51"E (natural water reservoir formed upon river flooding).

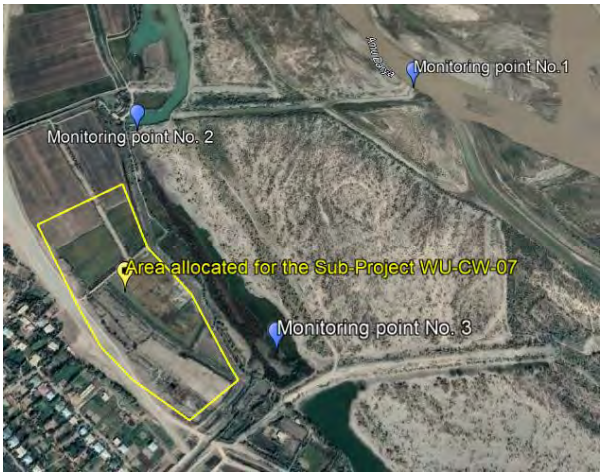


Figure 20 Location of surface water monitoring points

Sampling and water quality testing were carried out by the Sanitary-Epidemiological Welfare and Public Health Service of the Republic of Karakalpakstan on 5 October 2021 (Appendix 20) as part of this IEE. Table 10, BOD = Biochemical oxygen demand
Table 11 and BOD = Biochemical oxygen demand

103. Table 12 provide the results of the surface water quality tests around the Sub-Project WU-CW-07 site.

Table 10 Surface water quality at sampling point No.1 (on 5 October 2021)

Indicator	Unit	Rate	Reference (O'zDST 951:2000 standard)
Color	units	5	Not more than 30
Turbidity	mg/l (mg/dm^3)	1.7	Not more than 20
pH factor	pH	8.4	Within the range of 6.5 -8.5
BOD	mgO_2/l (mgO_2/ dm^3)	1.9	Not more than 5 (II class)
Acid capacity (permanganate)	mgO_2/l (mgO_2/ dm^3)	1.1	Not more than 7
Alkalescency	mg-equiv	1.8	-
Total hardness	mg-equiv/l (Mg-equiv/ dm^3)	5.7	Not more than 7
Solid residue	mg/l (mg/dm^3)	384	Not more than 1000
Iron	mg/l (mg/dm^3)	0.01	Not more than 0.3
Copper	mg/l (mg/dm^3)	0.1	-
Chloride content	mg/l (mg/dm^3)	118	Not more than 250
Sulphate content	mg/l (mg/dm^3)	201	Not more than 400

BOD = Biochemical oxygen demand

Table 11 Surface water quality at sampling point No.2 (on 5 October 2021)

Indicator	Unit	Rate	Reference (O'zDST 951:2000 standard)
Color	units	5	Not more than 30
Turbidity	mg/l (mg/dm^3)	1.7	Not more than 20
pH	pH	8.4	Within the range of 6.5 -8.5
BOD	mgO_2/l (mgO_2/ dm^3)	1.9	Not more than 5 (II class)
Acid capacity (permanganate)	mgO_2/l (mgO_2/ dm^3)	1.1	Not more than 7
Alkalescency	mg-equiv	1.8	-
Total hardness	mg-equiv/l (Mg-equiv/ dm^3)	5.7	Not more than 7
Solid residue	mg/l (mg/dm^3)	384	Not more than 1000
Iron	mg/l (mg/dm^3)	0.05	Not more than 0.3
Copper	mg/l (mg/dm^3)	0.001	-
Chloride	mg/l (mg/dm^3)	118	Not more than 250
Sulphate	mg/l (mg/dm^3)	201	Not more than 400

BOD = Biochemical oxygen demand

Table 12 Surface water quality at sampling point No.3 (on 5 October 2021)

Indicator	Unit	Rate	Reference (O'zDST 951:2000 standard)
Color	units	5	Not more than 30
Turbidity	mg/l (mg/dm^3)	1.0	Not more than 20
pH	pH	8.2	Within the range of 6.5 -8.5
BOD	mgO_2/l (mgO_2/ dm^3)	2.1	Not more than 5 (II class)
Acid capacity (permanganate)	mgO_2/l (mgO_2/ dm^3)	1.4	Not more than 7
Alkalescency	mg-equiv	1.6	-
Total hardness	mg-equiv/l (mg-equiv/ dm^3)	5.0	Not more than 7
Solid residue	mg/l (mg/dm^3)	384	Not more than 1000
Iron	mg/l (mg/dm^3)	0.1	Not more than 0.3
Copper	mg/l (mg/dm^3)	0.008	-
Zinc	mg/l (mg/dm^3)	0.009	-
Chloride content	mg/l (mg/dm^3)	131	Not more than 250
Sulphate content	mg/l (mg/dm^3)	196	Not more than 400

BOD = Biochemical oxygen demand

104. According to the report of Sanitary-Epidemiological Welfare and Public Health Service of the Republic of Karakalpakstan as of 8 October 2021, provided by the Head of Sanitary and Hygiene Laboratory (Ms. Alfiya Mustafina) and Head of Environmental Sanitation Department (Mr. A.Jolmurzaev), the surface water quality around the Sub-Project WU-CW-07 complies with local environmental and public health regulations (Regulation No. O'zDST 951:2000).

4.1.5. Air Quality

105. To obtain the data on existing air quality around and at the Sub-Project WU-CW-07 site, Amudarya District Branch of Karakalpakstan Environmental Committee specified the following four geographical coordinates (Appendix 13) for ambient air sampling and testing. Location of the sampling points is provided in Figure 21:

- Sampling point No.1: 42°12'26.07"N 60° 6'9.19"E (on the bank of the existing natural flooding area);
- Sampling point No.2: 42°12'16.98"N 60° 6'14.40"E (inside the Sub-Project WU-CW-07 site);
- Sampling point No.3: 42°12'11.99"N 60° 6'12.43"E (on the boundary of Sub-Project WU-CW-07 site);

- Sampling point No.4: 42°12'15.20"N 60° 5'58.60"E (inside the adjacent Tulkin-aul settlement).

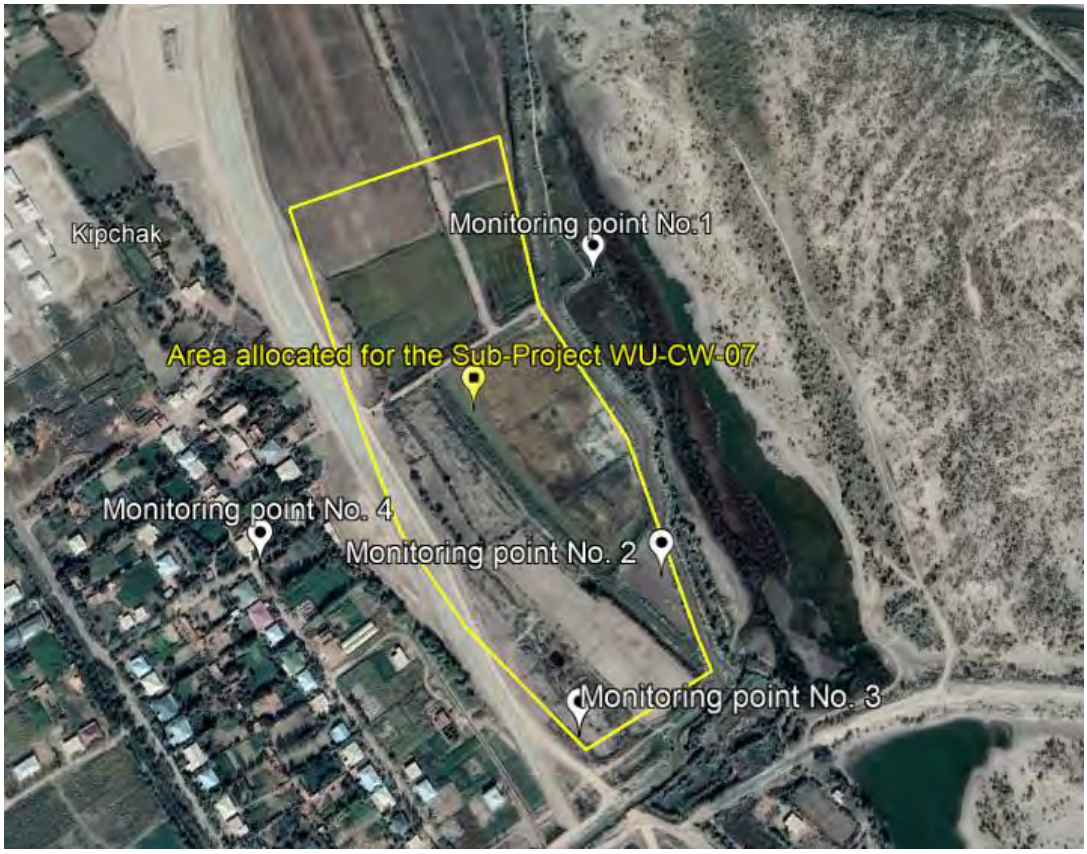


Figure 21 Location of ambient air monitoring points

As part of the IEE the ambient air sampling and testing was carried out by the Sanitary-Epidemiological Welfare and Public Health Service of the Republic of Karakalpakstan on 5 October 2021 (Appendix 20). Table 13, Table 14, Table 15 and

106. Table 16 provide the results of ambient air quality around the Sub-Project WU-CW-07 site.

Table 13 Ambient air quality at sampling point No.1 (on 5 October 2021)

Weather factor				Testing timing			Parameter mg/m³	Testing results mg/m³		Sampling Method
Temperature C°	Atmosphere pressure mm hg	Relative moisture	Velocity of air	Start	End	Aspiration speed l/min		Concentration	maximum concentration limit	
+ 14	763	36%	5m/s	10-50 am	10-55 am	Express method	Cl_2	Not detected	0.1 mg/m³	RD 52.04.186-89
+ 14	763	36%	5m/s	10-50 am	10-55 am	Express method	$S0_2$	Not detected	0.5 mg/m³	RD 52.04.186-89
+ 14	763	36%	5m/s	10-50 am	10-55 am	Express method	NO_2	Not detected	0.085 mg/m³	RD 52.04.186-89
+ 14	763	36%	5m/s	10-50 am	10-55 am	Express method	NH_3	Not detected	0.2 mg/m³	RD 52.04.186-89
+ 14	763	36%	5m/s	10-50 am	10-55 am	Express method	H_2S	Not detected	0.008 mg/m³	RD 52.04.186-89
+ 14	763	36%	5m/s	10-50 am	10-55 am	Express method	CO	Not detected	5,0 mg/m³	RD 52.04.186-89
+ 14	763	36%	5m/s	10-50 am	10-55 am	Express method	NO	Not detected	0.6 mg/m³	RD 52.04.186-89
+ 14	763	36%	5m/s	10-50 am	10-55 am	Express method	Ethylene oxide	Not detected	0.3 mg/m³	RD 52.04.186-89

Table 14 Ambient air quality at sampling point No.2 (on 5 October 2021)

Weather factor				Testing timing			Parameter mg/m³	Testing results mg/m³		Sampling Method
Temperature C°	Atmosphere pressure mm hg	Relative moisture	Velocity of air	Start	End	Aspiration speed l/min		Concentration	maximum concentration limit	
+ 17	755	48%	4m/s	11-05 am	11-10 am	Express method	Cl_2	Not detected	0.1 mg/m³	RD 52.04.186-89
+ 17	755	48%	4m/s	11-05 am	11-10 am	Express method	$S0_2$	Not detected	0.5 mg/m³	RD 52.04.186-89
+ 17	755	48%	4m/s	11-05 am	11-10 am	Express method	NO_2	Not detected	0.085 mg/m³	RD 52.04.186-89
+ 17	755	48%	4m/s	11-05 am	11-10 am	Express method	NH_3	Not detected	0.2 mg/m³	RD 52.04.186-89
+ 17	755	48%	4m/s	11-05 am	11-10 am	Express method	H_2S	Not detected	0.008 mg/m³	RD 52.04.186-89
+ 17	755	48%	4m/s	11-05 am	11-10 am	Express method	CO	Not detected	5,0 mg/m³	RD 52.04.186-89
+ 17	755	48%	4m/s	11-05 am	11-10 am	Express method	NO	Not detected	0.6 mg/m³	RD 52.04.186-89
+ 17	755	48%	4m/s	11-05 am	11-10 am	Express method	Ethylene oxide	Not detected	0.3 mg/m³	RD 52.04.186-89

Table 15 Ambient air quality at sampling point No.3 (on 5 October 2021)

Weather factor				Testing timing			Parameter mg/m³	Testing results mg/m³		Sampling Method
Temperature C°	Atmosphere pressure mm hg	Relative moisture	Velocity of air	Start	End	Aspiration speed l/min		Concentration	maximum concentration limit	
+ 15	754	45%	4m/s	11-20 am	11-25 am	Express method	Cl_2	Not detected	0.1 mg/m³	RD 52.04.186-89
+ 15	754	45%	4m/s	11-20 am	11-25 am	Express method	$S0_2$	Not detected	0.5 mg/m³	RD 52.04.186-89
+ 15	754	45%	4m/s	11-20 am	11-25 am	Express method	NO_2	Not detected	0.085 mg/m³	RD 52.04.186-89
+ 15	754	45%	4m/s	11-20 am	11-25 am	Express method	NH_3	Not detected	0.2 mg/m³	RD 52.04.186-89
+ 15	754	45%	4m/s	11-20 am	11-25 am	Express method	H_2S	Not detected	0.008 mg/m³	RD 52.04.186-89
+ 15	754	45%	4m/s	11-20 am	11-25 am	Express method	CO	Not detected	5,0 mg/m³	RD 52.04.186-89
+ 15	754	45%	4m/s	11-20 am	11-25 am	Express method	NO	Not detected	0.6 mg/m³	RD 52.04.186-89
+ 15	754	45%	4m/s	11-20 am	11-25 am	Express method	Ethylene oxide	Not detected	0.3 mg/m³	RD 52.04.186-89

Table 16 Ambient air quality at sampling point No.4

Weather factor				Testing timing			Parameter mg/m³	Testing results mg/m³		Sampling Method
Temperature C°	Atmosphere pressure mm hg	Relative moisture	Velocity of air	Start	End	Aspiration speed l/min		Concentration	maximum concentration limit	
+ 17	766	32%	4m/s	11-35 am	11-40 am	Express method	Cl_2	Not detected	0.1 mg/m³	RD 52.04.186-89
+ 17	766	32%	4m/s	11-35 am	11-40 am	Express method	$S0_2$	Not detected	0.5 mg/m³	RD 52.04.186-89
+ 17	766	32%	4m/s	11-35 am	11-40 am	Express method	NO_2	Not detected	0.085 mg/m³	RD 52.04.186-89
+ 17	766	32%	4m/s	11-35 am	11-40 am	Express method	NH_3	Not detected	0.2 mg/m³	RD 52.04.186-89
+ 17	766	32%	4m/s	11-35 am	11-40 am	Express method	H_2S	Not detected	0.008 mg/m³	RD 52.04.186-89
+ 17	766	32%	4m/s	11-35 am	11-40 am	Express method	CO	Not detected	5.0 mg/m³	RD 52.04.186-89
+ 17	766	32%	4m/s	11-35 am	11-40 am	Express method	NO	Not detected	0.6 mg/m³	RD 52.04.186-89
+ 17	766	32%	4m/s	11-35 am	11-40 am	Express method	Ethylene oxide	Not detected	0.3 mg/m³	RD 52.04.186-89

107. According to the report of Sanitary-Epidemiological Welfare and Public Health Service of the Republic of Karakalpakstan as of 8 October 2021, provided by the Head of Sanitary and Hygiene Laboratory (Ms. Alfiya Mustafina) and Head of Environmental Sanitation Department (Mr. A.Jolmurzaev), the ambient air quality around the Sub-Project WU-CW-07 complies with local environmental and public health regulations (Regulation No. №0293-11 “Hygienic standard: List of pollutants maximum allowable concentrations in ambient air of populated areas in Uzbekistan”, 16.05.2011).

4.1.6. Noise level

108. As the Sub-Project WU-CW-07 site is not a part of the settlement and is not a part of the industrial area, noise level was recorded about 8-16 dB inside the site. During measurements, no construction activities were carried out on the neighboring railway project.

4.1.7. Soils

109. According to the survey findings, the geomorphological structure of the site soils are loess-like loams interbedded with lenses of sand and some gravel. The geological section specifies presence of sandy loam, loam, silty sand and fine sand.

110. The irrigation canal and collector boarders with the subproject site. There is also small natural reservoir formed as a result of the river flooding. Such conditions make the soil around the site suitable for planting agricultural crops. Local population planting rice, cotton and corn nearby the site.

Figure 22 Rice crops in the Site (Amudarya District, 17 August 2021)

Figure 23 Fallow land on the site (Amudarya District, 17 August 2021)

Figure 24 Vegetation around the Site (Amudarya District, 23 September 2021)

111. To obtain the data on existing soil quality at the Sub-Project WU-CW-07 site, Amudarya District Branch of Karakalpakstan Environmental Committee specified the following four geographical coordinates (Appendix 13) for soil sampling and testing. Location of the sampling points is provided in Figure 21:

- Sampling point No.1: 42°12’26.57”N 60° 5’55.61”E (on the boundary of Sub-Project WU-CW-07 site);
- Sampling point No.2: 42°12’30.36”N 60° 6’3.82”E (on the boundary of Sub-Project WU-CW-07 site);
- Sampling point No.3: 42°12’14.40”N 60° 6’17.18”E (on the boundary of Sub-Project WU-CW-07 site);
- Sampling point No.4: 42°12’11.54”N 60° 6’13.16”E (on the boundary of Sub-Project WU-CW-07 site).

112. As the part of the IEE, the soil sampling and testing was carried out by the Sanitary-Epidemiological Welfare and Public Health Service of the Republic of Karakalpakstan on 5 October, 2021 (Appendix 20). The soil survey was carried out using 400 g of soil samples at the depth of 20 cm at each sampling point. The soil survey results are given in Table 17, Table 18, Table 19 and Table 20:

Table 17 Soil quality at sampling point No.1

Parameter	Result	Maximum permissible concentration	Sampling method
pH factor	8.8	6-9	GOST 26423-85
Copper	0.0087 mg/kg	3 mg/kg	GOST 4388-72
Saturn	Not detected	32 mg/kg	GOST 8293-72
Zinc	Not detected	23 mg/kg	GOST 8293-72
Nitrate	145 mg/kg	130 mg/kg	GOST 26951-86

Table 18 Soil quality at sampling point No.2

Parameter	Result	Maximum permissible concentration	Sampling method
pH factor	8.5	6-9	GOST 26423-85
Copper	0.5 mg/kg	3 mg/kg	GOST 4388-72
Saturn	Not detected	32 mg/kg	GOST 8293-72
Zinc	Not detected	23 mg/kg	GOST 8293-72
Nitrate	881 mg/kg	130 mg/kg	GOST 26951-86

Table 19 Soil quality at sampling point No.3

Parameter	Result	Maximum permissible concentration	Sampling method
pH factor	8.4	6-9	GOST 26423-85
Copper	0.3 mg/kg	3 mg/kg	GOST 4388-72
Saturn	Not detected	32 mg/kg	GOST 8293-72
Zinc	0.02 mg/kg	23 mg/kg	GOST 8293-72
Nitrate	642 mg/kg	130 mg/kg	GOST 26951-86

Table 20 Soil quality at sampling point No.4

Parameter	Result	Maximum permissible concentration	Sampling method
pH factor	8.8	6-9	GOST 26423-85
Copper	0.4 mg/kg	3 mg/kg	GOST 4388-72
Saturn	Not detected	32 mg/kg	GOST 8293-72
Zinc	0.5 mg/kg	23 mg/kg	GOST 8293-72
Nitrate	997 mg/kg	130 mg/kg	GOST 26951-86

113. Since the Sub-Project WU-CW-07 site and lands around are actively used by local farmers for cotton and rice crops, the soil survey findings revealed high level of nitrates present in soil fertilizers.

Figure 25 Location of soil survey sampling points

4.2. Biological resources

4.2.1. Lower Amudarya State Biosphere Reserve

114. According to the Regulation No. 243 *On the organization of the activity of the Lower Amudarya State Biosphere Reserve by the State Environmental Committee of Uzbekistan*[49], the reservation is 68,717.8 ha and consists of three zones: core zone is strictly protected area of 11,568.3 ha and included Badai-Tugai Reservation; buffer zone of 6,731.4 ha are used by various landowners for agricultural activities and transition zone of 50,418.1 ha is used for economic activity that do not harm environment (Appendix 8).

115. On the right side, the Sub-Project site borders on Lower Amudarya State Biosphere Reserve, i.e., on its buffer zone, which presented by *turanga* (Populus pruinosa), Tamarix (yulgun), Halostachys belangeriana, Halimodendron halodendron, Alhági, wormwood (Artemesia) and reed beds, growing along the banks of small natural water reservoirs formed as river flooding.

116. According to the request and following reply of Lower Amudarya State Biosphere Reserve (Appendix 9), the subproject site is not in the buffer zone of Lower Amudarya State Biosphere Reserve. Only one legally protected area (Badai-Tugai Reservation) is close, but not within the

[49] Regulation No. 243 On the organization of the activity of the Lower Amudarya State Biosphere Reserve by the State Environmental Committee of Uzbekistan, 26.08.2011, https://lex.uz/docs/1860356#1861013

zone of impact of Sub-Project WU-CW-07. The distance between Badai-Tugai Reservation and new area of Mangit WTP is 31,148.97 km (Figure 26).

Figure 26 Distance between Badai-Tugai Reservation and Mangit WTP

117. Badai-Tugai Reservation is located on the right bank of the Amudarya River at the foot of the Sultan-Uizdag Mountains. The territory is egg-shaped, oriented from the south-east to the north-west. From the south, it is washed by the Amudarya River and borders on the Taldyk riparian forest. From the north and north-west it is surrounded by Kokdarya, a tributary of the Amudarya River.

118. Badai-Tugai Reservation is of international ecological importance (included in the UNESCO World Heritage List in September 2021) and very high conservation value for holding globally threatened breeding and migratory bird species and rare Bactrian deer. The reservation contains riparian vegetation, including poplar forests, and is home to various species of birds and twenty species of mammals.

119. These woodlands, known as ‘tugai”, represent a specific complex of woody-shrubby vegetation and high grasses, occurring only in the floodplains and river valleys of the Central Asian rivers. The tugai plant communities are comprised of the poplars (Populus diversifolia), *turanga* (Populus pruinosa), dzhidda (Elaeagnus oxycarpa), willows (Salix spp.), and tamarix (Tamarix spp.) forests, which alternate with meadows and reeds. Under the cover of dominant trees are shrubs such as Hippophae rhamnoides, barbel (Berberis spp.), briar roses (Rosa spp.), honeysuckles (Lonicera spp.), and Cotoneaster spp. Along the river shores, large areas are occupied by the reed (Phragmites spp.), cattail (Typha sp.), Erianthus, Tamarix, Halimodendron, Halostachys belangeriana (local name is karabarak), and licorice (Glycyrrhiza spp.). The herbaceous vegetation is represented by steppe, desert, and swamp species. In the steppe zone, the ecosystems of willow and poplar forests alternate with various types of meadow and meadow-swamp ecosystems.

120. The reptiles and amphibian fauna here is represented by Green Toad and Marsh Frog, Horsefield’s Central Asian Tortoise and Steppe Agama, Desert Lidless Skink, Caspian Rock

Gecko, Rapid Fringe-Toed Lizard and Striped Racerunner, Dice snake, Steppe Ribbon Snake, Pallas's Coluber, Diadem and Northern Wolf Snakes, etc.[50]

121. Among the common birds living in tugai are White-winged Pheasant, Rock Dove, Laughing Turtle Dove, Little Owl, Long-Eared Owl, White-Winged Spotted Woodpecker, Black-Billed Magpie, Bokhara Great Tit, Indian Myna, Tree Sparrow, and others. However, there is a diversity of natural landscapes suitable for nesting and breeding widely used by summer and winter residents represented by Ruddy Shelduck, Night Heron, Mallard, Shikra, Stone Curlew, White-Tailed Plover, Black-Winged Stilt, Common, Gull-billed and Little Terns, Striated Scops Owl, Kingfisher, European and Blue-cheeked Bee-eaters, Eurasian Roller, Hoopoe, Northern Swift, Sand Martin, Golden Oriole, White-crowned Penduline Tit, Barn Swallow, Nightingale, Upcher's and Southern Booted Warblers and others).[20]

122. In the tugais[51], rare mammals are Bactrian deer (Cervus elaphus bactricanus), and the endangered goitered gazelle (Gazella subgutturosa) visiting tugai from the desert. Other mammals are the grey wolf and golden jackal, red and corsac foxes, several wildcats, the Eurasian badger, Indian porcupine, and numerous rodents.

123. During the visit to Badai-Tugai Reservation in September 2021, it was noticed that the main source of pollutants of Badai-Tugai Reservation are two cement plants located across the highway from Badai-Tugai Reservation (Figure 27). The emissions of these cement plants into the ambient air are clearly visible from the Badai-Tugai Reservation. The main air emissions of cement plants include dust, nitrogen oxides, sulfur dioxide, volatile organic compounds, calcium oxide, heavy metal ions, and carbon dioxide. The main source of emissions in cement production is kiln systems – clinker burning process. The cement plants used for this project will not be located within 10km from the Reservation.

[50] Lower Amudarya State Biosphere Reserve, http://tugai.uz/about/fauna/?setlang=en

[51] Central Asia – Atlas of Natural Resources, p.106, Central Asian Countries Initiative for Land Management, ADB, https://www.adb.org/sites/default/files/publication/27508/central-asia-atlas.pdf

Figure 27 Location of Cement Plants and Badai-Tugai Reservation

124. The ambient air is a leading environmental pollutant in the area. Despite the distance of about 1.4 km between the cement plants and Badai-Tugai Reservation (Appendix 10), the negative impact of two cement plants emissions on the Badai-Tugai Reservation is strongly noticeable both on the soil and on the surrounding flora. According to the Badai-Tugai Reservation personnel, the wind rose is directed towards the Badai-Tugai Reservation. The ambient air carries salt and dust containing heavy metals, calcium hydroxides and toxic substances produced as emissions from cement plants towards the Badai-Tugai Reservation. The change in the environment is clearly observed right from the highway to the bank of the Amu Darya River. The soil is covered with a thick layer of dust and whitish coating; soil contamination by toxic substances lead to the alkalization of the soil profile. Sparse vegetation is observed near the highway with its further increase towards the river. Lack of water in Kokdarya and lowering the water level in the Amudarya also negatively impact on the vegetation of Badai-Tugai Reservation.

4.2.2. Territory of Sub-Project WU-CW-07

125. The baseline information regarding the biological environment was collected during the site visits and walkthrough survey throughout the core and surrounding areas of the project area, both in August and September 2021. The subproject area was significantly influenced by anthropogenic factor due to agriculture as main activity of local population. The neighboring plots intended for the construction of a railway station are planted by cotton and some lands were leveling by earth machines.

126. During the field visits, it was noticed that half of the site is currently planted by rice crops (Figure 22) and the second part of the land is fallow (Figure 23). Despite the meetings held with the Local Administration of the Amudarya district, the PMC submitted a request for clarification whether the land allocated for Sub-Project WU-CW-07 is actually owned by the Government

(Appendix 5). In reply to the PMC request, the Local Administration of the Amudarya district confirmed that the provided plot is a Government-owned lands. The Local Administration states that it is an owner of the plot, which is treated as a reserved area, and the existing agricultural crops are illegal and planted by representatives of local community (Appendix 6). No farmers were seen during the missions on the site. However, the Local Administration has assured that the area will be cleaned up immediately after the rice is collected in the fall (October-November).

127. During the joint field visit of representatives of Amudarya District Branch of Karakalpak State Environmental Committee and PMC, it was noted Populus pruinosa or *turanga* (*local name is turandil)* along the edges of the site mixed with bushes. Turanga mostly concentrated on the western and eastern borders of the site and represented by both mature trees and small seedlings with a total of up to about 50 plants.

128. The shrubs are presented by Tamarix (yulgun), Halostachys belangeriana (*local name is karabarak*), Halimodendron halodendron (*local name is jingil or chingil*), Alhági (*local name is jantak*), thickets of wormwood (Artemesia) and reed beds. They are growing along the site perimeter (Figure 24).

129. As site is in very close to Kipchak town, no mammals on the project area, except livestock. There are some rodent types, including the common rat, the house mouse, shrew (Soricidae), yellow gopher, gerbil and others.

130. Considering close vicinity of the Tulkin-aul village and ongoing Government Railway Project civil works bordering with the site, only few birds cross the site but there were no roosting sites observed as some of the area around the subproject site have recently been levelled by bulldozing; grass species have been removed and flattened mud remains at the surface. The present birds are the species that are typically tolerant of urban and farming areas. There is no reason to expect the presence of any rare, threatened or endangered species.

4.3. Socio-economic Conditions

131. The Amudarya district was formed on 18 December 1957, by the merger of Kipchak and Mangit districts. It borders with Turkmenistan in the south, the Beruni district of Republic of Karakalpakstan in the south-east and Navoi Province in the east and Kazakhstan in the north and west.

132. The administrative center of the district is Mangit city. According to the data provided by Local Administration of Amudarya District, the total population of the district is about 202,016 as of 1 September 2021, whereas 30,711 households are in Kipchak town. The average annual growth rate of Amudarya district is 1.4 %. There are 50.16% male and 49.84% female live in the district. Majority of population live in rural area.

133. The composition of communities, living in the Amudarya district, by ethnicity is heterogeneous in nature. Diversity of culture, custom, tradition, norms and values are existing in the project area. Ethnical composition is represented mainly by Uzbeks, but there also Karakalpaks, Kazakhs, Turkmens, and other nations are in the district.

134. The Amudarya district area is ’102’119 ha[52], including agricultural land – 73’983 ha and cultivated area – 36’000 ha. The main cultivated crops are rice, and cotton. Local population also planting vegetables and melons. Along with growing crops, livestock and poultry production are the main economic activities in the district.

[52] Open Data Portal of the Republic of Uzbekistan https://data.gov.uz/ru/datasets/17859?dp-1-page=1

135. There is one hospital, five private medical centers are functioning in the Amudarya district. Kipchak town has three secondary school, one music school, one community college, one outpatient clinic and one private medical center.

4.4. Cultural Heritage

136. Karakalpakstan is rich for protected cultural monuments built in different times, including Kushan Empire, Turkic Khaganate, Ancient Khorezm, Arab invasion, and during other historic events. There is a number of historical monuments, remains of ancient settlements, towers in Karakalpakstan. Some of these historical sites are included in the national and international lists of protected cultural heritage.

137. Dakhma Chilpyk (Appendix 11) is the oldest monument of Zoroastrianism, with an age of over 2200 years. Chilpyk is a round tower without a roof and 15 m in height and 65 m in diameter. The monument is built on top of a natural rounded hill, which is 6.881 km from the project site (Figure 28) and 43 km from Nukus (the capital of Republic of Karakalpakstan). It was used by the Zoroastrians to bury the dead. However, after the Arabs invasion, the tower was used rebuilt and used Khorezmshakhs as a signal and defense tower. Chilpyk is one of the striking sights of Karakalpakstan, the image of the tower is on the coat of arms of the Karakalpakstan Republic.

138. There are no protected cultural monuments on the new project site. As mentioned earlier, the site is currently planted with rice crops and previously used by local population for cotton and rice planting.

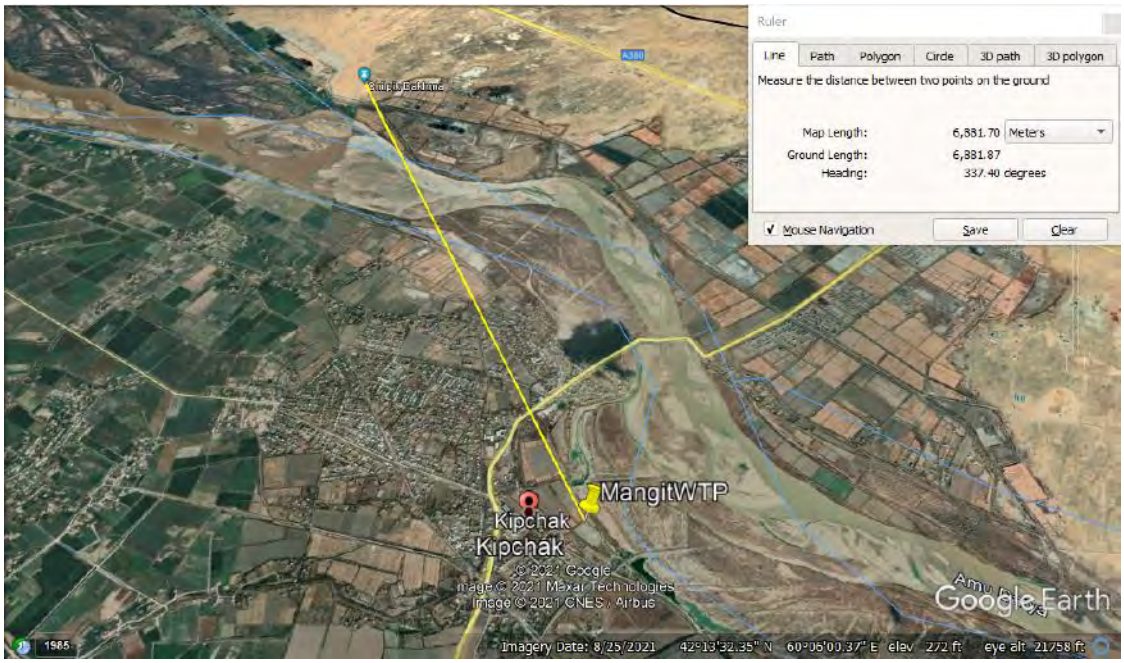


Figure 28 Distance from Mangit WTP to Chilpik Dahma (historic monument)

5. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATE MEASURES

139. Potential environmental impacts of the proposed Mangit WTP construction are presented in this section along with the recommended mitigation measures. Screening of potential environmental impacts was implemented considering the following project phases: (i) location impacts and design impacts (pre-construction phase), (ii) construction phase impacts and (iv) operations and maintenance phase impacts.

(i) Location impacts include impacts associated with site selection and include loss of on-site biophysical array and encroachment either directly or indirectly on adjacent environments. It also includes impacts on people, who could lose their livelihood or any other structures by the development of that site.

(ii) Design impacts include impacts arising from project design, including technology used, scale of operation, waste production, and ancillary services.

(iii) Construction impacts include impacts caused by site clearing, earthworks, machinery, vehicles and workers; whereas the construction site impacts include erosion, dust, noise, traffic congestion and waste production.

(iv) operations and maintenance impacts include impacts arising from the operation and maintenance activities of the infrastructure facility. These include routine management of operational waste streams, and occupational health and safety issues.

140. The ADB Rapid Environmental Assessment Checklist[53] has been used to screen the project for environmental impacts and to determine the scope of the IEE.

141. In this project (i) most of the individual project components involve simple construction and operation, so impacts will be mainly localized and not greatly significant; (ii) most of the predicted impacts are associated with the construction process and are produced because that process is invasive, involving excavation and earth movements; and (iii) being located in the already used area, will not cause a direct impact on biodiversity values. The project will be in properties held by the local government and access to the project location is through public rights-of-way and existing roads hence, land acquisition and encroachment on private property will not occur. No blasting (including controlled blasting) is anticipated to be used during the construction.

5.1. Pre-construction Stage

142. During pre-construction stage the following aspects may impact on implementation of environmental safeguards during whole project cycle and may lead to non-compliance with requirements: inefficient treatment, treated water characteristics not satisfying the standards; inadequate design of intake works or wells, leading to pollution of water supply; increase in production of sewage beyond capabilities of the facilities; inadequate buffer zone and WTP; health hazards arising from the inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals; increased sewage flow due to increased water supply; permanent or temporary change in land use or topography including increases in the intensity of land use; and inadequate design of water network leading to disproportional water distribution and water losses.

[53] ADB Environmental Assessment Guidelines, 2003, https://www.adb.org/sites/default/files/institutional-document/32635/files/environmental-assessment-guidelines.pdf

143. Planning principles, subproject selection criteria, and design considerations have been reviewed and incorporated by PMC into the site planning and design process wherever possible. Therefore, environmental impacts as being due to the project design or location will not be significant. The proposed conceptual design encompasses mitigation measures to reduce all negative impacts to acceptable levels. These were discussed with specialists responsible for the engineering aspects, and as a result, significant measures have already been included in the subproject designs. Moreover, the contractor will perform detailed design under supervision of PMC and corresponding authorities involved in monitoring engineering and environmental aspects of the sub-project.

144. In most cases, mitigation measures can be designed with uncomplicated measures commonly used at construction sites and known to civil works contractors. Once the subprojects are operating, the facilities will operate with routine maintenance, which will not affect the environment. Improved system operation will comply with the operation and maintenance manual to be developed by contractor upon commissioning of WTP and follow then with standard operating procedures to be developed by QST-LLC during operation of infrastructure and facilities.

145. The mitigation measures during Design Phase will include the following:

Design of WTP

- The finally treated water will be in compliance with the requirements set in applicable national legislation, including Public Health Standard No. 950-2011 “Drinking water. Hygienic requirements and quality control”[54]. This will be achieved with effective water treatment technology, which will include all necessary steps in the treatment process, including: (1) Collection; (2) Screening and Straining; (3) Chemical Addition; (4) Coagulation and Flocculation; (5) Sedimentation and Clarification; (6) Filtration; (7) Disinfection; (8) Storage; (9) and finally Distribution.

- Attention will be paid to the water clarification technology, considering raw water’s high turbidity and salinity. These will include (1) using a large metal screen, often called a bar screen and which is placed in front of the water source intake to screen or strain out the larger items; (2) adding chemicals (coagulants) to help make the suspended particles that are floating in the water clump together to form a heavier and larger gelatinous particle, often called floc; (3) control of water mixing with coagulant; (4) using specific rack for scraping the settled floc in the clarifier; (5) pumping water over the weir for filtration; (6) backwashing the filters; (7) chlorination – whichever method is used (chlorine gas, chlorine dioxide, hypochlorite, and others), chlorine is added to the water in an amount to ensure all microorganisms are destroyed; (8) continuously monitoring of the chlorine levels in the treated water.

- Detailed engineering design will ensure construction of sanitary zone for surface water intakes in accordance with national legislation, KMK 2.04.02-97 “Water supply. External networks and facilities”[55] and Public Health Standard No. 0244-07 “Design and operation of sanitary protection zones of drinking water sources and pipelines”[56].

- Detailed engineering design will ensure that the intakes are located in areas and distance that will not disturb the aquatic ecosystem

[54] Public Health Standard No. 950-2011, “Drinking Water. Hygienic requirements and quality control”, 02.02.2011, https://www.lex.uz/docs/4979438

[55] KMK 2.04.02-97 “Water supply. External networks and facilities", Ministry of construction of Uzbekistan, https://mc.uz/gradostroitelnye-normy/

[56] Public Health Standard No. 950-2011 “Drinking Water. Hygienic requirements and quality control”, https://www.lex.uz/acts/1921690

- Perimeter fencing around water intake facilities location.
- Training of WTP operators in O&M, use of chlorination equipment and dosing, etc.

Design of Water Distribution System

- Detailed design will include the requirements for pipes to be used in water distribution system in order to prevent pipe corrosive and leakage.
- Detailed design will include requirements for minimizing water losses from pipelines by perfect jointing and alignments using appropriate techniques.

Bidding documents

- Bidding documents and the contract will ensure inclusion of environmental provisions along with environmental management plan (EMP).
- Bid evaluation will ensure selection of experienced bidder in environmentally friendly construction and proposing corresponding EMP budget.
- Contract with successful bidder will ensure provision of Site-Specific Environmental Management plan (SSEMP) within the 30 days after contract award and prior to commencing any physical works by the contractor. SSEMP will be prepared by the contractor and be approved by PCU/PMC. SSEMP will include (i) excavation segmentation plan, (ii) spoil management plan, (iii) solid waste management plan, (iv) contingency and spoil management plan, (v) Traffic Management Plan, (vi) code of conduct for workers, (vii) health and safety management plan, (viii) occupational health and safety plan, (ix) COVID-19 Health and Safety Management Plan and Emergency Response Plan.
- Bidding documents will ensure non-use of cement produced by cement plant located up to 10 km from Lower Amudarya Reservation.
- Bidding documents will ensure reinstatement of damaged utilities such as roads (including access roads) and transmission/distribution lines (if any).
- Bidding documents will ensure preparation of operation and maintenance manual for WTP by the contractor.

Existing utilities and infrastructure

146. The new water main will be started from the new WTP through village of Tulkin aul, and then along the road infrastructure of the Kipchak and Mangit cities. This will impact on the existing utilities and infrastructure. The following mitigation measures will be implemented:

- Identification of locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction.
- Requiring contractors to prepare a contingency and spoil management plan as part of the SSEMP.

Construction work camps, stockpile areas, storage areas, and disposal areas

147. To avoid disruption to traffic flow and sensitive receptors, the detailed design will ensure certain locations of work camps, hot mix plants, stockpile areas, storage areas, and disposal areas, within the premise of the new WTP.

Sources of materials

148. Quarrying and extraction of materials can disrupt natural land contours and vegetation of the Amudarya River’s bank and resulting in accelerated erosion, disturbance in natural

drainage patterns, resulting water logging, and water pollution. To avoid these impacts, quarrying and extraction of materials on the riverbed or riverbank will be prohibited. Moreover, to prevent contribution by the project to harm the Lower Amudarya Reservation through the use of cement from cement plants located near the reserve, use of cement produced by cement plants located near the Lower Amudarya Reservation will be prohibited.

149. The pre-construction works will involve field surveys, engineering design and detailed drawings, carrying out cost estimate etc. This also includes discussion with various authorities to obtain permits and revision of design, if necessary.

150. The environmental assessment of the subproject shows that it is not likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. Potential impacts are unlikely to affect areas larger than the sites or facilities subject to physical works. These impacts are site-specific and few if any of them are irreversible.

5.2. Construction Stage

151. Except for the pipe-laying works, all other construction activities will be confined to the selected sites, and the interference with the public and community around is minimal. There will be temporary negative impacts, arising mainly from construction dust and noise, hauling of construction material, waste, and equipment on local roads (traffic, dust, and safety), occupation health, and safety aspects.

5.2.1. Physical Resources

152. **Erosion and Land Surface Disturbance.** Excavation and digging of trenches during construction has the potential to cause erosion and cave in thereby causing soil erosion, silt runoff, and unsettling of nearby road surfaces. Unorganized disposal of the excavated earth may disturb the surface and decrease the aesthetic and economic value of the area. Such activity will create discomfort for the road users and inhabitants.

153. During construction, precautionary measures will be taken including proper backfilling of trenches. Temporary access, diversions, and signboards for pedestrians will be provided. The exposed soil will be stabilized and vegetated to prevent further soil erosion.

154. **Impacts on Air Quality.** Dust will be generated from inadequately managed or haphazard: (i) earthworks such as clearing, grubbing, excavations, and drilling; (ii) stockpiling of natural aggregates, excavated materials, and spoils; (iii) transport, loading, and unloading of construction materials; (iv) movement of construction-associated vehicles; and (v) onsite rock crushing and concrete mixing; (vi) burning and heating of bitumen, etc. In addition, the main source of pollutants of Lower Amudarya Reservation are two cement plants located near the Reservation. The use of cement produced by these factories for the construction of Mangit WTP will contribute to the pollution of Badai-Tugai Reservation.

155. Mitigation measures will include:

(i) confining earthworks according to excavation segmentation plan that will be part of SSEMP;

(ii) using of physical controls, sprays, covers, compaction, screening, enclosure, windbreaks, binders, and road surfacing;

(iii) covering delivery trucks during transportation;

(iv) watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, or as necessary;

(v) placing warning signs at active work sites in populated areas;

(vi) limiting the speed of construction vehicles on access roads and worksites to a maximum of 40 km/h;

(vii) use of vehicles complying with applicable national legislation in terms of emission;

(viii) prohibit open burning of solid waste;

(ix) minimizing stockpile height;

(x) non-use of cement produced by cement plants located near the Badai-Tugai Reservation.

156. **Noise.** Noise will be one of the key environmental issues in this subproject. It is anticipated that noise from the use of powered mechanical equipment (PME) on site and the haulage of construction materials during the WTP construction will cause a nuisance to the nearby noise sensitive receivers. Noise-emitting construction activities also include earthworks, concrete mixing, movement and operation of construction vehicles and equipment, and loading and unloading of coarse aggregates. The significance of noise impact will be higher in NSRs areas. However, NSRs are located far enough from the construction site, i.e., at least 700 m from the subproject site. Anyhow, noise levels should not exceed the national standards for noise or WHO Guidelines for Community Noise [57].

157. In this subproject, percussive piling may be employed. However, percussive piling will be prohibited at any time on Sundays and public holidays and during the weekday evening and night-time hours. The contractor will be also committed to phase out the use of diesel, pneumatic and steam hammer pile drivers, which are particularly noisy. Noise generated by general construction works will be during normal working hours (i.e., 07:00 to 19:00 hours on any day not being a Sunday or public holiday).

158. The closest household (No.4 in Figure 3) is located at 87 m from the construction site boundary; other household (No.1 in Figure 3) is located at 93.38 m from the construction site and one more household is located at 95.68 m from the construction site boundary (No.10 in Figure 3).

159. Mitigation measures will include:

(i) using equipment that emits the least noise, well-maintained and with efficient mufflers;

(ii) restricting noisy activities to daytime;

(iii) avoiding the use of noisy equipment or doing noisy works at nighttime;

(iv) preparing work schedules and informing adjacent communities;

(v) installing acoustic screen during noisy activities to ensure noise level at the area adjusted to the closest household is no more than 70 dB;

(vi) warning signs in noise hazard areas;

(vii) limiting engine idling to a maximum of one minute;

(viii) limiting the vehicle speed inside settlements to a maximum of 40 km/h;

(ix) spread out the schedule of material, spoil and waste transport;

(x) minimizing drop heights when loading and unloading coarse aggregates;

(xi) using Personal Protective Equipment (PPE);

(xii) informing population on anticipated works;

[57] WHO Guidelines for Community Noise, https://www.who.int/docstore/peh/noise/Comnoise-4.pdf

(xiii) upon completion of the construction activities, planting trees around the WTP; this includes any trees that can well take root around the site (cherry trees, poplar, etc.).

160. **Impacts on River Morphology and Hydrology.** No quarrying from riverbeds will be made in this subproject. Therefore, no cause of river morphology and hydrology alteration.

161. **Impacts on the Quality of Groundwater Resource and Surface Water Quality.** There are no private and community groundwater wells that will be affected by the subproject.

162. No distribution pipeline will cross water body, the Amudarya River. Discharge of wastewater in the Amudarya River is prohibited. However, trenching and excavation, run-off from stockpiled materials, and chemical contamination from fuels and lubricants may result in silt-laden runoff during rainfall, which may cause siltation and reduction in the quality of adjacent water bodies.

163. Mitigation measures will include:

(i) development of spoil management plan as part of the SSEMP;
(ii) reusing excess spoils and materials;
(iii) organizing the disposal site in designated areas;
(iv) carrying out earthworks during the dry season;
(v) ensuring stockyards away from watercourses;
(vi) organizing the fuel storage area away from water drainage;
(vii) management and storage of fuel, waste oil, hazardous waste will be planned in accordance with EHS General Guidelines on Hazardous Materials Management; this includes the use of appropriate secondary containment structures capable of containing the larger of 110 percent of the largest tank or 25% percent of the combined tank volumes in areas with above-ground tanks with a total storage volume equal or greater than 1,000 liters.
(viii) There are national regulations establishing the standards of water being fed into a public effluent (Table 2),[58] which place limits on suspended solids (SS), acidity (pH), biological oxygen demand (BOD) and chemical oxygen demand (COD) among others. Domestic wastewater will be treated by the septic tanks (for settling and anaerobic processing) which will be installed by the contractors. The treated liquid effluent will be discharged to the septic drain field located in Takhiatash – a subsurface wastewater disposal facility for removing contaminants and impurities from the liquid effluent after anaerobic digestion in the septic tank. The sludge accumulated in the septic tank will be periodically removed and transported by suction trucks to the nearby wastewater treatment plant. For construction wastewater, the contractor will, prior to the commencement of construction works, install construction wastewater treatment facility which includes neutralization tank and settling/sedimentation pond. The water will be treated so that it meets the national standards before being discharged into a public effluent. Accumulated sludge from the treatment facility will be transported by the suction truck to the solid waste disposal area in Amudarya district. The specifications of the domestic and construction wastewater treatment will be provided in detailed design by the contractor.
(ix) ensuring safe water diversion;
(x) ensuring no obstruction in flowing water.

164. **Impacts of Solid Wastes.** It is expected that during construction phase, there will be construction and typical household wastes in the construction site and camp correspondingly.

[58] Under the national regulation, standards of surface water quality are used as effluent standards as well.

165. Mitigation measures will include:

(i) Better solid waste management practices will be adopted such as collection, segregation, reuse and recycling activities within the construction site and worker’s camp.

(ii) The waste management plan will be prepared by the contractor and shall be included in SSEMP.

166. Generation of solid waste, wastewater from labor camp and other construction waste may cause pollution of environment.

167. Mitigation measures will include:

(i) preparing a solid waste management plan as part of the SSEMP;
(ii) minimizing stockpile size;
(iii) clearing wastes regularly;
(iv) avoiding stockpiling of excess spoils;
(v) covering delivery trucks during transportation;
(vi) cleaning roads;
(vii) using screening enclosure shade cloth, temporary walls;
(viii) cleaning site regularly.

168. The solid wastes (domestic and construction) will be gathered by the contractor in containers, which will be then collected and removed from the site by the waste management company (Toza Hudud) based on the contract made between the contractor and the waste management company. The specifications of the solid waste treatment will be provided by contractor in the detailed design.

5.2.2. Biological Resources

169. Haphazard site clearing, parking, and movement of construction vehicles and equipment stockpiling will result in disturbance to the land in the project area. The project area does not include any forest or protected area. However, there are up to 50 matured trees and small seedlings of Populus pruinosa or turanga along the edge of the subproject site. There are also illegally planted rice crops, which supposed to be harvested in November 2021.

170. During construction, some disturbances will occur during pipe laying from the WTP to the existing water main. The water main will be laying along the existing road, but there may be areas with trees and shrubs, the loss of which must be minimized. In case of necessity to cut the trees or shrubs, the contractor will obtain permission from State Environmental Protection Committee by paying the appropriate fee following applicable legislation[59].

171. Considering close vicinity of the Amudarya River and lack of wastewater and sanitation system in Kipchak town, the contractor will ensure that liquid waste is not discharged into the river. Otherwise, the wastewater will have a detrimental effect on the biodiversity of the river.

172. Mitigation measures shall include:

(i) considering pipeline route to minimize cutting of trees and shrubs;

[59] Regulation on the use of biological resources and the procedure for obtaining corresponding permissions, No. 290, 20.10.2014, https://lex.uz/docs/2485767

(ii) if cutting trees is unavoidable, the corresponding permission will be obtained and compensation will be provided in accordance with applicable legislation by paying the appropriate fee following applicable legislation (footnote 59);

(iii) installing clear signs and markers to direct traffic movement in sites;

(iv) designating stockpiling areas;

(v) wastewater discharge into the river is prohibited.

5.2.3. Socio-economic Resources

173. The road closure is not anticipated. Hauling of construction materials and operation of equipment on-site can cause traffic problems. The water main will be laying along the existing roads. However, the impacts will result from excavation works, stockpiling, the operation of construction vehicles and equipment, and accidental damage to utilities during the pipe laying. Nuisance and safety hazards are the indirect impacts.

174. Local population of the adjacent communities can benefit by getting a job with a contractor.

175. Mitigation measures will include:

(i) prepare a traffic management plan in collaboration with local authorities;

(ii) where traffic congestion will likely occur, place warning signs and traffic flagmen during the working hours;

(iii) provide compensation to affected people;

(iv) manage to stockpile;

(v) relocate the affected engineering communication before excavation and further pipes laying;

(vi) advise the concerned authority during accidental damage to utilities;

(vii) informing the communities about planning works on pipe laying;

(viii) hiring local population for construction works;

(ix) completing the work quickly nearby institutions, places of worship, business, hospitals, and schools.

5.2.4. Community Health and Safety Hazards

176. Communities will be moderately exposed to threats due to impacts on air quality, ambient noise level; mobility of people, goods, and services; accesses to properties, economic activities, and social services; service disruptions, etc. Construction workers may potentially bring communicable diseases in the community. The impact is thus indirect in nature, local in extent, medium in magnitude and short term in duration.

177. Mitigation measures will include:

(i) implementation of health and safety management plan;

(ii) provision of adequate space and lighting, temporary fences, shining barriers and signage at active work sites;

(iii) constructing gender-friendly toilets for workers;

(iv) prohibiting alcohol and drugs on site;

(v) preventing excessive noise;

(vi) code of conduct for workers will include restricting workers in designated areas, no littering, no fire, no trespassing, no residence at construction sites, and no obligation to potentially dangerous works;

(vii) maintaining a complaint logbook in workers camp and take action promptly of complaints;

(viii) restricting access to the site, through a combination of institutional and administrative controls, with a focus on high-risk structures or areas depending on site-specific situations;

(ix) removing hazardous conditions on construction sites that cannot be controlled affectively with site access restrictions, such as covering openings to small confined spaces, ensuring means of escape for larger openings such as trenches or excavations, or locked storage of hazardous materials;

(x) implementing measures to prevent proliferation of diseases vectors (including COVID-19 virus and flu) at work sites;

(xi) implementing risk management strategies to protect the local communities from physical, chemical, or other hazards associated with subproject activities;

(xii) contractor's preparedness in emergency response;

(xiii) dissemination of grievance redress mechanism (GRM) information.

5.2.5. Occupational Health and Safety Hazards

178. Workers will be exposed to the crosscutting threats of the impacts above during construction. Inadequate supply of safe and potable water and inadequate sanitation facilities; poor sanitation practices on site; poor housing conditions; the handling and operation of construction equipment; handling of hazardous substances; exposure to extreme weather and non-observance of health and safety measures, pose additional threats to the health and safety of construction workers. Mishandling of chemicals and other hazardous substances may pose health and safety hazards to the workers.

179. Construction workers may be potentially exposed to communicable and transmittable diseases (including COVID-19, HIV/AIDS, flu, etc.) in the community and the workforce.

180. Mitigation measures will include:

(i) development and implementation of an occupational health and safety plan, COVID-19 Health and Safety Management Plan and Emergency Response Plan;

(ii) If a suspected incidence of COVID-19 is reported of any member of the project team during implementation of the project-related activity (including consultation and public participation), the activity will stop immediately for a review of the adequacy of the safety system of work and a corrective action will be implemented to address any identified gaps in the safety system of work prior to recommencement of the activities. All such incidence will be reported to ADB immediately for review.

(iii) Development of Worker Camp Management Plan in reference to Workers' Accommodation: Processes and Standards [60] as part of the SSEMP, and implementation of the plan;

(iv) training of all workers on occupational health and safety prior to construction works;

(v) conducting orientation to visitors on health and safety procedures at work sites;

[60] A guidance note by IFC and the EBRD Workers' Accommodation: Processes and Standards (August 2009)

(vi) installation of signage to identify all areas at work sites, including hazard or danger areas;

(vii) proper labeling of equipment and containers at construction and storage sites;

(viii) suitable arrangements to cater for emergencies, including: first aid equipment; personnel trained to administer first aid; communication with, and transport to, the nearest hospital with an accident/emergency department; monitoring equipment; rescue equipment; firefighting equipment; and communication with nearest fire brigade station;

(ix) provision of personal protective equipment (earplugs, safety shoes, hard hats, masks, goggles, etc.) to all workers as applicable, and ensure these are used properly;

(x) avoidance of slips and falls through good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths, cleaning up excessive waste debris and liquid spills regularly, locating electrical cords and ropes in common areas and marked corridors, and use of slip retardant footwear;

(xi) using bracing or trench shoring on deep excavation works;

(xii) inspecting and testing the rotating and moving equipment prior to use during construction works;

(xiii) regular checking of integrity of workplace structures to avoid collapse or failure;

(xiv) provision of enough work spaces for workers, including exit routes during emergencies;

(xv) provision of first aid stations and kits; availability of trained personnel, who can provide first aid measures to victims of accidents;

(xvi) secured storage areas for chemicals and other hazardous and flammable substances are installed and ensure access is limited to authorized personnel only;

(xvii) worker camps and work sites provided with housekeeping facilities, such as separate toilets for male and female workers, drinking water supply, wash and bathing water, rest areas, and other lavatory and worker welfare facilities;

(xviii) maintaining records and reports concerning health, safety and welfare of persons, and damage to property; taking remedial action to prevent a recurrence of any accidents that may occur.

5.2.6. Cultural Heritage

181. The subproject will not encroach into, or be near physical, cultural resources. However, considering the wealth of cultural heritage in the Republic of Karakalpakstan, the contractor will stop works immediately to allow further investigation, if any findings are suspected.

5.3. Operational Stage

5.3.1. Impacts on air quality

182. No permanent impact on air is expecting during the operation phase. However, it is recommended (i) ensuring compliance with national air quality standards and (ii) trees planting around the new WTP to improve air quality and aesthetic.

5.3.2. Impact on acoustic environment

183. Some temporary noise may occur during maintenance of WTP and water supply network. However, this disturbance is indirect in nature, local in extent, and short-term in duration.

184. The mitigation measures will include:

(i) developing and following operation and maintenance manual, including standard operating procedures for operation and maintenance will be developed;

(ii) training on operation and maintenance of new water intake, WTP, and water main;

(iii) planting trees around the new WTP to improve the visual impact and reduce noise and dust.

5.3.3. Impact on water

185. Operation of WTP and pumping station may cause some direct and indirect negative impacts on the water. These include excessive water withdrawal, discharge and seepage of wastewater into the river and groundwater.

186. The effluent produced from the periodic backwashing of the filter plant, if discharged directly into the river course, may harm the water bodies and aquatic life, especially during dry season when the flow will be less.

187. Excessive water withdrawal from the river can negatively impact the sensitive ecosystem of the Amudarya River. It also may have impact on water users located at the downstream, and affect the agriculture, the main economic activity is the region.

188. There is no wastewater system in the Amudarya administrative region. Wastewater can adversely affect groundwater and surface water. In most cases, wastewater is collected in local or household earthen basins, from where it seeps into deeper soil layers. Sewage system is expected to be improved under the upcoming new project to be financed jointly by the World Bank (Project ID 33799) and Asian Infrastructure Investment Bank. Currently, the feasibility study of this new project is undergoing.

189. Water for wash down of vehicles and machinery on site and spills or leaks of fuels, lubricants or chemicals from machinery and vehicles may contaminate groundwater.

190. Algae growth in a water reservoir for drinking water can have negative consequences for the water quality. The water turns green, sand filters can clog, and some algae produce toxins, can give the water an “earthy” and “molty” taste and can increase water temperature. Algal growth usually occurs in stagnant water body, such as lakes, with high concentrations of phosphorus and nitrogen in summer when the sunlight is very strong. However, the water intake source of the Mangit WTP, Amudarya River, has a relatively fast flow rate, so there is no stagnant water. In summer, when sunlight is strong, turbidity is relatively high, preventing sunlight from penetrating into the water, so there is little chance of algal growth. Nevertheless, mitigation measures are proposed to prevent algal growth.

191. Mitigation measures will include:

(i) developing and following operation and maintenance manual, including standard operating procedures for operation and maintenance;

(ii) training QST-LLC personnel on effective operation and maintenance of new water intake, WTP, water main and network;

(iii) screening and monitoring the equipment with further replacing defective one;

(iv) development and implementation of leak detection campaign;

(v) installation of specific wash down of vehicles and machinery station with further collection of wastewaters;

(vi) implementing spill control measures to prevent spills from infiltrating into the groundwater table; measures should include appropriate materials handling and storage procedures, and development of contingency plans in the event of a spill;

(vii) installation and monitoring of water meters at intake facilities and monitoring of water intake in compliance with the permissible amount[61];

(viii) to prevent algae growth in the WTP, the operator will (1) use the pre-chlorination on the receiving well of the water treatment, (2) discharge back wash waste from sand filter and settled sludge from settling basin to irrigation canal without reusing it to prevent more algal growth, and (3) perform water quality monitoring (temperature, pH, odor, turbidity, dissolved oxygen, nitrogen, phosphorus, total organic carbon in the water, etc.).

(ix) organizing public awareness campaign on effective wastewater management, Amudarya River and environment conservation.

5.3.4. Erosion and land surface disturbance

192. As part of water treatment, sludge generated after sedimentation and filtration is collected at drying bed within Mangit WTP territory for dewatering by gravity drainage and air drying, thickening and temporary storage. After several months, the sludge cake formed on the surface can be removed by hand shoveling or mechanically and transferred to the sludge disposal sites at the landfills of "Toza Hudud LLC" – local solid waste management operators.

193. The detailed specifications of the sludge treatment will be provided by the contractor in the detailed design. According to the conceptual design, (a) the sludge drying bed is a facility to receive sludge for final disposal; (b) it has sand filtration layer for sludge dewatering; (c) filtrated water flow into the water recycling tank by gravity and concentrated sludge are dried for disposal; (c) dimension of sludge drying bed is as follows:

- B9.0m x L40.0m x 8basins;
- A = 2880 m^2 (Sludge retention time: 120 days, 0.3 m sludge depth (25% solid));

194. The conceptual design also stipulates that the sludge drying bed will be equipped with:

- Inlet and outlet pipe
- 6 inlet gate valves
- Filtration and support layer (gravel, sand)

195. Mitigation measures will include:

(i) Timely and proper disposal of sludge excavated from clarifiers to the drying ponds;
(ii) Avoiding collection sludge next to clarifiers.

5.3.5. Health and safety hazards

196. Impacts during operations concern environmental or public health. Poorly operated WTPs pass pathogens; failure to chlorinate allows pathogens to survive in distribution systems; poor quality pipes and low pressure allow cross-contamination from sewers and soil organisms. Modern, well-operated WTPs deliver a product water consistently free of coliform organisms and other pathogens, no matter how polluted the raw water may have been. Effective coagulation and sedimentation reduce turbidity to improve the effectiveness of filtration. Effective removal of bacteria by filtration relies on influent turbidity in the range of 7-14 NTU,

[61] The conceptual design specifies maximum capacity of new WTP as 30,000 m^3 per day.

after which sand filtration is capable of high removal efficiency. Regardless of the effectiveness of the treatment process, continuous chlorination at the head of the delivery system is necessary for delivery of safe water free of bacterial contamination, viruses and other pathogens. Broken lines and low pressure provide means for entry of pathogens into distribution systems. The mechanics of this phenomenon are difficult to trace; however most modern systems guard against low pressure, when cross-contamination is potentially more likely in systems with high rates of unaccounted for water (e.g., systems with broken and leaky mains). Maintaining chlorine residual in the system is one way to guard against cross-contamination, as is sustaining pressure in the system.

197. Mitigation measures will include:

(i) developing and implementing capacity building for WTP personnel in all aspects of operations and maintenance, which will ensure that high quality drinking water is provided through district systems;

(ii) provision of on-the-job training activities in the occupational and public safety aspects of storage and operational use of chlorine;

(iii) water quality test on residual chlorine;

(iv) water quality monitoring on all parameters specified in Public Health Standard No. 950-2011, “Drinking water. Hygienic requirements and quality control”;

(v) screening electrical equipment and replacing the broken one by new

(vi) ensuring availability of health and safety specialist as part of QST-LLC personnel;

(vii) ensuring availability of emergency plan and provision of corresponding training to QST-LLC personnel.

5.3.6. Impact on Socio-economic resources.

198. The current population is mainly involved in agricultural activities as there is a lack of jobs in the commercial and government organisations. During the public consultations many residents expressed concern about the lack of employment opportunities in the area.

199. The subproject will positively affect socioeconomic resources. Personnel with different qualifications will be required for operation of new infrastructure and facilities. Operation of the WTP will create new jobs for both technical and administrative personnel, benefiting local social settings.

200. Mitigation measures will include recruitment of local population for WTP operation and specifically providing jobs for women.

6. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

6.1. Consultation

202. Stakeholder consultation and participation is an essential process in IEE study. The process in engaging stakeholders involved key informant interviews, on-site discussions, and random field interviews of stakeholders. These events included meetings with representatives of Local Administration of Amudarya district, the Amudarya branch of QST-LLC, local communities, etc.

203. Several stakeholder consultations were conducted in September 2021 regarding the subproject and included meetings with representatives of Karakalpakstan Republican Environmental Committee, Amudarya District Brunch of Karakalpakstan Republican Environmental Committee, Amudarya District Local Administration and Lower Amudarya State Biosphere Reserve.

204. During the stakeholder consultation (21 September 2021) in Nukus with representatives of Karakalpakstan Republican Environmental Committee **(**Appendix 12**)**, it was discussed the existing situation of the subproject site, the proposed subproject and monitoring plan. The discussion resulted in the list of environmental surveys of water, soil and ambient air to be served as baseline for further monitoring of the subproject site. These surveys were conducted as part of this IEE preparation by the Sanitary-Epidemiological Welfare and Public Health Service of the Republic of Karakalpakstan on 5 October 2021 and results were given on 8 October 2021 **(**Appendix 20**).** The stakeholder consultation was participated by deputy head of Karakalpakstan Republican Environmental Committee (Mr. Shukhrat Aberkulov), head of water resources department (Mr. Medet Nurjanov) and heads of soil and ambient air laboratories (Ms. Barno Kadyrbaeva and Ms. Guljakhon Perinbetova), and other personnel of the institution.

205. Stakeholder consultation with Amudarya District Brunch of Karakalpakstan Republican Environmental Committee was held in Mangit (on 23 September 2021) with following joint mission to the site and discussion of the findings. The minutes of the meeting were drawn up **(**Appendix 13**)** with specifying the sampling points for environmental and sanitary-hygienic surveys in order to identify baseline conditions. These surveys were conducted as part of this IEE preparation by the Sanitary-Epidemiological Welfare and Public Health Service of the Republic of Karakalpakstan on 5 October 2021 and results were given on 8 October 2021 **(**Appendix 20**).** The meeting was participated by head of Amudarya District Brunch of Karakalpakstan Republican Environmental Committee (Mr. Nurbek Uzakbaev) and two inspectors (Mr. Gayrat Iskanderov and Ms. Abdullaeva Nilufar) and the representative of Amudarya District Branch of Karakalpakstan Republican Public Health Surveillance Services.

206. Stakeholder consultation **(**Appendix 15**)** with the head of Lower Amudarya State Biosphere Reserve was conducted on 23 September 2021. During the meeting with the head (Mr. Oybek Matkarimov) and environmental engineer of Lower Amudarya State Biosphere Reserve (Mr. Bakhit Kamalov), the PMC requested to confirm that the subproject site does not occupies the buffer zone of the Lower Amudarya State Biosphere Reserve, and to specify the monitoring measures implemented by personnel of the Lower Amudarya State Biosphere Reserve on the buffer zone. The head of Lower Amudarya State Biosphere Reserve requested to provide official letter specifying required information; whereas the corresponding letter was sent to institution on 24 September 2021 (Appendix 9).

207. Stakeholder consultation with the Amudarya District Local Administration included head of Amudarya District Local Administration (Mr. Nodir Kamolov) and representatives of statistic, health and other departments of Local Administration, as well as representatives of Qaraqalpaq Suv Ta’minati (Mr. Bobojonov Bekzod and Mr. Khurshid Rakhmatullaev) and

head of community (Tulkin aul) adjacent to the subproject site. Meetings resulted in provision of required economic and social data on the Amudarya district and Kipchak town **(**Appendix 14**)**.

208. Public consultation was conducted on 23 September, 2021 in Tulkin aul community of Kipchak town **(**Appendix 16**)**. Local population was informed earlier on upcoming public consultation. The meeting with the community was started provision information on the proposed construction, expected benefits of the subproject and possible negative impacts during the construction phase (i.e., noise, dust, road traffic congestion, etc.).

209. The consultation was organized by Local Administration of Amudarya District jointly with QST-LLC and the PMC. The presentation materials used for the consultation are in Appendix 17. Concerns raised regarding the construction of subproject as well as issues addressed the organizers are summarized below:

Table 21 Issues raised during public consultation in Tulkin aul community of Kipchak town

No.	Concerns raised	Information addressed by the study team
1	The current railway construction is very close to our settlement. These works create a lot of dust and noise. Please consider specific measures for your project.	Corresponding measures is included into the EMP and monitoring plan.
2	There is little work around and our people need to work somewhere. Will our people from the settlement be involved in construction work?	The EMP includes recommendations for the staffing of the contractor, primarily from the local population as well as providing jobs for women. The EMP includes the same recommendation for QST-LLC during the WTP operation.
3	We have a lot of dust around here, is there a possibility of planting greenery?	EMP includes requirement on planting trees around the new WTP.
4	We suggest that fruit trees be planted around the WTP, and the more, the better fruit can be used in food… cherries grow best on our lands	We will include this recommendation into the EMP
5	How clean will the water be after the construction of the WTP?	The subproject includes water cleaning technology able to produce drinking water in compliance with applicable Uzbek legislation

210. All together during the field visits towards the finalization of this IEE 26 people were consulted **(**Appendix 21**)**.

211. Stakeholder consultations will be continued throughout the implementation of the subproject and operation of WTP. The stakeholders will be invited and encouraged to participate in further community consultations.

6.2. Information Disclosure

212. ADB SPS required the borrower to provide relevant environmental information, including IEE and SAEMRS in a timely manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders.

213. As part of information disclosure, the final IEE in English and local language (whole report in Russian and Summary in Karakalpak languages) will be available to local communities and relevant authorities at the offices of the PCU and MHCS of Republic of Karakalpakstan. The IEE will also be disclosed on the ADB website (footnote 2) (in English) and JSC

“Uzsuvtaminot” website (footnote 4) in English and local language: (whole report in Russian and Summary in Karakalpak languages).

214. ADB will post the SAEMRs on its website. The executing agency JSC “Uzsuvtaminot” will post on its website the whole report in Russian language and Summary in Karakalpak languages.

7. GRIEVANCE REDRESS MECHANISM

215. A project-specific GRM will be established to receive, evaluate and facilitate resolution of affected persons' concerns, complaints, and grievances related to social, environmental and other concerns on the project. The GRM will aim to provide a time-bound and transparent mechanism to resolve such concerns. Grievances may be channeled through letters, emails, text messages (SMS), verbal narration, grievance boxes and registers. Suggested template for grievance redress form is in **(**Appendix 18**)**.

216. A common GRM will be in place for social, environmental or any other grievances related to the project. This is supported by applicable local legislation, Law on Appeals of Individuals and Legal Entities.[62]

217. The GRM will provide an accessible forum for receiving and facilitating resolution of affected persons' grievances related to the project. Sample grievance registration form will be disseminated among communities adjacent to the construction site before the commencement of land acquisition procedure. Every grievance will be registered with careful documentation of process adopted for each of the grievance handled, as explained below.

218. PCU's Resettlement, Social, and Gender Specialist and Environmental Specialist, with the support of PMC's International Environmental Specialist (PMC-IES), PMC's National Environmental Specialist (PMC-NES) and PMC's Social Safeguards Specialists, will have the overall responsibility for timely grievance redress on environmental and social safeguards issues. The Project Coordinator in Karakalpakstan will be the focal person for facilitating the grievance redress at the local level.

219. Public awareness campaigns will be conducted on a regular basis as per the communication strategy of the project to ensure awareness on the subproject progress and its GRM.

220. The GRM procedure comprising the following steps **(**Figure 29**)**:

221. **First Level of GRM** (local community-based level or contractor's field office): The first level, which is also the most accessible and immediate venue for quick resolution of grievances will be the community-based committee (makhalla) personnel, who will immediately inform the contractor, PMC field engineers, and Project Coordinator. Any person with a grievance related to the project works can contact the community-based committee (*makhalla*) personnel or the Project Coordinator to file a complaint. The community-based committee (*makhalla*) personnel will document the complaint shortly, and the contractor, PMC field engineers, and Project Coordinator will immediately address and resolve the issue at the field level within fifteen days of receipt of a complaint. The Project Coordinator will be responsible to fully document: (I) name of the person, (ii) date of complaint received, (iii) nature of complaint, (iv) location, and (v) how the complaint was resolved as well as to provide feedback to the complainant. If the complaint remains unresolved at the local level within fifteen days following applicable legislation, the Project Coordinator will forward the complaint to the PCU and QST-LLC.

222. **Second Level of GRM** (QST-LLC level)**:** The complainant will be notified by the community-based committee (makhalla) that the grievance is forwarded to QST-LLC in Nukus and PCU in Tashkent. The PCU and PMC will be called for a meeting, called and chaired by QST-LLC. This meeting will be resulted in development of recommend corrective measures (including collection of additional information within ten days, if required) at the field level and assign clear responsibilities for implementing its decision within the next fifteen days. If the grievance remains unresolved within 30 days according to Article 28 of Law on Appeals of Individuals

[62] Law on Appeals of Individuals and Legal Entities, amended by law No.ZRY-445 dated 11.09.2017, https://lex.uz/docs/3336171

and Legal Entities[63], The complainant may submit its appeal to Executing Agency through www.my.gov.uz.

223. **Third Level of GRM** (Executing Agency level): Any unresolved or major issues will be referred to the Executing Agency (Joint Stock Company Uzsuvtaminot), PCU, and PMC for the final solution. The decision has to be made within fifteen days of receipt of the complaint. The Executing Agency will be responsible to convey the final decision to the complainant.

224. However, one of the last instances for complainants will be Economic Court of Uzbekistan, where a decision will be made following relevant national legislation.

225. Despite the project GRM, an aggrieved person has access to the country's legal system at any stage, and accessing the country's legal system can also run parallel to accessing the project GRM.

226. In the event that the established GRM is not in a position to resolve the issue, the affected person also can use ADB's Accountability Mechanism[64] by directly contacting (in writing) the Complaint Receiving Officer at ADB headquarters or the ADB Uzbekistan Resident Mission, or filing a complaint through the web: https://www.adb.org/who-we-are/accountability-mechanism/how-file-complaint. The complaint can be submitted in any of the official languages of ADB's Developing Member Countries.

227. **Record Keeping and Disclosure.** All paperwork (details of grievances) will be completed and registered in a logbook, which will be distributed by PCU and made available at all levels: local community-based level or contractor's field office, QST-LLC (Nukus city) and Executing Agency (Tashkent). PCU will be responsible for circulation of grievances to the respective authorities and stakeholders prior to the scheduled meetings and be responsible for follow-through of all escalated grievances. All decisions taken will be communicated to the affected persons by the PCU's Resettlement, Social, and Gender Specialist, including timely sharing of information with the person filing complaint. The PCU's Resettlement, Social, and Gender Specialist will keep all grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date of the incident and final outcome.

228. The number of grievances recorded and resolved, and the outcomes will be disclosed in the PCU office and community-based committee, as well as be reported in the SAEMRs submitted to ADB. For any grievance escalated to QST-LLC level, the Project Coordinator, assigned as GRM focal person, will be responsible for record-keeping, calling of meetings and timely sharing of information with community-based committee and QST-LLC, PCU and PMC. For grievances escalated to Executing Agency and above, the PCU's Resettlement, Social, and Gender Specialist will be responsible for maintenance of records, sending copies to QST-LLC and community-based committee.

229. If the complaints are directly raised to the contractor, the Contractor will record the grievance and resolve the issue at the field level within fifteen days of complaint receipt. The Contractor will notify the PMC and Project Coordinator on filed complaint and addressed measures through weekly environmental checklists and environmental section of the contractor's monthly progress reports. If the complaint remains unresolved by the Contractor at the local level within fifteen days, the Project Coordinator will forward the complaint to the PCU and QST-LLC for grievance considering and addressing.

230. **Lessons Learned.** The PCU's and PMC's Resettlement, Social, and Gender Specialist will periodically review the functioning of the GRM at the local and QST-LLC level and record

[63] Law on Appeals of Individuals and Legal Entities, amended by law No.ZRY-445 dated 11.09.2017, https://lex.uz/docs/3336171

[64] ADB's Accountability Mechanism, https://www.adb.org/who-we-are/accountability-mechanism/main

information on the effectiveness of the mechanism, especially on the project’s ability to prevent and address grievances. Grievance redress indicators (number of grievances received, number of complaints redressed, and number of appeals to be reported and analyzed) will be reflected in monthly and quarterly progress reports as well as the SAEMRs.

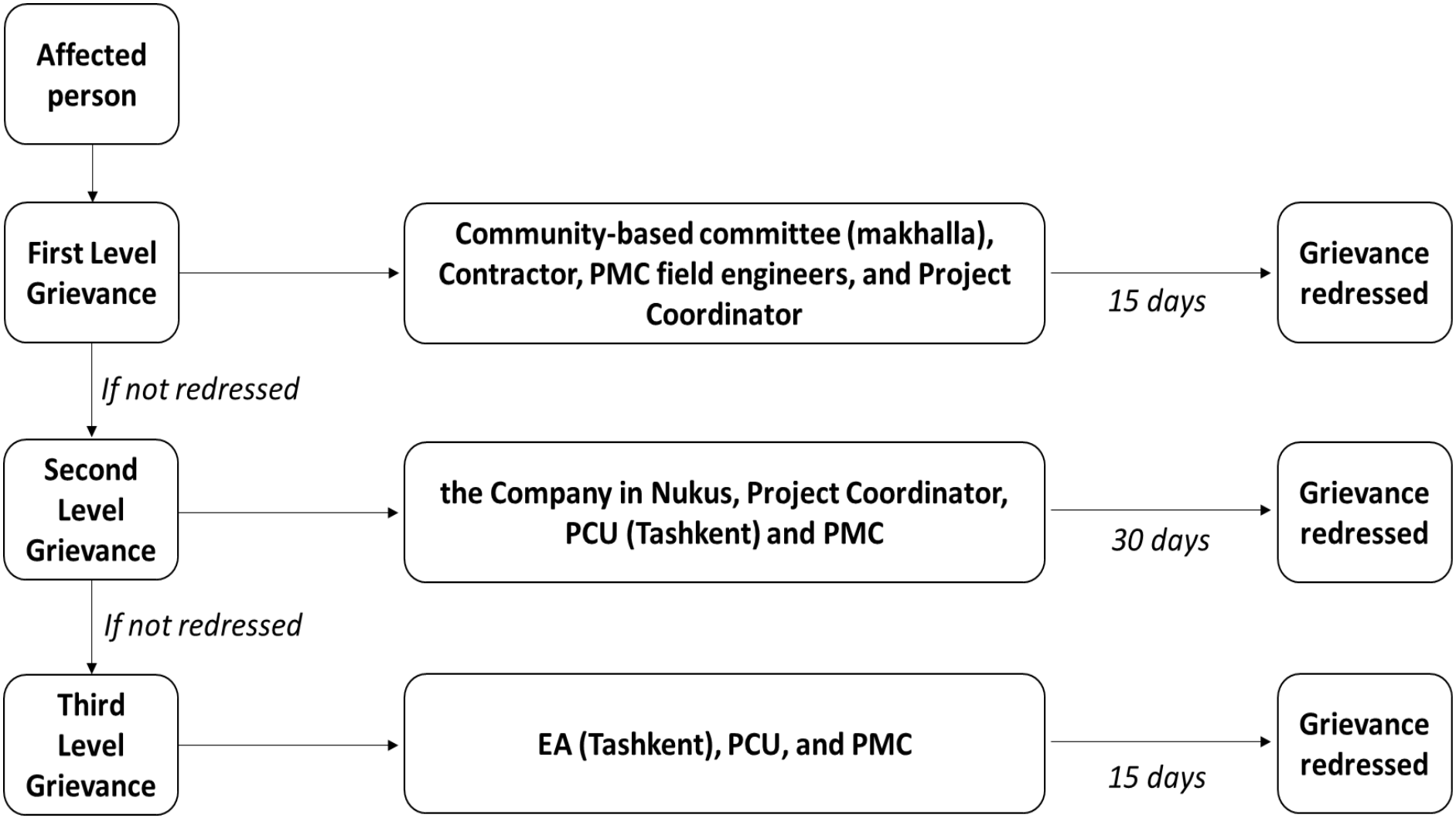


Figure 29 Grievance Redress Process

EA = Executing Agency (Uzsuvtaminot); PCU = Project Coordination Unit; Project Coordinator = Specialist of PCU in Nukus; PMC = Project Management Consultant

8. ENVIRONMENTAL MANAGEMENT PLAN

8.1. Environmental Management

231. The EMP will guide the environmentally-sound construction of the subproject and ensure efficient lines of communication between PCU, QST-LLC, Project Coordinator, PMC and contractors. The EMP will (i) ensure that the activities are undertaken in a responsible non-detrimental manner; (ii) provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site; (iii) guide and control the implementation of findings and recommendations of the environmental assessment conducted for the subproject; (iv) detail specific actions deemed necessary to assist in mitigating the environmental impact of the subproject; and (v) ensure that safety recommendations are complied with. The EMP includes a monitoring program to measure the environmental condition and effectiveness of implementation of the mitigation measures. It will include observations on- and off-site, document checks, and interviews with workers and beneficiaries.

232. The contractor will be required to (i) carry out all of the mitigation and monitoring measures set forth in the approved SSEMP; and (ii) implement any corrective or preventative actions set out in SAEMRs that the employer will prepare from time to time to monitor implementation of this IEE, EMP and SSEMP. The contractor will allocate budget for compliance with the IEE, EMP and SSEMP measures, requirements and actions. The contractor will be required to submit to PCU, for review and approval, SSEMP including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the EMP in this IEE; and (iii) monitoring program as per EMP. No works can commence prior to PCU’s approval of SSEMP.

Table 22 Environmental Management Plan

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
Pre-construction stage					
Design of Water Treatment Plant (WTP)	Inefficient treatment, treated water characteristics not satisfying the standards	1. The finally treated water will be in compliance with the requirements set in applicable national legislation, including Public Health Standard No. 950-2011 “Drinking water. Hygienic requirements and quality control”[65]. This shall be achieved with effective water treatment technology, which should include all necessary steps in the treatment process, including: (1) Collection; (2) Screening and Straining; (3) Chemical Addition; (4) Coagulation and Flocculation; (5) Sedimentation and Clarification; (6) Filtration; (7) Disinfection; (8) Storage; (9) and finally Distribution. 2. Attention will be paid to the water clarification technology, considering raw water’s high turbidity and salinity. These will include (1) using a large metal screen, often called a bar screen, which is placed in front of the water source intake to screen or strain out the larger items; (2) adding chemicals (coagulants) to help make the suspended particles that are floating in the water clump together to form a heavier and larger gelatinous particle, often called floc; (3) control of water mixing with coagulant; (4) using specific rack for scraping the settled floc in the clarifier; (5) pumping water over the weir for filtration; (6) backwashing the filters; (7) chlorination - whichever method is used (chlorine gas, chlorine dioxide, hypochlorite, and others), chlorine is added to the water in an amount to ensure all microorganisms are destroyed; (8) continuously monitoring of the chlorine levels in the treated water.	PCU, QST-LLC Associated costs will be covered by the project funds	Incorporated in final design and communicated to contractors	Prior to civil works

[65]Public Health Standard No. 950-2011, “Drinking Water. Hygienic requirements and quality control”, 02.02.2011, https://www.lex.uz/docs/4979438

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		3. Detailed engineering design will ensure construction of sanitary zone for surface water intakes in accordance with national legislation, KMK 2.04.02-97 “Water supply. External networks and facilities"[66] and Public Health Standard No. 0244-07 “Design and operation of sanitary protection zones of drinking water sources and pipelines” 4. Perimeter fencing around water intake facilities location 5. Ensuring that the intakes are located in areas and distance that will not disturb the aquatic ecosystem 6. Training of WTP operators in O&M, use of chlorination equipment and dosing, etc.			
Design of water distribution system	inadequate design of water network leading to disproportional water distribution and water losses	7. Design will include the requirements for pipes to be used in water distribution system in order to prevent pipe corrosive and leakage. 8. Detailed design will included requirements for minimizing water losses from pipelines by perfect jointing and alignments using appropriate techniques.	PCU, QST-LLC Associated costs will be covered by the project funds	Incorporated in final design and communicated to contractors	Prior to civil works
Bidding documents	Failure to conduct environmental and social monitoring over the construction activities	9. Bidding documents and the contract will ensure inclusion of environmental provisions along with environmental management plan (EMP). 10. Bid evaluation will ensure selection of experienced bidder in environmentally friendly construction and proposing corresponding EMP budget. 11. Contract with successful bidder will ensure provision of Site-Specific Environmental Management plan (SSEMP) within the 30 days after contract award and prior to commencing any physical works by the contractor. SSEMP will be prepared by the contractor and be approved by	PCU, QST-LLC Associated costs will be covered by the project funds	Incorporated in final design and communicated to contractors	Prior to civil works

[66]KMK 2.04.02-97 “Water supply. External networks and facilities", Ministry of construction of Uzbekistan, https://mc.uz/gradostroitelnye-normy/

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		PCU/PMC. SSEMP will include (i) excavation segmentation plan, (ii) spoil management plan, (iii) solid waste management plan, (iv) contingency and spoil management plan, (v) Traffic Management Plan, (vi) code of conduct for workers, (vii) health and safety management plan, (viii) occupational health and safety plan, (ix) COVID-19 Health and Safety Management Plan and Emergency Response Plan. 12. Bidding documents will ensure non-use of cement produced by cement plant located up to 10 km from Lower Amudarya Reservation. 13. Bidding documents will ensure reinstatement of damaged utilities such as roads (including access roads) and transmission/distribution lines (if any). 14. Bidding documents will ensure preparation of operation and maintenance manual for WTP by the contractor.			
Existing utilities and infrastructure	Disruption of services	15. Identification of locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction 16. Requiring contractors to prepare a contingency and spoil management plan as part of the SSEMP	QST-LLC, Project Engineer, PCU, PMC, Contractor Associated costs will be covered by Project Engineer and Contractor during detailed design stage	List of affected utilities and operators; Bidding documents include a requirement for a contingency plan for service interruptions	During detailed design phase
Construction work camps, stockpile areas, storage areas, and disposal areas	Disruption to traffic flow and sensitive receptors	17. The detailed design will ensure certain locations of work camps, hot mix plants, stockpile areas, storage areas, and disposal areas, within the premise of the new WTP	QST-LLC, Project Engineer, PCU, PMC, Contractor Associated costs will be covered by	List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	During detailed design phase

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
			Project Engineer and Contractor		
Sources of materials	Quarrying and extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, resulting water logging, and water pollution	18. Prohibition of quarrying and extraction of materials on the riverbed or riverbank 19. Prohibition of use of the cement produced by cement plants located up to 10 km from Lower Amudarya Reservation 20. Discuss with various authorities to obtain permits and revision of design, if necessary	QST-LLC, Project Engineer, PCU, PMC, Contractor	Bidding documents include a requirement for prohibition of quarrying and extraction of materials on the riverbed or riverbank	During detailed design phase
During Construction Activities					
Erosion and land surface disturbance	Excavation and digging of trenches leading to soil erosion, silt runoff, and unsettling of nearby road surfaces, unorganized disposal of the excavated earth	21. Proper backfilling of trenches 22. Stabilization through vegetation of exposed soil 23. Provision of temporary access, diversions, and signboards for pedestrians	Implementation by Contractor Supervision by QST-LLC, PCU, PMC Associated costs will be covered by the Contractor	No visible degradation to nearby drainage, water bodies due to construction activities	Visual inspection by PMC on weekly basis
Air quality	Working during the dry season and transporting construction materials may increase dust, carbon, monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons in the air environment	24. Confining earthworks according to excavation segmentation plan that will be part of SSEMP 25. Using of physical controls, sprays, covers, compaction, screening, enclosure, windbreaks, binders, and road surfacing 26. Covering delivery trucks during transportation 27. Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, or as necessary 28. Placing warning signs at active work sites in populated areas 29. Limiting construction vehicle’s speed to 40 kph	Implementation by Contractor Supervision by QST-LLC, PCU, PMC Associated costs will be covered by the Contractor	Number of complaints from sensitive receptors	Visual inspection by PMC on weekly basis Quarterly inspection by PCU’s Environmental and Social Specialist

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		30. Use of vehicles complying with applicable national legislation in terms of emission 31. Prohibition of open burning of solid waste 32. Minimizing stockpile height 33. Non-use of cement produced by cement plants located up to 10 km from Lower Amudarya Reservation			
Noise environment	Temporary increase in noise level and vibrations by excavation equipment, and the transportation of materials, equipment, and people	34. Percussive piling will be prohibited at any time on Sundays and public holidays and during the weekday evening and night-time hours. 35. Do not use diesel, pneumatic and steam hammer pile drivers, which are particularly noisy. 36. Using equipment that emits the least noise, well-maintained and with efficient mufflers 37. Restricting noisy activities to daytime: Noise generated by general construction works will be during normal working hours (i.e., 07:00 to 19:00 hours on any day not being a Sunday or public holiday). 38. Avoiding the use of noisy equipment or doing noisy works at nighttime 39. Preparing work schedules and informing adjacent communities 40. Installing acoustic screen during noisy activities to ensure noise level at the area adjusted to the closest household is no more than 70 dB 41. Warning signs in noise hazard areas 42. Limiting engine idling to a maximum of one minute 43. Limiting the vehicle speed inside settlements to a maximum of 40 km/h; 44. Spread out the schedule of material, spoil and waste transport; 45. Minimizing drop heights when loading and unloading coarse aggregates	Implementation by Contractor Supervision by QST-LLC, PCU, PMC Associated costs will be covered by the Contractor	Number of complaints from sensitive receptors	Visual inspection by PMC on weekly basis Quarterly inspection by PCU’s Environmental and Social Specialist

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		46. Using Personal Protective Equipment (PPE) 47. Informing population on anticipated works 48. Upon completion of the construction activities, planting trees around the WTP; this includes any trees that can well take root around the site and preferably fruit trees to provide additional fruits for population of adjacent settlements (cherry trees, plum, pear-tree poplar, etc.)[67]			
River morphology and hydrology	Quarrying from the riverbeds and riverbank leading to changes in river morphology and hydrology	49. No quarrying from riverbeds will be made in this subproject	Implementation by Contractor Supervision by QST-LLC, PCU, PMC Associated costs will be covered by the Contractor	Contractor’s contract for material purchase Riverbank of Amudarya River remains as it was during the baseline study	Visual inspection by PMC on weekly basis Quarterly inspection by PCU’s Environmental and Social Specialist
Surface and ground water quality	Trenching and excavation, run-off from stockpiled materials, and chemical contamination from fuels and lubricants may result in silt-laden runoff during rainfall, which may cause siltation and reduction in the quality of adjacent water bodies	50. No distribution pipeline will cross water body, the Amudarya River. 51. Discharge of wastewater in the Amudarya River is prohibited. 52. Development of spoil management plan as part of the SSEMP 53. Reusing excess spoils and materials 54. Organizing the disposal site in designated areas 55. Carrying out earthworks during the dry season 56. Ensuring stockyards away from watercourses 57. Organizing the fuel storage area away from water drainage 58. Management and storage of fuel, waste oil, hazardous waste will be planned in accordance	Implementation by Contractor Supervision by QST-LLC, PCU, PMC Associated costs will be covered by the Contractor	Areas for stockpile storage of fuels and lubricants and waste materials; Silt traps installed along trenches leading to water bodies; No visible degradation to nearby drainage, water bodies due to construction activities	Visual inspection by PMC on weekly basis Quarterly inspection by PCU’s Environmental and Social Specialist

[67] In response to the opinion raised during the public consultation (Table 21).

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		with EHS General Guidelines on Hazardous Materials Management. This includes the use of appropriate secondary containment structures capable of containing the larger of 110 percent of the largest tank or 25% percent of the combined tank volumes in areas with above-ground tanks with a total storage volume equal or greater than 1,000 liters. 59. Domestic wastewater will be treated by the septic tanks (for settling and anaerobic processing) which will be installed by the contractors. The treated liquid effluent will be discharged to the septic drain field located in Takhiatash – a subsurface wastewater disposal facility for removing contaminants and impurities from the liquid effluent after anaerobic digestion in the septic tank. The sludge accumulated in the septic tank will be periodically removed and transported by suction trucks to the nearby wastewater treatment plant. For construction wastewater, the contractor will, prior to the commencement of construction works, install construction wastewater treatment facility which includes neutralization tank and settling/sedimentation pond. The water will be treated so that it meets the national standards before being discharged into a public effluent. Accumulated sludge from the treatment facility will be transported by the suction truck to the solid waste disposal area in Amudarya district. The specifications of the domestic and construction wastewater treatment will be provided in detailed design by the contractor. 60. Ensuring safe water diversion 61. Ensuring no obstruction in flowing water			
Waste generation	Generation of solid waste, wastewater from labor camp and	62. Better solid waste management practices will be adopted such as collection, segregation, reuse and	Implementation by Contractor	Number of complaints from sensitive receptors	Visual inspection by PMC on weekly basis

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
	other construction waste may cause pollution	recycling activities within the construction site and worker’s camp. 63. Preparing a solid waste management plan as part of the SSEMP 64. Minimizing stockpile size 65. Clearing wastes regularly 66. Avoiding stockpiling of excess spoils 67. Covering delivery trucks during transportation 68. Cleaning roads 69. Using screening enclosure shade cloth, temporary walls 70. Cleaning site regularly	Supervision by QST-LLC, PCU, PMC Associated costs will be covered by the Contractor	Worksite cleared of hazardous wastes Worksite cleared of unutilized materials, household and - construction wastes Construction camp cleared of household waste Transport route and worksite cleared of dirt	Quarterly inspection by PCU’s Environmental and Social Specialist
Biodiversity	cutting trees and shrubs, haphazard site clearing, parking, and movement of construction vehicles and equipment stockpiling resulting in disturbance to the land in the project area	71. Considering pipeline route to minimize cutting of trees and shrubs 72. If cutting trees is unavoidable, the corresponding permission will be obtained, and compensation will be provided in accordance with applicable legislation by paying the appropriate fee following applicable legislation68 73. Installing clear signs and markers to direct traffic movement in sites 74. Designating stockpiling areas 75. Wastewater discharge into the river is prohibited	Implementation by Contractor Supervision by QST-LLC, PCU, PMC Associated costs will be covered by the Contractor	PCU and PMC’s report on the number of trees cut and planted, if any (during detailed design)	Visual inspection by PMC on weekly basis Quarterly inspection by PCU’s Environmental and Social Specialist
Socio-economic resources	excavation works, stockpiling, the operation of construction vehicles and equipment, and accidental damage to utilities during the pipe laying	76. Prepare a traffic management plan in collaboration with local authorities 77. Where traffic congestion will likely occur, place warning signs and traffic flagmen during the working hours 78. Provide compensation to affected people 79. Manage to stockpile	Implementation by Contractor Supervision by QST-LLC, PCU, PMC	Number of complaints from sensitive receptors	Visual inspection by PMC on weekly basis Quarterly inspection by PCU’s Environmental and Social Specialist

[68]Regulation on the use of biological resources and the procedure for obtaining corresponding permissions, No. 290, 20.10.2014, https://lex.uz/docs/2485767

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
	Construction works will impede the access of residents and business in limited cases	80. Relocate the affected engineering communication before excavation and further pipes laying 81. Advise the concerned authority during accidental damage to utilities 82. Informing the communities about planning works on pipe laying 83. Hiring local population (especially women if possible) for construction works 84. Completing the work quickly nearby institutions, places of worship, business, hospitals, and schools 85. Restoring damaged properties and utilities	Associated costs will be covered by the Contractor		
Community health and safety	Bringing noise, communicable diseases and unethical behavior of workers in the adjacent communities	86. Implementation of health and safety management plan 87. Provision of adequate space and lighting, temporary fences, shining barriers and signage at active work sites 88. Constructing gender-friendly toilets for workers 89. Prohibiting alcohol and drugs on site 90. Preventing excessive noise 91. Code of conduct for workers will include restricting workers in designated areas, no littering, no fire, no trespassing, no residence at construction sites, and no obligation to potentially dangerous works 92. Maintaining a complaint logbook in workers camp and take action promptly of complaints 93. Restricting access to the site, through a combination of institutional and administrative controls, with a focus on high-risk structures or areas depending on site-specific situations 94. Removing hazardous conditions on construction sites that cannot be controlled affectively with site access restrictions, such as covering openings to small confined spaces, ensuring means of escape for larger openings such as trenches or	Implementation by Contractor Supervision by QST-LLC, PCU, PMC Associated costs will be covered by the Contractor	Health and safety management plan included in SSEMP Equipped first-aid stations Number of accidents Condition of workers eating areas Record of H&S orientation training Availability of PPE for all workers at the construction site Signage for storage and disposal areas Condition of sanitation facilities for workers	Visual inspection by PMC on weekly basis Quarterly inspection by PCU’s Environmental and Social Specialist

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		excavations, or locked storage of hazardous materials 95. Implementing measures to prevent proliferation of diseases vectors (including COVID-19 virus and flu) at work sites 96. Awareness Programme (trainings) on health-related issues (nutrition, sexually transmitted infections, alcohol abuse) to promote a healthy living culture in surrounding communities and establish monitoring of Camp followers such as prostitutes, narcotic dealers 97. Implementing risk management strategies to protect the local communities from physical, chemical, or other hazards associated with subproject activities 98. Contractor’s preparedness in emergency response 99. Dissemination of grievance redress mechanism (GRM) information			
Occupational health and safety	inadequate sanitation facilities and drinking water supply, poor housing conditions, mishandling of hazardous substances leading to health and safety hazards to the workers	100. Development and implementation of an occupational health and safety plan, COVID-19 Health and Safety Management Plan and Emergency Response Plan 101. If a suspected incidence of COVID-19 is reported of any member of the project team during implementation of the project-related activity (including consultation and public participation), the activity will stop immediately for a review of the adequacy of the safety system of work and a corrective action will be implemented to address any identified gaps in the safety system of work prior to recommencement of the activities. All such incidence will be reported to ADB immediately for review. 102. Development of Worker Camp Management Plan in reference to Workers' Accommodation:	Implementation by Contractor Supervision by QST-LLC, PCU, PMC Associated costs will be covered by the Contractor	Equipped first-aid stations Number of accidents Condition of workers eating areas Condition of sanitation facilities for workers Availability of safe drinking water	Visual inspection by PMC on weekly basis Quarterly inspection by PCU’s Environmental and Social Specialist

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		Processes and Standards69 as part of the SSEMP, and implementation of the plan 103. Training of all workers on occupational health and safety prior to construction works 104. Conducting orientation to visitors on health and safety procedures at work sites 105. Installation of signage to identify all areas at work sites, including hazard or danger areas 106. Proper labeling of equipment and containers at construction and storage sites 107. Suitable arrangements to cater for emergencies, including: first aid equipment; personnel trained to administer first aid; communication with, and transport to, the nearest hospital with an accident/emergency department; monitoring equipment; rescue equipment; firefighting equipment; and communication with nearest fire brigade station 108. Provision of personal protective equipment (earplugs, safety shoes, hard hats, masks, goggles, etc.) to all workers as applicable, and ensure these are used properly 109. Avoidance of slips and falls through good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths, cleaning up excessive waste debris and liquid spills regularly, locating electrical cords and ropes in common areas and marked corridors, and use of slip retardant footwear 110. Using bracing or trench shoring on deep excavation works			

[69] A guidance note by IFC and the EBRD Workers' Accommodation: Processes and Standards (August 2009)

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		111. inspecting and testing the rotating and moving equipment prior to use during construction works 112. Regular checking of integrity of workplace structures to avoid collapse or failure 113. Provision of enough work spaces for workers, including exit routes during emergencies 114. Provision of first aid stations and kits; availability of trained personnel, who can provide first aid measures to victims of accidents 115. Secured storage areas for chemicals and other hazardous and flammable substances are installed and ensure access is limited to authorized personnel only 116. Worker camps and work sites provided with housekeeping facilities, such as separate toilets for male and female workers, drinking water supply, wash and bathing water, rest areas, and other lavatory and worker welfare facilities 117. Maintaining records and reports concerning health, safety and welfare of persons, and damage to property; taking remedial action to prevent a recurrence of any accidents that may occur			
Cultural heritage	There are no archaeological, paleontological, or architectural sites of significance listed by local, national authority and UNESCO	118. Stop work immediately to allow further investigation, if any findings are suspected	Implementation by Contractor Supervision by QST-LLC, PCU, PMC	Records of chance finds	Visual inspection by PMC on weekly basis Quarterly inspection by PCU’s Environmental and Social Specialist
Operation phase					
Impacts on air quality	No permanent impact on air is expecting during operation phase	119. Ensuring compliance with national air quality standards	QST-LLC	Number of complaints from sensitive receptors	Quarterly inspection by Environmental Specialist of QST-LLC

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		120. Water the trees planted around the new WTP to maintain air quality and aesthetic[70]			
Impact on acoustic environment	Some temporary noise may occur during maintenance of WTP and water supply network	121. Developing and following Operation and Maintenance manual 122. Training QST-LLC personnel on Operation and Maintenance of new water intake, WTP, water main and network 123. Planting trees around the new WTP to improve the visual impact and reduce noise and dust	QST-LLC	Number of complaints from sensitive receptors	Quarterly inspection by Environmental Specialist of QST-LLC
Impact on water	Operation of WTP and pumping station may cause some direct and indirect negative impacts on the water. These include excessive water withdrawal, discharge and seepage of wastewater into the river and groundwater	124. Developing and following standard operating procedures for operation and maintenance based on the Operation and Maintenance manual provided by the contractor 125. Training QST-LLC personnel on Operation and Maintenance of new water intake, WTP, water main and network 126. Screening and monitoring the equipment with further replacing defective one 127. Development and implementation of leak detection campaign 128. Installation of specific wash down of vehicles and machinery station with further collection of wastewaters 129. Implementing spill control measures to prevent spills from infiltrating into the groundwater table; measures should include appropriate materials handling and storage procedures, and development of contingency plans in the event of a spill 130. Installation and monitoring of water meters at intake facilities and monitoring of water intake in accordance with the permissible amount	QST-LLC	Number of complaints from sensitive receptors	Quarterly inspection by Environmental Specialist of QST-LLC

[70] QST-LLC has to water the trees planted by the contract around new WTP.

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		131. Organizing public awareness campaign on effective wastewater management, Amudarya River and environment conservation 132. To prevent algae growth in the WTP, the operator will (1) use the pre-chlorination on the receiving well of the water treatment, (2) discharge back wash waste from sand filter and settled sludge from settling basin to irrigation canal without reusing it to prevent more algal growth and, and (3) perform water quality monitoring (temperature, pH, odor, turbidity, dissolved oxygen, nitrogen, phosphorus, total organic carbon in the water, etc.)			
Erosion and land surface disturbance	As part of water treatment, the sludge is generated upon sedimentation and filtration and collected in the specific sites	133. Timely and proper disposal of sludge excavated from clarifiers to the drying ponds 134. Avoiding collection sludge next to clarifiers	QST-LLC	Number of complaints from sensitive receptors	Semiannually inspection by Environmental Specialist of QST-LLC
Health and safety hazards	Poorly operated treatment plants pass pathogens; failure to chlorinate allows pathogens to survive in distribution systems; poor quality pipes and low pressure allow cross-contamination from sewers and soil organisms Electrical equipment used in the WTP can cause fire or electric shock to QST-LLC employees	135. Developing and implementing capacity building for WTP personnel in all aspects of operations and maintenance, which will ensure that high quality drinking water is provided through district systems 136. Preparation and provision of WTP standard operating procedures 137. Provision of on-the-job training activities in the occupational and public safety aspects of storage and operational use of chlorine 138. Water quality test on residual chlorine; 139. Water quality monitoring on all parameters specified in Public Health Standard No. 950-2011, “Drinking water. Hygienic requirements and quality control” 140. Screening electrical equipment and replacing the broken one by new	QST-LLC	Records of training delivery Availability of Operation and Maintenance manual for WTP, water intake and water main Water quality Availability of Operation and Maintenance manuals for equipment Number of accidents	Monthly inspection by Health and Safety Specialist of QST-LLC

Field	Impact	Mitigation Measures	Responsible for Implementation	Indicator	Frequency of Monitoring
		141. Ensuring availability of health and safety specialist as part of QST-LLC personnel; 142. Ensuring availability of emergency plan and provision of corresponding training to QST-LLC personnel			
Socio-economic resources	Lack of jobs	143. Recruit local population for WTP operation and specifically providing jobs for women	QST-LLC	Number of new jobs Number of jobs received by local population Number of jobs received by women of the adjacent settlements	Annual inspection by Health and Safety Specialist of QST-LLC

8.2. Environmental Monitoring and Reporting

8.2.1. During Pre-Construction

233. The pre-construction works under subproject will involve field surveys, detailed engineering design and drawings, cost estimate etc. This also includes discussion with various authorities to obtain permits and revision of design, if necessary. This pre-construction works encompass six-month period.

234. During this period, the contractor will provide quarterly environmental reports incorporating information on sub-project status, findings revealed during the site investigation and proposed engineering solutions that can impact the environment, and other issues related to environment, health and safety. Contractor will submit its report to PMC for review before submission to PCU.

235. The PMC’s environmental monitoring reports will aggregate all contractor’s environmental reports with adding PMC’s comments on the received information. This information on subproject implementation will be added to the general Project Semiannual Environmental Monitoring Report and be submitted to PCU.

8.2.2. During Construction

236. Upon approval of the detailed design and prior to the commencement of the civil works, Contractor will ensure that SSEMP is approved by PCU/PMC. The construction period is 20 months. The contractor will prepare monthly reports on SSEMP implementation under the subproject and submit them to the PCU/PMC during this period.

237. To ensure SSEMP is implemented by the contractor, the environmental monitoring will be undertaken during construction to control performance indicators, implementation of mitigation measures by the contractor and overall regulatory monitoring of environmental issues.

238. In addition to regular inspection missions to the site, i.e., weekly field visits by PMC-NES and quarterly by PCU, the monitoring of key environmental parameters is proposed. Table 22 provides the indicative environmental monitoring plan for the subproject, which includes relevant environmental parameters, with a description of the sampling stations, frequency of monitoring, applicable standards, and responsible stakeholders.

239. During construction, Environmental Management Officer (EMO) and Health and Safety Officer (HSO) of contractors are responsible for the preparation of weekly environmental checklists and environmental section of the contractor’s monthly progress reports. The reports should comprehensively address all relevant aspects of environmental requirements and, in particular, all environmental audits undertaken during the period covered by the report. The monthly reports will be reviewed and endorsed by the contractor’s project manager and then submitted to the PMC and PCU for review.

240. The PMC will prepare and submit to PCU Quarterly Progress Reports, which includes the information on the implementation and compliance with the EMPs and the SSEMPs (of all subprojects under Western Uzbekistan Water Supply System Development Project), including information on oil spills, accidents, grievance received, if any, and actions taken against them. Based on the contractor’s monthly environmental reports and the PMC’s Quarterly Progress Reports, PCU will, assisted by PMC-IES and PMC-NES, prepare SAEMRs and submit to ADB for disclosure.

241. Within three months after completion of all civil works, a report on the project's environmental compliance performance (including lessons learned that may help JSC “Uzsuvtaminot” and PCU in their environmental monitoring of future projects) will also be prepared.

242. **Environmental Effect Monitoring During Construction.** Amudarya District Branch of Karakalpakstan Environmental Committee specified certain places with the following geographical coordinates for sampling and testing the current state of soil, water and ambient air in the area allocated for the Sub-Project WU-CW-07 (Appendix 13):

A. Geographical coordinates for sampling and testing the current state of soil:

- Monitoring point No.1: 42°12'26.57"N 60° 5'55.61"E
- Monitoring point No.2: 42°12'30.36"N 60° 6'3.82"E
- Monitoring point No.3: 42°12'14.40"N 60° 6'17.18"E
- Monitoring point No.4: 42°12'11.54"N 60° 6'13.16"E

B. Geographical coordinates for sampling and testing the current state of water:

- Monitoring point No.1: 42°12'40.22"N 60° 6'35.50"E
- Monitoring point No.2: 42°12'35.57"N 60° 6'4.62"E
- Monitoring point No.3: 42°12'16.42"N 60° 6'20.51"E

C. Geographical coordinates for sampling and testing the current state of ambient air:

- Monitoring point No.1: 42°12'26.07"N 60° 6'9.19"E
- Monitoring point No.2: 42°12'16.98"N 60° 6'14.40"E
- Monitoring point No.3: 42°12'11.99"N 60° 6'12.43"E
- Monitoring point No.4: 42°12'15.20"N 60° 5'58.60"E

243. Water, soil and ambient air sampling and testing were carried out by Karakalpakstan Public Health and Welfare Services. The findings of the tests are provided in (Appendix 20).

8.2.3. During Operation

244. SAEMRs need to be submitted until ADB’s project completion report is issued. During the operation phase, QST-LLC will be responsible for environmental management, while PCU will continue to prepare SAEMRs, collecting information from relevant departments of QST-LLC.

8.2.4. Incident Report

245. In addition to the above-mentioned reports, in case of any accident related to occupational and community health and safety, PCU is expected to (i) report to ADB within 72 hours, and (ii) prepare and submit an incident report with action plan within 7 days of the occurrence.

Table 23 Environmental Monitoring Plan

Field	Parameter	Location	Frequency	Standard[71]	Responsibility
Construction Phase					
A. Air quality	PM2.5, PM10, SO_2, NO_x	- 4 locations listed under Chapter 8.2.2 - C - Intake and/or worksite locations (2 locations) - Along water transmission main 1-km interval from intake locations (6 locations) - Construction campsite locations (2 locations)	Quarterly during the construction	Public Health Regulation No. 0293-11[72](Table 3)	Contractor Associated costs will be included in the civil works contract
B. Noise and vibration	Noise and vibration levels	- Intake and/or worksite locations (2 locations) - Along water transmission main 1-km interval from intake locations (4 locations) - Construction campsite locations (2 locations) - Closest households (5 locations)	Quarterly during the construction	Public Health Regulation No. 0325-16[73] Public Health Regulation № 0267-09[74] (Table 4)	Contractor (same as above)
C. Surface water quality	Turbidity, color, odor, pH[75], iron, manganese, fluorine, BOD[76], total coliform, Ecoli TDS[77], TSS[78], hardness, total nitrogen, total	- 3 locations listed under Chapter 8.2.2 - BC; and - Adjacent to construction sites (3 locations)	Twice a year during construction	Public Health Regulation No. 0200-06[79] (Table 2)	Contractor (same as above)

[71] Following ADB SPS, When Uzbekistan’s national regulations differ from the levels and measures reflected in internationally recognized standards such as EHS Guidelines (footnote 9), whichever is more stringent will be achieved. If less stringent levels or measures are appropriate in view of specific project circumstances, JSC “Uzsuvtaminot” will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in this document.

[72] Public Health Regulation No. 0293-11 “Hygienic standard: List of pollutants maximum allowable concentrations in ambient air of populated areas in Uzbekistan”, 16.05.2011, http://med.uz/documentation/detail.php?ID=47545

[73] Public Health Regulation No. 0325-16 “Sanitary standards for acceptable noise levels at workplace”, 01.02.2016, https://ssv.uz/ru/documentation/sanpin-ruz-0325-16-sanitarnye-normy-dopustimyh-urovnej-shuma-na-rabochih-mestah

[74] Public Health Regulation No. 0267-09 “Sanitary standards on permissible noise in residential and public buildings and nearby area”, 19.06.2009, https://www.lex.uz/acts/1765725

[75] Potential of hydrogen

[76] BOD = biochemical oxygen demand

[77] TDS = total dissolved solids

[78] TSS = total suspended solids

[79] Public Health Regulation No. 0200-06, “Sanitary standards of water sources hygienic assessment, definition of surface water and groundwater sources classes, and their selection for drinking water supply”, 15.05.2006, https://www.lex.uz/acts/1933428

Field	Parameter	Location	Frequency	Standard[71]	Responsibility
	phosphorus, heavy metals, temperature, hydrocarbons, mineral oils, phenols, cyanide, temperature				
D. Treated construction wastewater quality monitoring	pH, BOD, COD, SS	Effluent of construction wastewater treatment facility	Quarterly	Public Health Regulations No. 0318-15 and No. 0200-06 (Table 2)	Contractor (same as above)
E. Survival rate of landscaping, tree plantation	Survival rate	In the areas where replantation/ landscaping is proposed	Twice a year	-	Contractor (same as above)
F. Community and occupational health and safety	Incidence and types of health and safety issues	Work sites	Monthly	Zero incident	Contractor (same as above)
G. Treated water quality	All standard parameters	End of WTP line (after final disinfection)	Three times before the commissioning (by Contractor)	Public Health Standard No. 950-2011[80] (Table 1)	Contractor (same as above)
H. Soil quality monitoring	All standard parameters	- 3 locations listed under Chapter 8.2.2 - A; and - Adjacent to construction sites (3 locations)	Twice a year	Public Health Regulation № 0055-96[81] (Table 5)	Contractor (same as above)
Operation Phase					
I. Surface water quality	Same as C above.	- Adjacent to new Mangit WTP (irrigation channels)	Twice a year	Same as C above.	QST-LLC
J. Treated water quality	Same as G above.	Same as G above.	Monthly[82]	Same as G above	QST-LLC

[80] Public Health Standard No. 950-2011, “Drinking water. Hygienic requirements and quality control”, 02.02.2011, https://www.lex.uz/docs/4979438

[81] Public Health Regulation № 0055-96 “Maximum permissible concentrations (MPC) and regular permissible concentrations (RPC) of exogenous harmful substances in the soil” https://nrm.uz/contentf?doc=368500_predelno_dopustimye_koncentracii_(pdk)_i_orientirovochno_dopustimye_koncentracii_(odk)_ekzogennyh_vrednyh_veshchestv_v_pochve_(sanpin_ruz_n_0055-96)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_22_07_1996_g_)&products=1_vse_zakonodatelstvo_uzbekistana

[82] Based on Public Health Standard No. 950-2011, “Drinking water. Hygienic requirements and quality control”, 02.02.2011, https://www.lex.uz/docs/4979438

Field	Parameter	Location	Frequency	Standard[71]	Responsibility
K. Community and occupational health and safety	Same as F above.	Same as F above.	Monthly	Zero incident	QST-LLC

BOD = biochemical oxygen demand, NOx = nitrogen oxide (total), PM 2.5 = particles equal to or smaller than 2.5 microns, PM 10 = particles equal to or smaller than 10 microns, SO_2 = Sulphur dioxide, TDS = total dissolved solids, TSS = total suspended solids

8.3. Implementation Cost

246. Most of the mitigation measures require the contractors to adopt good site practice, which are part of their normal procedures. PCU and PMC's supervision and monitoring will be provided as part of their management of the Project. Cost estimate of environmental management is shown in the tables below.

Table 24 - Cost Estimate for PMC's Environmental Management[83]

Description	Unit	Quantity	Rate ($)	Amount ($)
PMC-NES	month	18	4,000	72,000
PMC-IES	month	4	18,000	72,000
Training	lump sum	5	3,000	15,000
			Total	**159,000**

Source: Western Uzbekistan Water Supply System Development Project: Project Administration Manual | Asian Development Bank (adb.org)
PMC = Project Management Consultant, PMC-IES = PMC's International Environmental Specialist, PMC-NES = PMC's National Environmental Specialist

Table 25 - Cost Estimate for PCU's Environmental Management[84]

Description	Unit	Quantity	Rate ($)	Amount ($)
PCU's Environmental Specialist	month	24	1,100	264,000
PCU's Resettlement, Social, and Gender Specialist	month	24	1,100	264,000
Total				**528,000**

Source: Western Uzbekistan Water Supply System Development Project: Project Administration Manual | Asian Development Bank (adb.org)
PCU = Project Coordination Unit

Table 26 – Annual Cost Estimate for QST-LLC's Environmental Management

Description	Unit	Quantity	Rate ($)	Amount ($)
Environment Specialist	month	12	-	-
Health and Safety Specialist	month	12	-	-
Development of standard operating procedure	unit	1	-	-
Training on Operation and Maintenance	session	2	200	400
Installation of specific wash down of vehicles and machinery station	unit	1	5,000	5,000
Public awareness campaign on effective wastewater management, Amudarya River and environment conservation	campaign	1	2,000	2,000
Disposal of sludge	vehicle	4	500	2,000
Monitoring				
Surface water quality	test	4	100	400
Treated water quality	test	12	300	3,600
Total	**13,400**			

WTP = water treatment plant

[83] This covers all subprojects under Western Uzbekistan Water Supply System Development Project.
[84] Same as footnote 83.

Table 27 Cost estimations for Contractor's Environmental Management[85]

Item	Quantity	Unit cost[86] ($)	Total cost ($)	Comments
Environmental Monitoring[87]				
Air quality monitoring (at least NO_2, NO, CO, SO_2, carbons, PM 2.5 and PM10)	**98** (14 locations x 7 times quarterly)	50	**4,900**	Performed by authorized laboratory pursuant to Uzbek regulation No. 0293-11.[88]
Noise and vibration	**91** (13 locations x 7 times quarterly)	50	**4,550**	Performed by authorized laboratory pursuant to Uzbek Regulation No. 0267-09.[89]
Surface water quality monitoring	**24** (6 locations x 4 times semi-annually)	200	**4,800**	Performed by authorized laboratory* pursuant Uzbek sanitary and hygiene regulation No. 0318-15.[90]
Treated construction wastewater quality monitoring	**7** (1 location x 7 times quarterly)	200	**1,400**	Performed by authorized laboratory* pursuant Uzbek sanitary and hygiene regulation No. 950-2011[91]
Soil quality monitoring	**24** (6 locations x 4 times semi-annually)	200	**2,400**	Performed by authorized laboratory* pursuant Uzbek sanitary and hygiene regulation No. 0212-06.[92]
Treated water quality monitoring	**3** times	200	**600**	Performed by authorized laboratory* pursuant Uzbek sanitary and hygiene regulation No. 950-2011[93]
Environmental Mitigation Measures/Permissions				
Cutting trees/bushes	0.5 ha	900	**450**	Contractor will receive permission for cutting trees or bush from Amudarya District Environmental Committee.
Dust and noise control barriers	1	10,000	**10,000**	
SSEMP preparation	1	1,000	**1,000**	
Management of solid wastes (storage facilities, transportation to the disposal site,)	lump sum	2,000	**2,000**	
Management of liquid wastes (installation and operation of wastewater treatment facility such as septic tanks, neutralization tank, settling/sedimentation pond, etc.)	lump sum	15,000	**15,000**	

[85] All the cost is included in the civil works contract.
[86] Authorized laboratories are presented by laboratories of Karakalpak Republican Public Health and Welfare Service and Karakalpak Republican Environmental Committee.
[87] Assuming 20 months of construction period.
[88] Uzbek sanitary and hygiene regulation No. 0293-11, http://www.med.uz/fergana/documents/detail.php?ID=47545
[89] Uzbek sanitary and hygiene regulation No. 0267-09 http://www.med.uz/fergana/documents/detail.php?ID=10027
[90] Uzbek sanitary and hygiene regulation No. 0318-1, https://ssv.uz/ru/documentation/sanpin-ruz-0318-15gigienicheskie-i-protivoepidemicheskie-trebovanija-k-ohrane-vody-vodoemov-na-territorii-respubliki-uzbekistan
[91] Uzbek sanitary and hygiene regulation No. 950-2011, https://www.lex.uz/docs/4979438
[92] Uzbek sanitary and hygiene regulation No. 0212-06, https://lex.uz/docs/1932321
[93] Uzbek sanitary and hygiene regulation No. 950-2011, https://www.lex.uz/docs/4979438

Item	Quantity	Unit cost[86] ($)	Total cost ($)	Comments
Dust suppression (water spraying)	120	20	**2,400**	Every day during four drought months (June, July, August and September)
COVID-19 mitigation	1	750	**750**	Contractor performs COVID-19 tests of its personnel.
Trees planting around the new WTP	200	10	**2,000**	Trees will be planted around the WTP by the contractor upon completion of all civil works per contract.
Other				
Development of Operation and Maintenance manual	1	1,000	**1,000**	Operation and maintenance manual will be developed by the contractor upon commissioning of WTP
Staffing				
Environmental Management Officer	20	1000	**20,000**	20 months of construction
Health and Safety Officer	20	1000	**20,000**	20 months of construction
Subtotal			**93,250**	
Miscellaneous			9,325	10% of Sub-total
Contingency			12,309	12% of Sub-total + Miscellaneous
Total			**114,884**	

8.4. Institutional Arrangements and Reporting

247. The PCU is responsible for ensuring implementation of EMP in compliance with ADB SPS and applicable national regulations. PCU is fully staffed and includes Environmental Specialist and Resettlement, Social and Gender Specialist. PCU is supported by PMC in overseeing the implementation of EMP. All costs associated with EMP implementation will be included into the civil work contract and cost of environmental supervision is included in the PMC contract. However, PCU is responsible for overall environmental compliance with ADB SPS.

248. The monitoring activities will correspond with the project’s risks and impacts, as indicated in the subproject IEE. In addition to recording information on the work and deviation of work components from the original scope PCU and PMC will undertake site inspections and document review to verify compliance with EMP and progress toward the expected outcome.

249. The PCU in assistance of the PMC will prepare and provide SAEMRs based on data gathering and analysis for the past six months. The SAEMR will be made in the format recommended by ADB.

250. The PMC will be responsible for provision of assistance to PCU in ensuring environmental safeguard compliance of civil works. The PMC will be staffed by PMC-IES and PMC-NES to perform environmental supervision and guidance of the contractor. The PMC will provide training on SSEMP preparation and overall implementation of EMP.

251. The PMC will conduct post-construction audit before WTP, water intake and water mains commissioning to QST-LLC and verify the compliance of the sites with EMP.

252. Reporting of the PMC will be based on site inspections and monthly reporting provided by contractor. The PMC’s reporting to PCU will be quarterly and Final Environmental Monitoring Report will be submitted upon post-construction audit to demonstrate that the project was properly completed.

253. Contractor will be responsible for implementation of mitigation measures. Contractor will assign full-time and qualified environmental management officer and health and safety officer respectively. Within thirty days upon signing the contract and prior to commencing any physical works, the contractor shall prepare and submit Site-Specific Environmental Management Plan (SSEMP). The contractor environmental reporting will be monthly and will incorporate scope of work for the reporting period, implemented mitigation measures and tests, delivered training activities, received and addressed complains, accidents, etc. Contractor will submit its reporting to the PMC before its submission to PCU.

254. QST-LLC will have an Environmental Specialist and a Health and Safety Specialist, who will be in charge for EMP implementation and ensuring compliance of WTP, water intake and water main operations with applicable national environmental requirements. PCU will collect information of monitoring result from QST-LLC and prepare and submit to ADB SAEMRs until ADB’s Project completion report is issued.

9. CONCLUSIONS AND RECOMMENDATIONS

255. Field study and analysis of the environmental aspects of the proposed project shows that the proposed project is not an environmentally critical intervention. The IEE shows that:

(i) The proposed subproject and its components are not within environmentally sensitive area;

(ii) There will be some negative impacts however the extent of these impacts is expected to be local, confined within the projects’ main areas of influence, and the routes to and from these sites; with the EMP in place, the potential impacts will either be eliminated or minimized to insignificant levels;

(iii) The significance of impacts during construction will be temporary and short-termed (i.e., most likely to occur only during peak construction periods). These will not be sufficient to threaten or weaken the surrounding resources;

(iv) During operation, the potential delivery of unsafe water can be mitigated with good operation and maintenance, prompt action on leaks, and complying with the required quality monitoring of supplied water as prescribed in the applicable national legislation;

(v) The proposed subproject will bring about: (a) the benefits of access to reliable supply of safe and potable water; (b) promotion of good hygiene and sanitation practices and reduced health and safety risks as positive impacts; and (c) enhanced community health, improved quality of life and safe communities as outcomes.

256. Following requirements of ADB SPS, Joint Stock Company Uzsuvtaminot and Qaraqalpaq Suv Taminati LLC will apply pollution prevention and control technologies and practices consistent with international good practice as reflected in internationally recognized standards such as EHS Guidelines (footnote 9). For this subproject, both General EHS Guidelines (footnote 10) and EHS Guidelines for Water and Sanitation (footnote 11) will be applicable. When Government regulations differ from these levels and measures, Joint Stock Company Uzsuvtaminot and Qaraqalpaq Suv Taminati LLC will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, Joint Stock Company Uzsuvtaminot and Qaraqalpaq Suv Taminati LLC will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

257. This IEE will be updated if unanticipated environmental impacts become apparent based on results of detailed engineering design and will be submitted to ADB for clearance and disclosure at ADB website.

10. APPENDICES

Appendix 1. Rapid Environmental Assessment Checklist

Rapid Environmental Assessment Checklist (REA) is prepared for Sub-Project WU-CW-07 “Construction of Mangit WTP” using the REA template for water supply.

SCREENING QUESTIONS	Yes	No	Remarks
A. Project Siting Is the project area…			
▪ Densely populated?	√		Tulkin aul is high densely populated community (8470 people are living on 0.5 km^2)
▪ Heavy with development activities?		√	The water main will go by the Kipchak, Madaniyat, Kora Kipchak and Nugai Eshon settlements.
▪ Adjacent to or within any environmentally sensitive areas?			
• Cultural heritage site		√	No cultural heritage site is located within vicinity of subproject site. The closest cultural monument is Dakhma Chilpyk and 6.881 km from the Mangit WTP site.
• Protected Area		√	
• Wetland		√	
• Mangrove		√	
• Estuarine		√	
• Buffer zone of protected area		√	
• Special area for protecting biodiversity		√	No protected area is located nearby the subproject site, except the Amudarya River. The EMP prohibits discharge of wastewater into the river.
• Bay		√	None
B. Potential Environmental Impacts Will the Project cause…			
▪ pollution of raw water supply from upstream wastewater discharge from communities, industries, agriculture, and soil erosion runoff?		√	The EMP prohibits discharge of wastewater by contractor into the river. The project envisages a campaign to highlight hygiene and sanitation issues, and the campaign will also highlight the issues of non-discharge of any wastes into the river, environment and river conservation.
▪ impairment of historical/cultural monuments/areas and loss/damage to these sites?		√	
▪ hazard of land subsidence caused by excessive ground water pumping?		√	
▪ social conflicts arising from displacement of communities?		√	No displacement
▪ conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters?		√	No local water uses disputes

▪ unsatisfactory raw water supply (e.g., excessive pathogens or mineral constituents)?	√		The Amudarya River has high turbidity and mineralization. Water treatment is proposed under the Subproject. EMP recommends water quality monitoring as prescribed in applicable local legislation.
▪ delivery of unsafe water to distribution system?	√		Subproject design include water quality laboratory for monitoring safe drinking water. EMP recommends continuing training of QST-LLC personnel in water quality monitoring
▪ inadequate protection of intake works or wells, leading to pollution of water supply?	√		Subproject design has considered the safest site for intake regarding environmental pollution and proposes enough measures to mitigate contamination. The water intake facilities will be placed on existing abandoned agricultural fed channel connecting the Amudarya River with earthen pond.
▪ over pumping of ground water, leading to salinization and ground subsidence?		√	None
▪ excessive algal growth in storage reservoir?	√		To prevent algae growth in the WTP, the operator will (1) use the pre-chlorination on the receiving well of the water treatment, (2) discharge back wash waste from sand filter and settled sludge from settling basin to irrigation canal without reusing it to prevent more algal growth and, and (3) perform water quality monitoring (temperature, pH, odor, turbidity, dissolved oxygen, nitrogen, phosphorus, total organic carbon in the water, etc.)
▪ increase in production of sewage beyond capabilities of community facilities?		√	EMP provides mitigation measures
▪ inadequate disposal of sludge from water treatment plants?		√	EMP provides mitigation measures
▪ inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?		√	
▪ impairments associated with transmission lines and access roads?		√	The existing access roads are unpaved. There are no transmission lines on the subproject site. If there are any impairments associated with utilities such as roads (including access roads) and transmission/distribution lines (if any), the damage will be reinstated by the contractor.
▪ health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals	√		EMP provides mitigation measures, including provision of training activities
▪ health and safety hazards to workers from the management of chlorine used for disinfection and other contaminants?		√	EMP provides mitigation measures, including provision of training activities
▪ dislocation or involuntary resettlement of people		√	No dislocation and resettlement

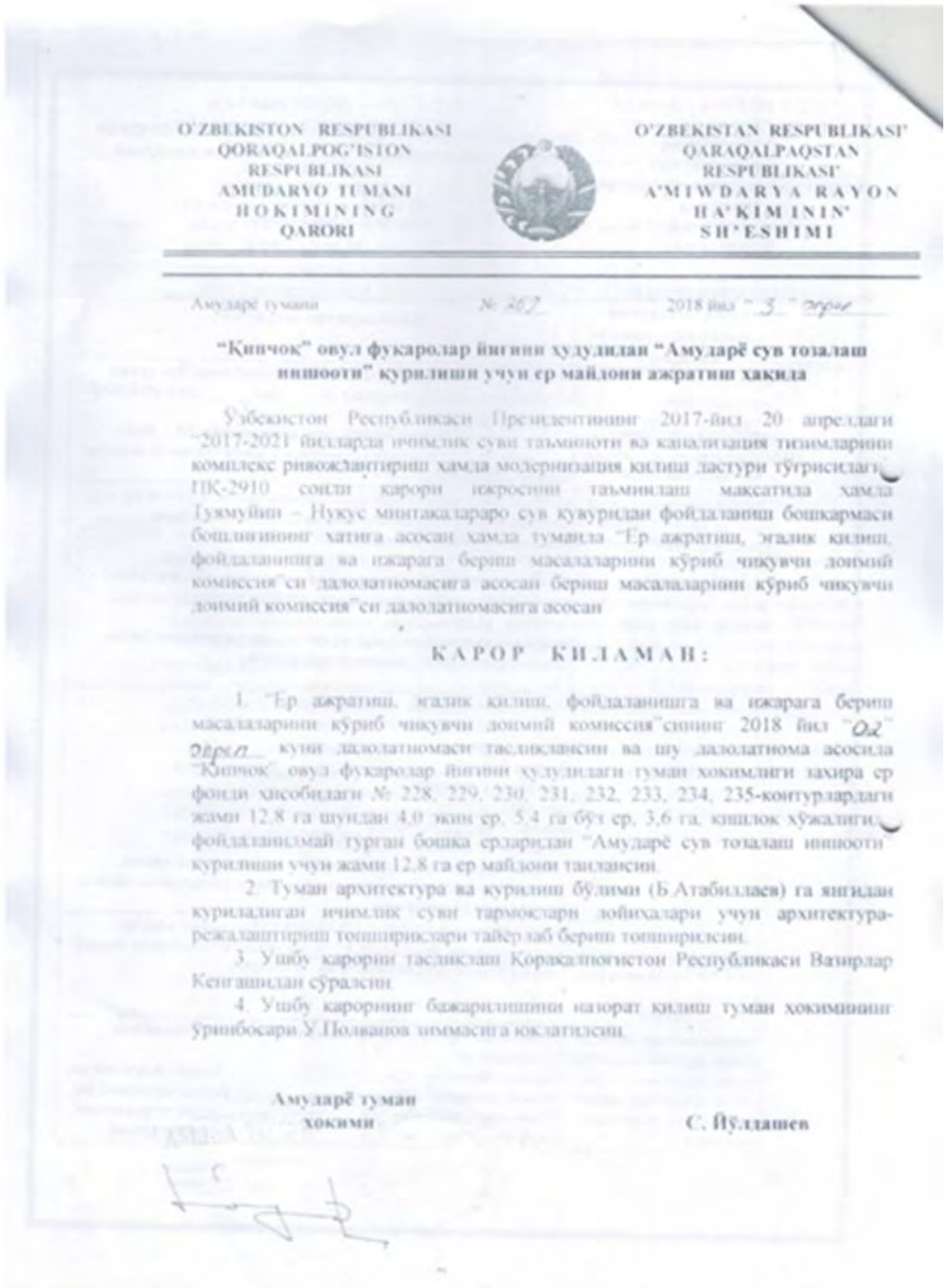
▪ disproportionate impacts on the poor, women and children, indigenous peoples or other vulnerable groups?		√	No such impact is envisaged
▪ noise and dust from construction activities?	√		EMP provides mitigation measures, including planting trees around the Mangit WTP site
▪ increased road traffic due to interference of construction activities?	√		There is a railway project adjacent to the Mangit WTP site. During the field visits It was noted the beginning of active works, including surface leveling, the accumulation of earthworks machinery, transport, and workers on the site. EMP provides mitigation measures, including preparation of traffic management plan by contractor.
▪ continuing soil erosion/silt runoff from construction operations?		√	
▪ delivery of unsafe water due to poor Operation and Maintenance treatment processes (especially mud accumulations in filters) and inadequate chlorination due to lack of adequate monitoring of chlorine residuals in distribution systems?	√		EMP incorporates monitoring of distributed water according to the applicable local legislation
▪ delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals?	√		EMP recommends water quality monitoring on all parameters specified in Public Health Standard No. 950-2011, “Drinking water. Hygienic requirements and quality control”, including test of residual chlorine
▪ accidental leakage of chlorine gas?		√	EMP provides mitigation measures, including provision of training activities on chlorine handling, maintaining emergency plan by QST-LLC, etc.
▪ excessive abstraction of water affecting downstream water users?	√		EMP provides mitigation measures, including installation and monitoring of water meters at intake facilities and monitoring of water intake in compliance with the permissible amount. Water abstraction will be limited to WTP capacity, the conceptual design specifies maximum capacity of new WTP as 30 thousand m^3 per day.
▪ competing uses of water?		√	The proposed abstraction rate is limited and there will be sufficient water for downstream users. The lower river basin management controls all water withdrawals in the 283 km section from the Kipchak monitoring station to the Aral Sea. The annual water withdrawal by new WTP (located near Kipchak) is limited to no more than 30,000 m^3 per day (IEE, Section 4.1.4).
▪ increased sewage flow due to increased water supply	√		Increased sewage flow will be resulted in increase of water usage due to construction of net WTP in the region. Sewage system is expected to be improved under the upcoming new project to be financed jointly by the World Bank (Project ID 33799) and Asian Infrastructure Investment Bank. Currently, the

			feasibility study of this new project is undergoing.
▪ increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant	√		There is a potential increase in volume of sullage due to improved water supply. The sludge will be properly treated and disposed at a legitimate landfill following the EMP.

Appendix 2. Crossing of designed water network by new railway in Kipchak

Figure 30 Crossing of designed water network by new railway in Kipchak

Appendix 3. Regulation on land allocation for Mangit WTP Sub-Project



O'ZBEKISTON RESPUBLIKASI
QORAQALPOG'ISTON
RESPUBLIKASI
AMUDARYO TUMANI
HOKIMINING
QARORI

O'ZBEKISTAN RESPUBLIKASI'
QARAQALPAQSTAN
RESPUBLIKASI'
A'MIWDARYA RAYON
HA'KIMININ'
SH'ESHIMI

Амударё тумани № 267 2018 йил "3" апрел

"Қипчоқ" овул фукаролар йиғини ҳудудидан "Амударё сув тозалаш иншооти" қурилиши учун ер майдони ажратиш ҳақида

Ўзбекистон Республикаси Президентининг 2017-йил 20 апрелдаги "2017-2021 йилларда ичимлик суви таъминоти ва канализация тизимларини комплекс ривожлантириш ҳамда модернизация қилиш дастури тўғрисида"ги ПҚ-2910 сонли қарори ижросини таъминлаш мақсатида ҳамда Туямўйин – Нукус миллатлараро сув қувуридан фойдаланиш бошқармаси бошлиғининг хатига асосан ҳамда туманда "Ер ажратиш, ғалаба қилиш, фойдаланишга ва ижарага бериш масалаларини кўриб чиқувчи доимий комиссия"си далолатномасига асосан бериш масалаларини кўриб чиқувчи доимий комиссия"си далолатномасига асосан

ҚАРОР ҚИЛАМАН:

1. "Ер ажратиш, ғалаба қилиш, фойдаланишга ва ижарага бериш масалаларини кўриб чиқувчи доимий комиссия"сининг 2018 йил "02" апрел куни далолатномаси тасдиқлансин ва шу далолатнома асосида "Қипчоқ" овул фукаролар йиғини ҳудудидаги туман ҳокимлиги заҳира ер фонди ҳисобидаги № 228, 229, 230, 231, 232, 233, 234, 235-контурлардаги жами 12,8 га шундан 4,0 экин ер, 5,4 га бўз ер, 3,6 га, кишлоқ хўжалигида фойдаланилмай турган бошқа ерларидан "Амударё сув тозалаш иншооти" қурилиши учун жами 12,8 га ер майдони танлансин.

2. Туман архитектура ва қурилиш бўлими (Б.Атабиллаев) га янгидан қурилаётган ичимлик суви тармоқлари лойиҳалари учун архитектура-режалаштириш топшириқлари тайёрлаб бериш топширилсин.

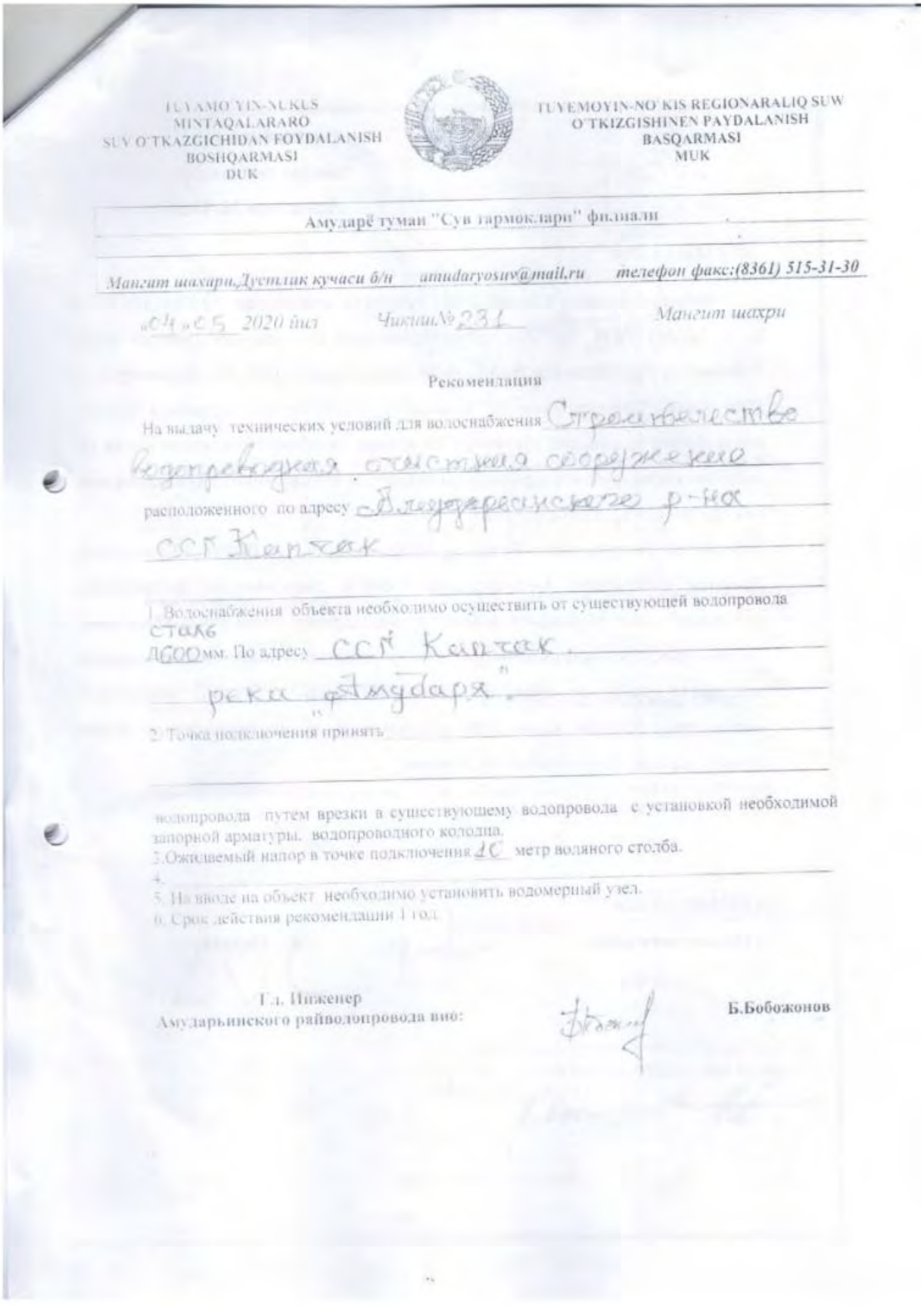
3. Ушбу қарорни тасдиқлаш Қорақалпоғистон Республикаси Вазирлар Кенгашидан сўралсин.

4. Ушбу қарорнинг бажарилишини назорат қилиш туман ҳокимининг ўринбосари У.Полванов зиммасига юклатилсин.

Амударё туман
ҳокими **С. Йўлдашев**

Figure 31 Regulation of Local Administration of Amudarya District regarding land allocation for Mangit WTP Sub-Project (Excerpt of Regulation No 262 d/d 3 April 2018)

Appendix 4. Permission for water intake from Amudarya River



TUYAMO'YIN-NUKUS
MINTAQALARARO
SUV O'TKAZGICHIDAN FOYDALANISH
BOSHQARMASI
DUK

TUYEMOYIN-NO'KIS REGIONARALIQ SUW
O'TKIZGISHINEN PAYDALANISH
BASQARMASI
MUK

Амударё туман "Сув тармоклари" филиали

Мангит шахри,Дустлик кучаси б/н amudaryosuv@mail.ru телефон факс:(8361) 515-31-30

«04 »05 2020 йил Чиқиш№231 Мангит шахри

Рекомендации

На выдачу технических условий для водоснабжения Строительство
водопроводной станции сооружения
расположенного по адресу Амударьинского р-на
ССГ Кантак

1. Водоснабжения объекта необходимо осуществить от существующей водопровода
сталб
Д600мм. По адресу ССГ Кантак.
реки Амударя.

2. Точка подключения принять

водопровода путем врезки в существующему водопровода с установкой необходимой запорной арматуры, водопроводного колодца.
3.Ожидаемый напор в точке подключения 20 метр водяного столба.
4.
5. На вводе на объект необходимо установить водомерный узел.
6. Срок действия рекомендации 1 год.

Гл. Инженер
Амударьинского райводопровода вио: Б.Бобожонов

Figure 32 Permission of Amudaryo Tuman Suv Tarmoklari on water intake from Amudarya River under the Sub-Project WU-CW-07 (Excerpt of the Document No. 231 d/d 4 May 2020)

Appendix 5. Request for clarification to Amudarya district local administration on the WTP territory

K water
GBS

Western Uzbekistan Water Supply Development Project Management Consultants
21 Husnutdin Asomov str., Tashkent 100084, UZBEKISTAN

Дата: 19-августа 2021 года.
Date: 19 August, 2021

Reference No. Номер письма	:	**PMC-CW07-21-087**
To	:	S.R.Yuldashev, the Khakim of Amudarya district of the Republic of Karakalpakstan
Кому	:	С.Р.Йулдашеву, Хаким Амударьинского района Республики Каракалпакстан
Subject	:	Territory for Mangit WTP construction
Reference to	:	
Тема	:	Территория для строительства ВОС Мангит
В ответ на	:	

Dear Sultanboy Rajabboevich,

In accordance with the Decree of the President of the Republic of Uzbekistan dated on April 9, 2019 No. PP-4271 and the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 37 dated January 16, 2019, the investment project "Development of water supply systems in the western part of Uzbekistan" is being implemented in the Republic of Karakalpakstan, financed by Asian Development Bank.

According to the Decision of the Governor of the Amudarya region of the Republic of Karakalpakstan No. 269 dated on April 3, 2018, for the construction of the Mangit WTP, 12.8 hectares of land were allocated on the territory of the Kipchok CRC, Amudarya region, the Republic of Karakalpakstan.

During the next visit of the international specialist in environmental monitoring and specialist in social, gender and resettlement of the Project Management Consultant (JV Korea Water Resources Corporation and Hankuk Engineering Consultants Co. Ltd and GLOBAL BUSINESS SERVICES LLC) on

Уважаемый Султанбой Ражаббоевич,

В соответствии с Постановлением Президента Республики Узбекистан от 9-апреля 2019 г. №ПП-4271 и Постановлением Кабинета Министров Республики Узбекистан №37 от 16-января 2019 года, в Республике Каракалпакстан реализуется инвестиционный проект «Развитие систем водоснабжения в западной части Узбекистана», финансируемый Азиатским Банком Развития.

Согласно Решению Хакима Амударьинского района Республики Каракалпакстан №269 от 3 апреля 2018 г. в целях строительства ВОС Мангит, было выделено 12.8 га земель на территории ССГ «Кипчок», Амударьинского района, Республики Каракалпакстан.

В ходе очередного визита международного специалиста по экологическому мониторингу и специалиста по социальным, гендерным вопросам и переселению Консультанта по Управлению Проектом (СП «Korea Water Resources Corporation» и «Hankuk Engineering

Страница **1** из **3**

Бир нусха олдим
Н.Юлдашев
20.08.2021й.

August 17, 2021, it was discovered that there are rice crops on the territory allocated for the construction of the Mangit WTP (photo attached).

We ask you to confirm that the allocated territory:

(1) belongs to the Khakimiyat of the Amu Darya region of the Republic of Karakalpakstan;

(2) remains designated for the construction of the Mangit WWTP;

(3) is not under an agreement with the farm;

is not a matter of land tenure proceedings with individuals and legal entities.

Sincerely,

I.Mirzabekov
Deputy Project Manager

Consultants Co. Ltd» и ООО «GLOBAL BUSINESS SERVICES») 17-августа 2021г., было обнаружено, что на территории, выделенной для строительства ВОС «Мангит», имеются посевы риса (фото прилагается).

Просим Вас подтвердить, что выделенная территория:

(1) принадлежит Хакимияту Амударьинского района Республики Каракалпакстан;

(2) остаётся предназначенной для строительства ВОС Мангит;

(3) не находится под договором с фермерским хозяйством;

не является вопросом разбирательств в отношении землевладения с физическими и юридическими лицами.

С уважением,

И. Мирзабеков
Заместитель руководителя проекта

Attachment:
1. Photo of the territory (dated on August 17, 2021) allocated for the construction of the Mangit WTP

CC:
1. Mr. A.Kudainazarov, Director/Karakalpak Suv Taminoti LLC
2. Mr. Sh.Gulomov, Director./ PCU ADB
3. Mr. I.Dadajonov, Royal Design Loyiha LLC
4. Mr. Yun Bae Kang, Project Manager of PMC
5. Mr. Sunmin ROH/K-Water
6. Mr. M.Sattarov/GBS

Приложение:
1. Фото территории (от 17 августа 2021г.), отведенной для строительства ВОС «Мангит»

Копия:
1. Г-н А.Кудайназаров, Директор ООО «Qoraqalpoq Suv Ta’minoti»
2. Г-н Ш.Гуломов, Директор ГКП АБР
3. Г-н И. Дадажонов, Royal Design Loyiha LLC
4. Г-н Юн Бае Канг, Менеджер Проекта
5. Г-н Сунмин Ро /K-Water
6. Г-н Мурод Саттаров /GBS

Attachment / Приложение: Photos of the territory (dated on August 17th , 2021) designated for the construction of the Mangit WTP / Фотографии территории (от 17-августа 2021г.), отведенной для строительства ВОС «Мангит»

Figure 33 Request to Amudarya district local administration (Khokimiyat) d/d 19 August 2021.

Appendix 6. Confirmation of Amudarya district local administration on the WTP territory

QORAQALPOG'ISTON RESPUBLIKASI
AMUDARYO TUMAN HOKIMLIGI

QARAQALPAQSTAN RESPUBLIKASÍ
ÁMIWDÁRYA RAYON HÁKIMLIGI

Mang`it shahri-230700, Gurlan ko`chasi-65-uy. Tel: (61) 515-33-83

19 09 2021-yil 03-255 -son

Western Uzbekistan Water Supply Development Project Management Consultants

На ваш запрос Хокимят Амударьинского района сообщает:

Земельный участок выделенный под строительство ВОС «Мангит» находится на балансе Хокимията Амударьинского района и является резервными землями.

Так же, подтверждаем, что выделенная земля остается закрепленной под строительство водозаборных сооружений, как было указано в вашей концепции.

Данный участок никем не занят и не является вопросом разбирательств в отношении землевладения с физическими и юридическими лицами.

Заместитель хакима Амударьинского района **Н.Камолов**

Figure 34 Confirmation letter from the Amudarya district Khokimiyat d/d 29 September 2021

Appendix 7. Summary of Planned Works under Sub-Project WC-07

Table 28 Summary of Planned Works under Sub-Project WC-07

Related facility	Planned Works
Detailed Design of WTP Structures	
Foundation	▪ strip monolithic, concrete class not less than B15/B20, reinforcement – armature class AIII, reinforcing mesh 5Bp1-100. Under foundation need to place stone bed thickness 10cm, saturated with bitumen mark BNI-V ▪ waterproofing with hot bitumen in two layers with glue by moisture-proof along the full contact surface of concrete and soil ▪ monolithic plate executed from concrete class C20, reinforcement – armature class AIII, constructive armature class AI ▪ plate working as basement for equipment foundations and columns; under foundation need to place stone bed thickness 10cm, saturated with bitumen mark BNI-V
Columns	▪ dimensions of section 400x400 mm, step of columns – 6.0m width of span – 6.0; 12.0; 18.0; 24.0; 30.0 m ▪ concrete class not less than C15/C20, reinforcement – class of working armature AIII ▪ made of square pipes, rectangular and electric-welded steel pipes; section selection according to the design
Beams	▪ span ≤ 6.0m – longitudinal and cross beams has dimensions in section – 400x400 mm produced with columns together, forming of integrated building frame ▪ span> 6.0m – prefabricated concrete beams and girders ▪ made of cold-drawn and hot-rolled, profiles; section selection according to the design
Walls	▪ are filling of monolithic frame and executed from clay brick thickness 380 mm (1.5 brick) of M75 grade on mortar M50 grade with ultimate resistance of axial tension on not bound joints within R≥120kPa ▪ between foundation and brick wall protection against capillary moisture – cement-sand mortar (ratio 1:2) thickness – 30mm ▪ walls and piers are made of sandwich panels made of profiled steel sheet filled with polyurethane foam, expanded polystyrene and mineral wool board
Trusses	▪ are made of square pipes, rectangular and electric-welded steel pipes, as well as from cold-drawn and hot-rolled profiles; section selection according to the design
Partitions	▪ executed from clay brick thickness 120 mm (0.5 brick) of M75 grade on mortar M50 grade
Overhead cover	▪ Spans ≤ 6,0m–round holes slab with dimensions 6.0 x 1.0-1.2-1.5 m according to series 1.141-19c/85. Spans> 6.0m – ribbed slab with dimensions 6.0 x 1.5-3.0m
Roof	▪ covering of roof is «soft» executed from roll material with waterproofing, forming of roof slope by means of heat insulation (foam concrete), protection of parapet and cornice – shaped elements executed from galvanized steel ▪ roof’s drainage system is executed with using of gutter sand rainwater pipes ▪ roof is made of sandwich panels made of profiled steel sheet filled with polyurethane foam, expanded polystyrene and mineral wool board
Floor	▪ executed from concrete, linoleum and ceramic tile depend on room’s purpose
Windows	▪ plastic with double glazing
Doors	▪ plastic or steel, depend on room’s purpose
Internal decoration	▪ plastering of brick walls, painting with moisture-proof paint, facing with glazed tile on height 1.5 - 2 m ▪ painting of slab’s bottom with moisture-proof paint; finishing depends on room’s purpose
External decoration	▪ plastering of brick walls, painting with moisture-proof paint
Building plinth	▪ facade ceramic tile
Paving	▪ along building’s perimeter, width – 1.5 m
Detailed Design of WTP Facilities	

Related facility	Planned Works
Foundation	▪ monolithic plate executed from concrete class B20, reinforcement – armature class AIII, constructive armature class AI; plate working as basement for equipment foundations and columns; under foundation need to place stone bed thickness 10cm, saturated with bitumen mark BNI-V ▪ waterproofing with hot bitumen in two layers with glue by moisture-proof along the full contact surface of concrete and soil (*for structures with a humid mode of operation (tanks, reagent facilities, etc.), container interior decoration is Penetron*)
Columns	▪ dimensions of section 400x400mm, step of columns – 6.0 m width of span – 6.0; 12.0; 18.0; 24.0; 30.0 m; concrete class not less than B15/B20, reinforcement – class of working armature AIII, class of structural armature AI; embedded items according to series 1.400-15
Overhead cover	▪ monolithic plate executed from concrete class B20, reinforcement – armature class AIII, constructive armature class AI; in roof plate depend on facility purpose will be provide openings for the installation of the followings: – ventilation air ducts – roof’s ventilators – simple absorber filter – access manholes – control and measurement devices
Walls	▪ monolithic reinforced concrete class B20, reinforcement – armature class AIII, structural reinforcement class AI; embedded items according to series 1.400-15
Design and Installation of Power Supply for WTP	
Power supply system for Mangit WTP	▪ Construction of a high-voltage overhead line of 35 kV overhead line, about 2 km long (the main source of power supply) ▪ Installation of 35/6 kV step-down transformer substation at WTP ▪ Construction of a high-voltage overhead line VL-6kV, length about 12 km (backup power supply) ▪ Installation of 6 / 0.4 kV transformer substation
Design Concept of Water Treatment Plant and Buildings	
Grit removal basin	▪ 2.5 mB x 16.0 mL x 5.0 mH x 2EA
Intake Pump Station	▪ Well: 7.0 mL x 12.0 mB x 7.0 mH x 2EA ▪ Pump Chamber: 27.4 mB x 9.5 mL x 6.3mH ▪ Pump: (Q=458 m³/h, H=20 m) x 4EA (1 pump is for standby) ▪ Receiving Well - 3.0 mB x 4.0 mL x 3.0 mH x 2EA
Flocculation Basin	▪ 6.3 mB x 9.6 mL x 3.0 mH x 4EA
Sedimentation Basin	▪ 6.3 mB x 50.0mL x 4.0mH x 4EA
Filter	▪ 3.8 mB x 12.0mL x 6EA
Filtered water tank	▪ 27.5 mB x 46.0mL x 3.0mH x 2EA (F/S Quantity Q=3,000 m^3/d x 2 basins & Q=1,500 m³/d of process water will be applied)
Primary Pump Station “Mangit – Existing WDC”	▪ Well: 37.1 mB x 5.0 mL x 5.2 mH ▪ Pump Chamber: 37.1 mB x 9.5 mL x 7.0 mH ▪ Main Trunk Pipe Pump: (Q=417 m³/h, H=80 m) x 4EA (1 pump is for emergency) ▪ Back Washing Pump: (Q=1,259 m³/h, H=10 m) x 3EA (1 pump is for emergency)
Chemical storage for preparation of reagents (design flow and	▪ Alum: more than 90 days usage ▪ Chlorine: more than 90 days usage ▪ Calculation of actual chlorine demand (considering also chlorination needs at Water Distribution Centers located downstream) depending on selected equipment and chlorine concentration

Related facility	Planned Works
average dosing rate)	
Waste Water Reservoir	▪ 10.0 mB x 30.0 mL x 3.0 mH x 2EA
Water Recycling Tank	▪ 10.0 mB x 30.0 mL x 3.0 mH x 2EA
Sludge Drying Bed	▪ 9.0 mB x 40.0 mL x 0.6 mH x 8EA
Transmission pipe and Auxiliaries	▪ Raw water: D630mm, L=140 m ▪ Treated water: D560 mm x 2 Line, L=8,100 m

Figure 35 Sketch of Mangit WTP

Appendix 8. Map of Lower Amudarya State Biosphere Reserve

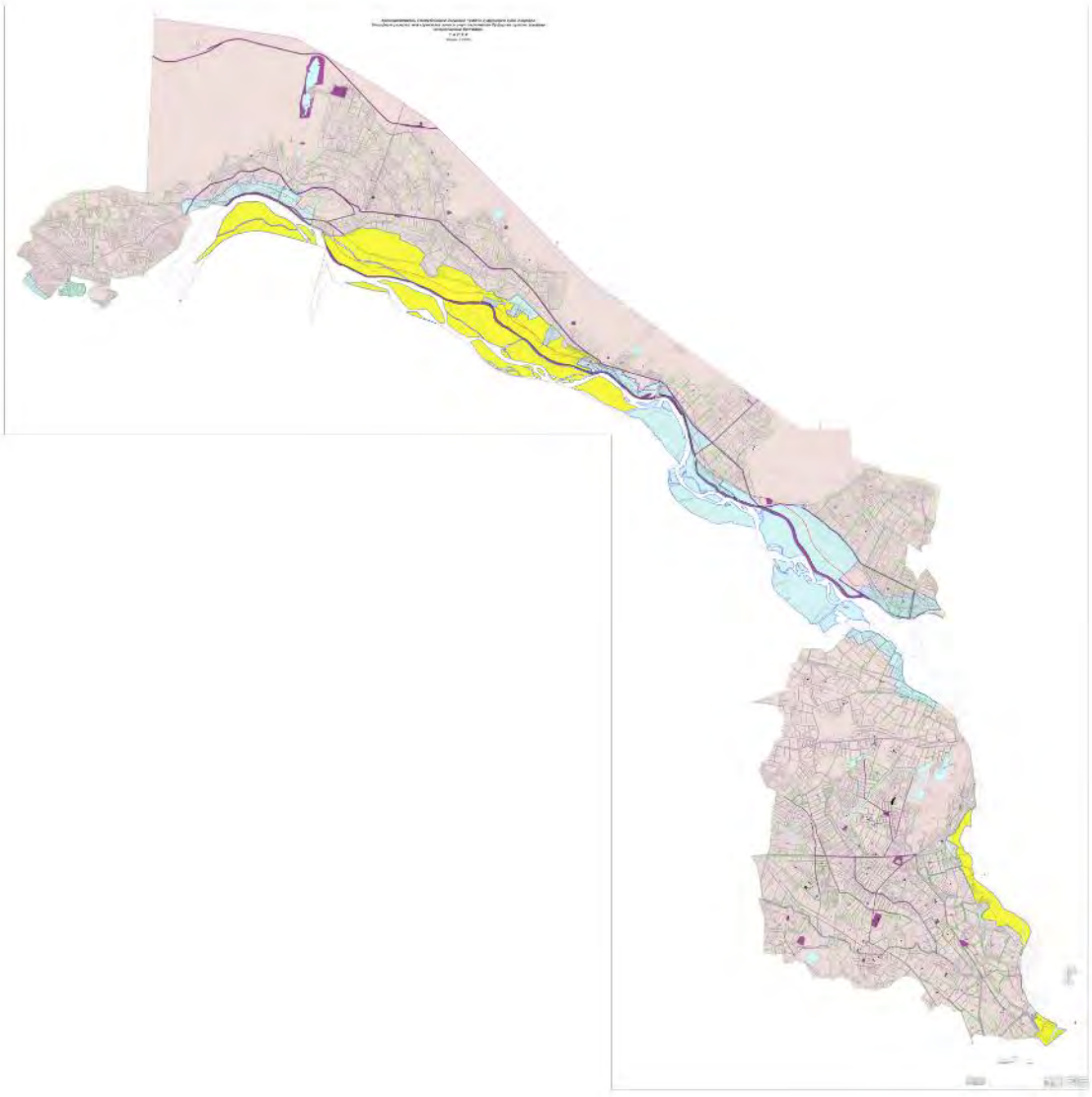


Figure 36 Territory of Lower Amudarya State Biosphere Reserve

core zone – pink; buffer zone – yellow; transition zone - blue

Appendix 9. Clarification of the Lower Amudarya State Biosphere Reserve territory

“O’ZSUVTA’MINOT”
AKCIONERLIK JAMIYETI
“QARAQALPAQ SUW
TA’MINATI” JSHJ
230100, Qaraqalpag’istan Respublikasi,
No’kis qalasi, Ernazar Alako’z ko’shesi n.uy

“UZSUVTAMINOT”
JOINT STOCK COMPANY
“KARAKALPAK SUV
TAMINOTI” LLC
230100,The Republic of Karakalpakstan, Nukus
city, Ernazar Alako’z streetun.apt.

«24» сентября 2021 j.y
№ МБ-02-08/2394

Директору
Нижне-Амударьинского
государственного биосферного
резервата Маткаримову О.Р.

Уважаемый Ойбек Реймбаевич!

В соответствии с Постановлением Президента Республики Узбекистан от 9 апреля 2019 №ПП-4271 и Постановлением Кабинета Министров Республики Узбекистан №37 от 16 января 2019 года в Республике Каракалпакстан реализуется инвестиционный проект «Развитие систем водоснабжения в западной части Узбекистана», финансируемый Азиатским Банком Развития.

Проектом предусматривается строительство Водоочистительных Сооружений (ВОС) «Мангит» на территории ССГ «Кипчок», Амударьинского района, Республики Каракалпакстан.

Согласно Решению Хокима Амударьинского района Республики Каракалпакстан №269 от 3 апреля 2018 г. для целей строительства ВОС Мангит было выделено 12.8га земель на территории ССГ «Кипчок», Амударьинского района, Республики Каракалпакстан. Координаты точек территории, выделенной под строительство ВОС Мангит следующие:

- Точка 1: широта 42°12'26.71"N; долгота 60° 5'55.62"E
- Точка 2: широта 42°12'30.46"N; долгота 60° 6'3.80"E
- Точка 3: широта 42°12'20.99"N; долгота 60° 6'12.00"E
- Точка 4: широта 42°12'14.51"N; долгота 60° 6'17.01"E
- Точка 5: широта 42°12'11.66"N; долгота 60° 6'12.80"E
- Точка 6: широта 42°12'14.64"N; долгота 60° 6'6.93"E
- Точка 7: широта 42°12'16.93"N; долгота 60° 6'3.76"E

В целях завершения экологического обследования территории под строительство ВОС Мангит, просим Вас подтвердить, что территория

tel: (61) 226-51-50 (61) 226-51-64 E -mail address: vodovodrk@umail.uz
invest-otdel@exat.uz

под строительство ВОС Мангит, не пересекает буферную зону Нижне-Амударьинского государственного биосферного резервата, а также в целях определения исходных данных для экологического мониторинга, просим Вас предоставить информацию по экологическому мониторингу (физико-химические и биологические исследования), осуществляемому Нижне-Амударьинским государственным биосферным резерватом на территории буферной зоны, и которые необходимо принять ко вниманию при проектировании, строительстве и эксплуатации ВОС Мангит.

С уважением,

Директор: **А.Кудайназаров**

Figure 37 Request for clarification of the Lower Amudarya State Biosphere Reserve territory d/d 24 September 2021

O‘ZBEKISTON RESPUBLIKASI EKOLOGIYA VA ATROF-MUHITNI MUHOFAZA QILISH DAVLAT QO‘MITASI

QUYI AMUDARYO DAVLAT BIOSFERA REZERVATI

230206, Qoraqalpog‘iston Respublikasi, Beruniy tumani, Oltinsoy OFY
тел: 61 2261642 электрон почта: lower-amudarya@eco.gov.uz

2021 yil “27” сентябрь 66 -son Beruniy t.

Директору ООО «Каракалпак сув таминоти» Кудайназарову А.

На ваше письмо от 24.09.2021 года за №МБ-02-08\2394.

Нижне-Амударьинский государственный биосферный резерват сообщает, что указанные Вами координаты под строительство ВОС Мангит расположенные по адресу ССГ “Кипчок” Амударьинского района по нижеследующим точкам:

- Точка 1: широта 42°12'26.71"С; долгота 60°5'55.62"В.
- Точка 2: широта 42°12'30.46"С; долгота 60°6'3.80"В.
- Точка 3: широта 42°12'20.99"С; долгота 60°6'12.00"В.
- Точка 4: широта 42°12'14.51"С; долгота 60°6'17.01"В.
- Точка 5: широта 42°12'11.66"С; долгота 60°6'12.80"В.
- Точка 6: широта 42°12'14.64"С; долгота 60°6'6.93"В.
- Точка 7: широта 42°12'16.93"С; долгота 60°6'3.76"В

не пересекают буферную зону биосферного резервата.

Также сообщаем, что со стороны биосферного резервата ведется мониторинг (наблюдение) природных явлений на территории резервата. В распоряжении биосферного резервата не имеется лаборатории и других необходимых оборудований для проведения физико-химических и других лабораторных исследований. Связи с этим вышеуказанные исследования проводятся со стороны Государственного комитета по Экологи и охраны окружающей среды Республики Каракалпакстан.

Директор **О. Маткаримов**

Figure 38 Respond from Lower Amudarya State Biosphere Reserve d/d 27 September 2021

Appendix 10. Badai-Tugai Reservation

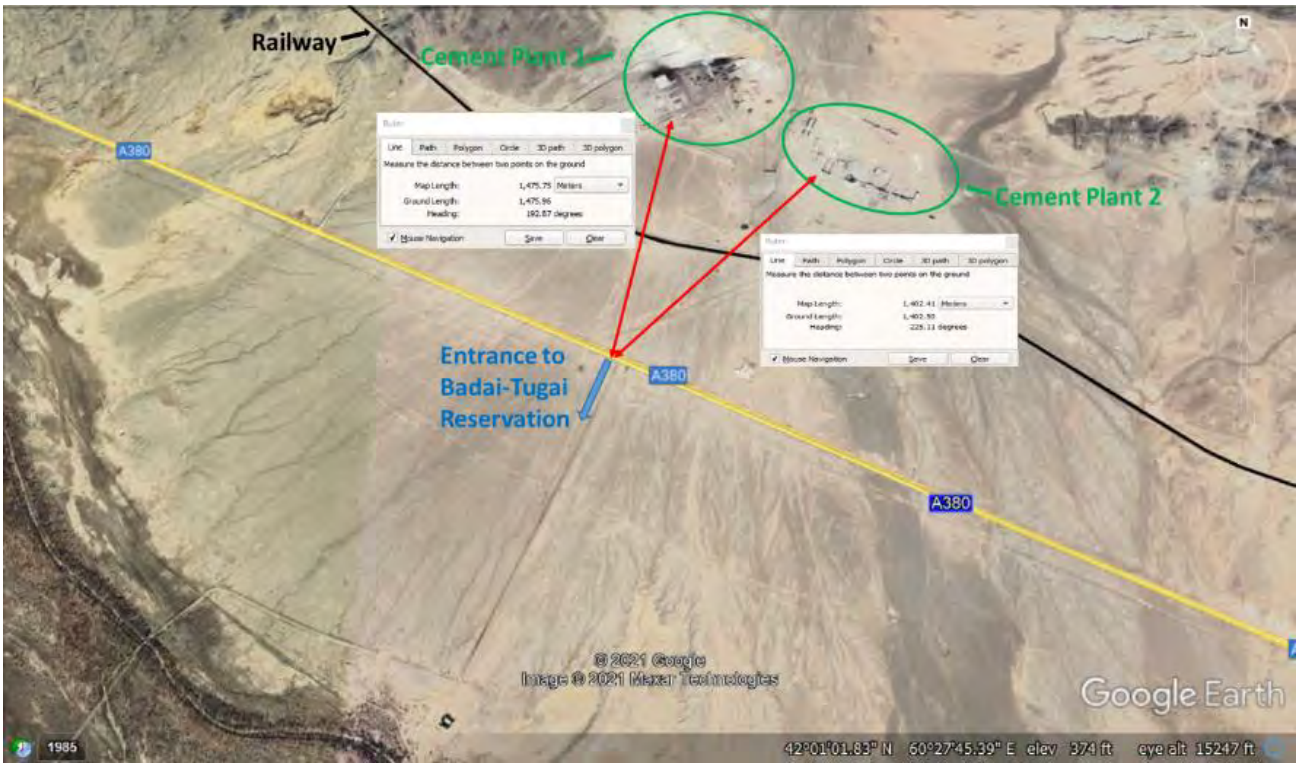


Figure 39 Distance between the cement plants and Badai-Tugai Reservation

Figure 40 View of cement plants from the Badai-Tugai Reserve (Beruniy District, 22 September 2021)

Figure 41 Badai-Tugai Reservation (bank of Amudarya River, dry bottom of the Kokdarya River, 22 September 2021)

Figure 42 Badai-Tugai Reservation (sparse vegetation at the reservation entrance and near the Bactrian deer enclosure, 22 September 2021)

Appendix 11. Cultural Monument – Chilpyk Dakhma

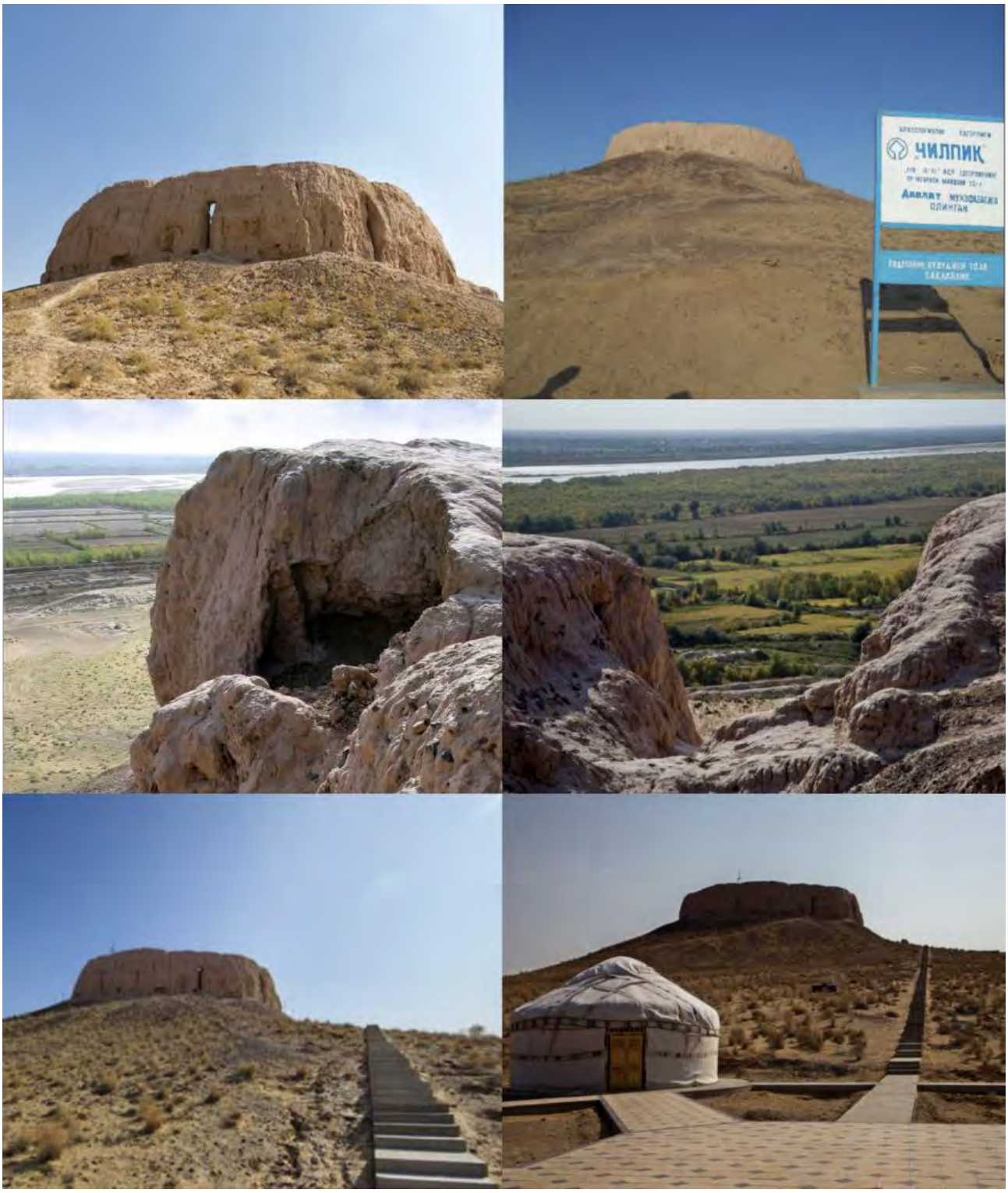


Figure 43 Chilpyk Dakhma (Amudarya District, 22 September 2021)

Appendix 12. Stakeholder Consultation in Karakalpakstan Republican Environmental Committee

Figure 44 Stakeholder consultation in Karakalpakstan Republican Environmental Committee (Nukus city, 21 September 2021)

Stakeholder consultation conducted on September 21, 2021 in the office of Karakalpakstan Republican Environmental Committee.

Appendix 13. Minutes of the meeting with Amudarya District Brunch of Karakalpakstan Republican Environmental Committee

ПРОТОКОЛ

технического совещания по проведению Первичной Экологической Экспертизы нового участка под строительство ВОС «Мангит» в Амударьинском районе, суб-проект WU-CW-07 проекта «Развитие систем водоснабжения в западной части Узбекистана»

23 сентября 2021 г. **г. Мангит**

Участвовали

Специалисты Консультанта по Управлению Проекта, (СП Korea Water Resources Corporation (Корея), Global Business Services Ltd (Узбекистан) и Hankuk Engineering Consultants Co., Ltd (Корея))

Специалисты Амударьинского районного отделения Государственного комитета экологии Республики Каракалпакстан

Повестка дня

Обсуждение точек забора проб для проведения анализа почвы, воды и воздуха, в целях установления базовых показателей перед началом строительства ВОС «Мангит»

В соответствии с Постановлением Президента Республики Узбекистан от 9 апреля 2019 №ПП-4271 и Постановлением Кабинета Министров Республики Узбекистан №37 от 16 января 2019 года, в Республике Каракалпакстан реализуется инвестиционный проект «Развитие систем водоснабжения в западной части Узбекистана», финансируемый Азиатским Банком Развития. Реализующим органом проекта является АО «O'zsuvta'minot», Исполнительным органом является ООО «Qaraqalpaq Suw Ta'minati».

Проектом предусматривается строительство Водоочистительных Сооружений (ВОС) «Мангит» на территории ССГ «Кипчок», Амударьинского района, Республики Каракалпакстан.

Согласно Решению Хокима Амударьинского района Республики Каракалпакстан №269 от 3 апреля 2018 г. для целей строительства ВОС Мангит было выделено 12.8 га земель на территории ССГ «Кипчок», Амударьинского района, Республики Каракалпакстан.

В ходе совещаний были обсуждены вопросы по определению точек забора проб для анализа почвы, воды и воздуха, в целях установления базовых показателей экологического мониторинга перед началом строительства ВОС «Мангит».

По итогам полевого осмотра вышеуказанной территории (23 сентября 2021 г. 10:00 – 12:30) были определены следующая база для экологического мониторинга:

Страница 1 из 2

Анализ почвы:

- Точка 1 с координатами: 42°12'26.57"N 60° 5'55.61"E
- Точка 2 с координатами: 42°12'30.36"N 60° 6'3.82"E
- Точка 3 с координатами: 42°12'14.40"N 60° 6'17.18"E
- Точка 4 с координатами: 42°12'11.54"N 60° 6'13.16"E

Анализ воды:

- Точка 1 с координатами: 42°12'40.22"N 60° 6'35.50"E
- Точка 2 с координатами: 42°12'35.57"N 60° 6'4.62"E
- Точка 3 с координатами: 42°12'16.42"N 60° 6'20.51"E

Анализ воздуха:

- Точка 1 с координатами: 42°12'26.07"N 60° 6'9.19"E
- Точка 2 с координатами: 42°12'16.98"N 60° 6'14.40"E
- Точка 3 с координатами: 42°12'11.99"N 60° 6'12.43"E
- Точка 4 с координатами: 42°12'15.20"N 60° 5'58.60"E

Мониторинг биоразнообразия:

- На участке были обнаружены 50 шт. Туранги (Populus pruinosa), на вырубку которых требуется разрешение Государственного комитета экологии Республики Каракалпакстан.

Руководитель Амударьинского районного отделения Государственного комитета экологии Республики Каракалпакстан

Узакбаев Нурбек

AMUDARYO TUMAN INSPEKSIYASI

Международный Специалист по Экологическому Мониторингу Консультанта по Управлению Проекта, (СП Korea Water Resources Corporation (Корея), Global Business Services Ltd (Узбекистан) и Hankuk Engineering Consultants Co., Ltd (Корея))

Лали Саттарова

Страница **2** из **2**

Figure 45 Minutes of the meeting with Amudarya District Brunch of Karakalpakstan Republican Environmental Committee d/d 23 September 2021

Appendix 14. Stakeholder consultation with the Amudarya District Local Administration

Figure 46 Stakeholder Consultation with Amudarya District Local Administration (Mangit city, Amudarya District, 23 September 2021)

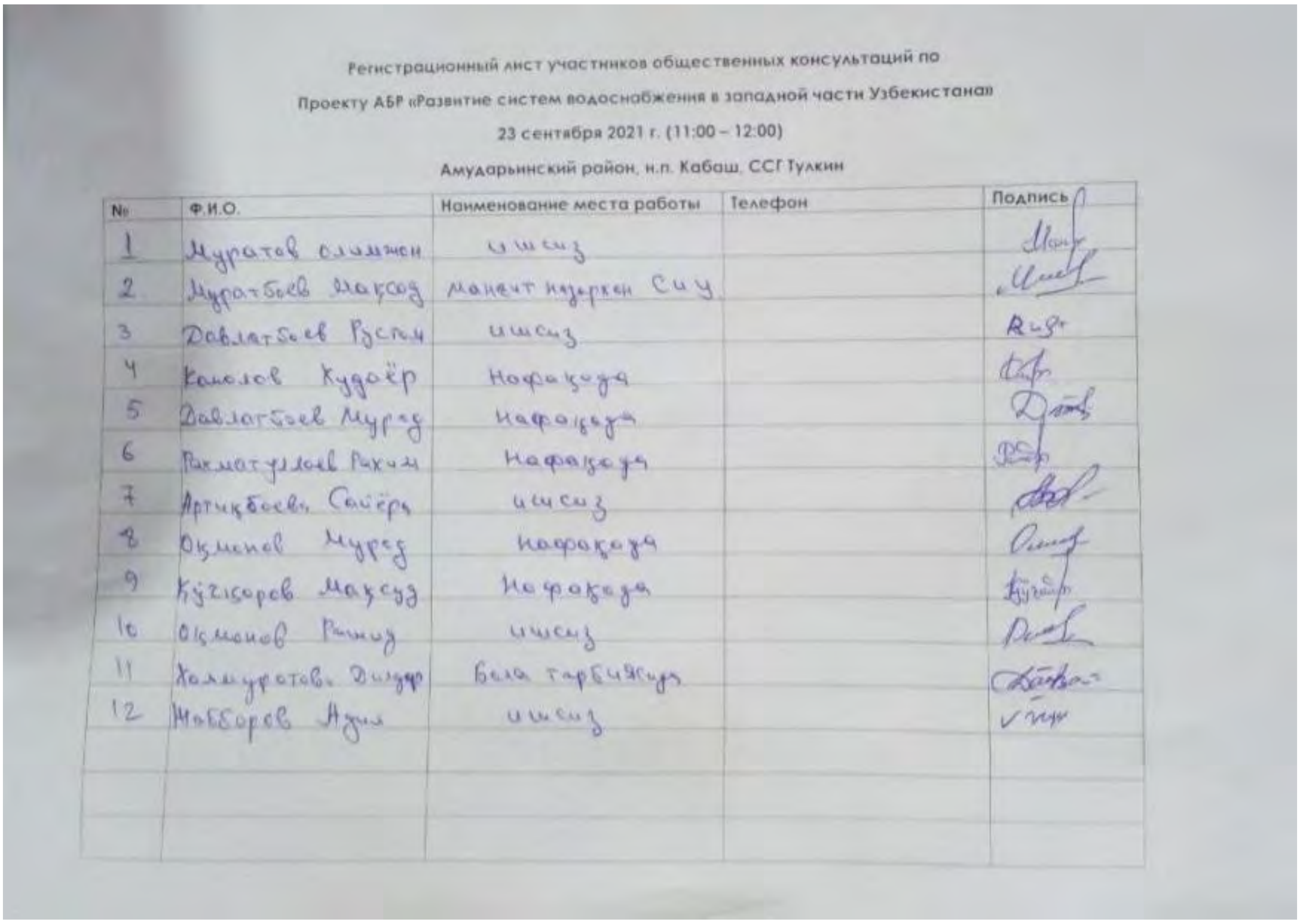
Appendix 15. Stakeholder consultation Lower Amudarya State Biosphere Reserve

Figure 47 Stakeholder Consultation with Lower Amudarya State Biosphere Reserve (Beruniy District, 22 September 2021)

Appendix 16. Public Consultation in Kipchak town

Figure 48 Public consultation in Tulkin aul of Kipchak city (Tulkin aul of Kipchak city Amudarya district, 23 September 2021)

Public consultation conducted in the closest community – Tulkin aul of Kipchak city (Amudarya district) on September 23, 2021.



Регистрационный лист участников общественных консультаций по

Проекту АБР «Развитие систем водоснабжения в западной части Узбекистана»

23 сентября 2021 г. (11:00 – 12:00)

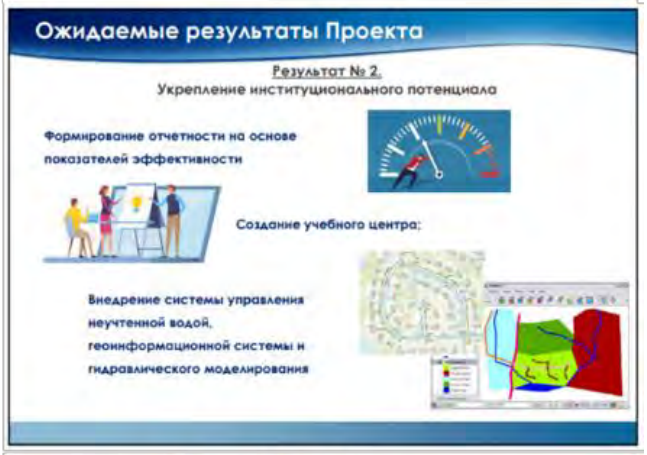
Амударьинский район, н.п. Кабаш, ССГ Тулкин

№	Ф.И.О.	Наименование места работы	Телефон	Подпись
1	Муратов Олимжон	ишсиз		
2	Муратбоев Максад	Манғит нажоркен Сиу		
3	Давлатбоев Рустам	ишсиз		
4	Камолов Худоёр	Нафақада		
5	Давлатбоев Мурод	Нафақада		
6	Рахматуллоев Рахим	Нафақада		
7	Артикбоева Сайёра	ишсиз		
8	Охмонов Мурод	нафақада		
9	Кўчкоров Махсуд	Нафақада		
10	Охмонов Равшан	ишсиз		
11	Холмуратова Дилдор	Бола тарбиясида		
12	Жабборов Азиз	ишсиз		

Figure 49 List of participants in public consultation in Tulkin aul of Kipchak city (23 September 2021)

Appendix 17. Presentation Materials

Some slides of the presentation materials used during Stakeholder and Public Consultations.



WU-CW-07 BOC Мангит

Текущее расположение BOC «Мангит»

WU-CW-07 BOC Мангит

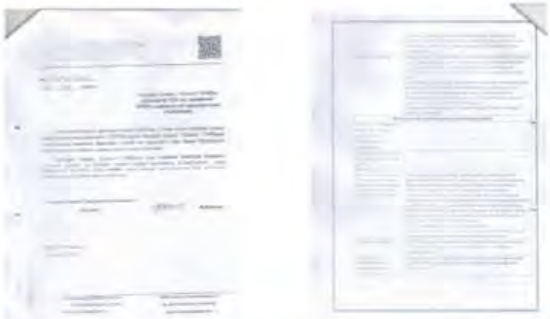
- Территория площадки объекта частично изменилась в следствии строительство железной дороги побликости. Получено подтверждение от Хокимията и водоканала для новой территории под строительство BOC .
- Концептуальный план был соответственно изменен для нового месторасположения.
- Тендерная документация находится на стадии завершения. КУП планирует представить тендерную документацию по проекту под ключ в октябре 2021 года.

WU-CW-07 BOC Мангит

- Разрешительные документы от Хокимията Амударьинского района

WU-CW-07 BOC Мангит

- Разрешительные документы от Хокимията



WU-CW-07 BOC Мангит

Расстояние до ближайших кыпчакских домов рассчитывается с помощью Google Earth. Среднее расстояние было рассчитано как 112,66 м. Однако ближайшее домохозяйство находится на 87,35 м от границ строительной площадки (Таблица).

Номер домохозяйства на карте	Расстояние от территории строительства до указанного домохозяйства
1	93.38 m
4	87.35 m
6	119.63
9	167.24
10	95.69

WU-CW-07 BOC Мангит

Только один охраняемый законом участок (Бадай-Тугайский заповедник) находится близко, но не в зоне воздействия подпроекта WU-CW-07. Расстояние от Бадай-Тугайского заповедника до нового участка BOC Мангит - 31 148,97 км.

Appendix 18. Grievance Redressed Form

It is highly recommended to make available the grievance redressed form in local languages, Karakalpak, Uzbek, and Russian. The following Grievance Redressed Form is recommended for using before, during and after subproject implementation.

Western Uzbekistan Water Supply System Development Project and Qaraqalpaq Suv Taminati LLC welcome complaints, appeals, recommendation and comments regarding the project design and its implementation. We encourage persons with grievance to provide their name and contact information to enables us to get in touch with you for clarification and feedback.

REGISTRATION DATA			
Date:		**Place:**	
Type:	Complaint ☐	Recommendations ☐	Request ☐
	Appeal ☐	Electronic message to the President of Uzbekistan ☐	Comments ☐
Communication mode:	Note/letter ☐	www.my.gov.uz ☐	Phone ☐
	Phone call to the office of the President of Uzbekistan[94] ☐	Electronic message to the President of Uzbekistan[95] ☐	E-mail ☐
COMPLAINANT/APPLICANT DATA			
Name *(full name)*:			
Gender:	Male: ☐	Female: ☐	Age:
Address:			
Contact phone:	Home:	Mobile:	
Additional information:			
COMPLAINT/APPEAL INFORMATION			
Date of incident:		Time of incident:	
Location of incident *(please, provide the details)*:			
Description of incident in detail: *To support your complaint/appeal, please provide the following:*			

[94] https://president.uz/en/site/contact?menu_id=13
[95] https://president.uz/en/site/contact?menu_id=13

(i) the details (who, what, where and how) *(ii) note, letter, photo, video, audio, etc. as attachment*	
REGISTERED BY	
Name (full name):	
Position:	
Department:	
Company:	
Contact phone:	
E-mail:	
DATA ON ACTIONS TAKEN	
Reviewed by: **(full name)**	
Position:	
Department:	
Company:	
Contact phone:	
E-mail:	
Action Taken:	

Appendix 19. Water supply coverage in Amudarya district as of 1 January 2021.

Амударё туманининг аҳолиси ичимлик сув таъминотининг 2021 йил 1 январ холатига
МАЪЛУМОТ

2-жадвал

Т/р	Худудлар	Аҳоли сони (минг.киши)	Марказлаштирилган ичимлик сув билан таъминланган аҳоли (минг.киши)	Таъминланганлик даражаси, %	шу жумладан				Жами альтернатив ичимлик сув манбаларидан	%	шу жумладан							
					Хонадонларга уланган (минг.киши)	%	Кўча колонкаларидан (минг.киши)	%			булоқ	%	скважина, қудуқ, качалка	%	дарё, сой канал, ховуз	%	Ташиб келтириладиган	%
1	**Амударё тумани**	200.6	81.8	40.8	77.2	94.4	4.6	5.6	118.8	59.2		0.0	92.9	78.2	0.0	0.0	25.9	21.8
2	Манғит шаҳри	45.381	36.5	80.5	35.2	96.4	4.4	12.1	8.9	19.5		0.0	8.8	98.8	0.0	0.0	0.1	1.2
3	Жумуртов шаҳарча	3.8	0.0	0.0	0.0	0.0	0.0	0.0	3.8	100.0		0.0	2.4	64.1	0.0	0.0	1.4	35.9
4	Кипшак шаҳарча	2.4	1.3	54.5	1.3	0.0	0.0	0.0	1.1	45.5		0.0	1.1	100.0	0.0	0.0	0.0	0.0
5	Киличбой шаҳарча	9.3	0.7	7.1	0.7	0.0	0.0	0.0	8.6	92.9		0.0	8.6	100.0	0.0	0.0	0.0	0.0
6	Хитой шаҳарча	2.7	0.0	0.0	0.0	0.0	0.0	0.0	2.7	100.0		0.0	2.7	100.0	0.0	0.0	0.0	0.0
7	**о.ф.й. Назархон**	**3.5**	**1.3**	**37.7**	**1.2**	**91.1**	**0.1**	**8.9**	**2.2**	**62.3**		**0.0**	**2.2**	**100.0**	**0.0**	**0.0**	**0.0**	**0.0**
8	қ.а.п. Назархон	1.4	1.321	92.8	1.2	91.1	0.1	8.9	0.1	7.2		0.0	0.1	100.0	0.0	0.0	0.0	0.0
9	қ.а.п. Жалпақ жап	0.7	0	0.0	0	0.0	0.0	0.0	0.7	100.0		0.0	0.7	100.0	0.0	0.0	0.0	0.0
10	қ.а.п. Кук дарьё	0.4	0	0.0	0	0.0	0.0	0.0	0.4	100.0		0.0	0.4	100.0	0.0	0.0	0.0	0.0
11	қ.а.п. Қирқ ўзак	0.3	0	0.0	0	0.0	0.0	0.0	0.3	100.0		0.0	0.3	100.0	0.0	0.0	0.0	0.0
12	қ.а.п. Майли кул	0.5	0	0.0	0	0.0	0.0	0.0	0.5	100.0		0.0	0.5	100.0	0.0	0.0	0.0	0.0
13	қ.а.п. Бекбой	0.3	0	0.0	0	0.0	0.0	0.0	0.3	100.0		0.0	0.3	100.0	0.0	0.0	0.0	0.0
14	**о.ф.й. Урта-қалъа**	**9.7**	**2.7**	**27.6**	**2.6**	**96.7**	**0.1**	**3.3**	**7.0**	**72.4**		**0.0**	**7.0**	**100.0**	**0.0**	**0.0**	**0.0**	**0.0**
15	қ.а.п. Урта қалъа	1.1	0	0.0	0	0.0	0.0	0.0	1.1	100.0		0.0	1.1	100.0	0.0	0.0	0.0	0.0
16	қ.а.п. Арна буйи	1.5	0	0.0	0	0.0	0.0	0.0	1.5	100.0		0.0	1.5	100.0	0.0	0.0	0.0	0.0
17	қ.а.п. Вахим	2.5	1.921	77.7	1.8	95.4	0.1	4.9	0.6	22.3		0.0	0.6	100.0	0	0.0	0.0	0.0
15	қ.а.п. Юсуф хужа	1.6	0.758	48.4	0.758	100.0	0.0	0.0	0.8	51.6		0.0	0.8	100.0	0	0.0	0.0	0.0
16	қ.а.п. Бужук кул	0.8	0	0.0	0	0.0	0.0	0.0	0.8	100.0		0.0	0.8	100.0	0	0.0	0.0	0.0
17	қ.а.п. Боғ	1.6	0	0.0	0	0.0	0.0	0.0	1.6	100.0		0.0	1.6	100.0	0	0.0	0.0	0.0
18	қ.а.п. Понашам	0.7	0	0.0	0	0.0	0.0	0.0	0.7	100.0		0.0	0.7	100.0	0	0.0	0.0	0.0
	о.ф.й. Қипчақ	**15.1**	**1.9**	**12.5**	**1.9**	**100.0**	**0.0**	**0.0**	**13.3**	**87.5**		**0.0**	**4.3**	**0.0**	**0**	**0.0**	**8.8**	**66.1**
19	қ.а.п. Аючи	2.5	0	0.0	0	0.0	0.0	0.0	2.5	100.0		0.0	0.2	8.1	0	0.0	2.3	91.9
20	қ.а.п. Хужакул	0.6	0.327	55.2	0.327	100.0	0.0	0.0	0.3	44.8		0.0	0.3	0.0	0	0.0	0.0	0.0
21	қ.а.п. Кайир овул	0.3	0	0.0	0	0.0	0.0	0.0	0.3	100.0		0.0	0.3	0.0	0	0.0	0.0	0.0
22	қ.а.п. Кукчи	2.9	0	0.0	0	0.0	0.0	0.0	2.9	100.0		0.0	0.6	0.0	0	0.0	2.1	73.2
23	қ.а.п. Чунок	1.1	0	0.0	0	0.0	0.0	0.0	1.1	100.0		0.0	0.3	0.0	0	0.0	0.8	72.7
24	қ.а.п. Бег овул	1.9	0	0.0	0	0.0	0.0	0.0	1.9	100.0		0.0	0.5	0.0	0	0.0	1.4	72.7
25	қ.а.п. Эшон қалъа	1.6	0	0.0	0	0.0	0.0	0.0	1.6	100.0		0.0	0.3	0.0	0	0.0	1.4	83.5
26	қ.а.п. Тоза қалъа	1.0	0	0.0	0	0.0	0.0	0.0	1.0	100.0		0.0	1.0	0.0	0	0.0	0.0	0.0
27	қ.а.п. Уйшин	0.8	0	0.0	0	0.0	0.0	0.0	0.8	100.0		0.0	0.8	0.0	0	0.0	0.0	0.0
28	қ.а.п. Беш том	2.6	1.571	61.2	1.571	100.0	0.0	0.0	1.0	38.8		0.0	0.1	0.0	0	0.0	0.9	89.6

	о.ф.й. Қуюк- купир	**10.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**10.4**	**100.0**		**0.0**	**10.4**	**0.0**	**0**	**0.0**	**0.0**	**0.0**
29	қ.а.п. Қизил чоли	3.5	0	0.0	0	0.0	0.0	0.0	3.5	100.0		0.0	3.5	0.0	0	0.0	0.0	0.0
30	қ.а.п. Аламчи	0.1	0	0.0	0	0.0	0.0	0.0	0.1	100.0		0.0	0.1	0.0	0	0.0	0.0	0.0
31	қ.а.п. Ишон овул	3.1	0	0.0	0	0.0	0.0	0.0	3.1	100.0		0.0	3.1	0.0	0	0.0	0.0	0.0
32	қ.а.п. Қишлиқ	2.3	0	0.0	0	0.0	0.0	0.0	2.3	100.0		0.0	2.3	0.0	0	0.0	0.0	0.0
33	қ.а.п. Жамол хужа	1.0	0	0.0	0	0.0	0.0	0.0	1.0	100.0		0.0	1.0	0.0	0	0.0	0.0	0.0
34	қ.а.п. Хитой Загот.пункт.	0.3	0	0.0	0	0.0	0.0	0.0	0.3	100.0		0.0	0.3	0.0	0	0.0	0.0	0.0
	о.ф.й. Хитай	**8.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**8.6**	**100.0**		**0.0**	**8.6**	**0.0**	**0**	**0.0**	**0.0**	**0.0**
35	қ.а.п. Жангал бог	1.0	0	0.0	0	0.0	0.0	0.0	1.0	100.0		0.0	1.0	0.0	0	0.0	0.0	0.0
36	қ.а.п. Қулан	0.8	0	0.0	0	0.0	0.0	0.0	0.8	100.0		0.0	0.8	0.0	0	0.0	0.0	0.0
37	қ.а.п. Мулкдор	0.8	0	0.0	0	0.0	0.0	0.0	0.8	100.0		0.0	0.8	0.0	0	0.0	0.0	0.0
38	қ.а.п. Сапашбой	0.6	0	0.0	0	0.0	0.0	0.0	0.6	100.0		0.0	0.6	0.0	0	0.0	0.0	0.0
39	қ.а.п. Қумсангар	0.5	0	0.0	0	0.0	0.0	0.0	0.5	100.0		0.0	0.5	0.0	0	0.0	0.0	0.0
40	қ.а.п. Тор ёп	2.3	0	0.0	0	0.0	0.0	0.0	2.3	100.0		0.0	2.3	0.0	0	0.0	0.0	0.0
41	қ.а.п. Нукус калъа	0.5	0	0.0	0	0.0	0.0	0.0	0.5	100.0		0.0	0.5	0.0	0	0.0	0.0	0.0
42	қ.а.п. Соритой	0.3	0	0.0	0	0.0	0.0	0.0	0.3	100.0		0.0	0.3	0.0	0	0.0	0.0	0.0
43	қ.а.п. Мулла шоир	0.7	0	0.0	0	0.0	0.0	0.0	0.7	100.0		0.0	0.7	0.0	0	0.0	0.0	0.0
44	қ.а.п. Айимбат	0.5	0	0.0	0	0.0	0.0	0.0	0.5	100.0		0.0	0.5	0.0	0	0.0	0.0	0.0
45	қ.а.п. Угизбой	0.3	0	0.0	0	0.0	0.0	0.0	0.3	100.0		0.0	0.3	0.0	0	0.0	0.0	0.0
46	қ.а.п. Окбош калъа	0.4	0	0.0	0	0.0	0.0	0.0	0.4	100.0		0.0	0.4	0.0	0	0.0	0.0	0.0
	о.ф.й. Оқ олтин	**7.9**	**7.0**	**88.2**	**6.8**	**97.1**	**0.0**	**0.0**	**0.9**	**11.8**		**0.0**	**0.9**	**0.0**	**0**	**0.0**	**0.0**	**0.0**
47	қ.а.п. Куна босу	1.6	1.446	88.6	1.446	100.0	0.0	0.0	0.2	11.4		0.0	0.2	0.0	0	0.0	0.0	0.0
48	қ.а.п. Тоза босу	2.2	1.951	87.6	1.751	89.7	0.0	0.0	0.3	12.4		0.0	0.3	0.0	0	0.0	0.0	0.0
49	қ.а.п. Аёкчи	1.0	0.951	93.1	0.951	100.0	0.0	0.0	0.1	6.9		0.0	0.1	0.0	0	0.0	0.0	0.0
50	қ.а.п. Бузчи	1.7	1.331	76.5	1.331	100.0	0.0	0.0	0.4	23.5		0.0	0.4	0.0	0	0.0	0.0	0.0
51	қ.а.п. Жийдали кулон	1.3	1.321	100.0	1.321	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0	0.0	0.0	0.0
	о.ф.й. Чайкул	**8.7**	**5.2**	**59.8**	**5.2**	**100.0**	**0.0**	**0.0**	**3.5**	**40.2**		**0.0**	**2.0**	**0.0**	**0**	**0.0**	**1.5**	**43.3**
52	қ.а.п. Шагал	0.4	0	0.0	0	0.0	0.0	0.0	0.4	100.0		0.0	0.2	0.0	0	0.0	0.2	54.7
53	қ.а.п. Ос овул	1.0	1.005	98.0	1.005	100.0	0.0	0.0	0.0	2.0		0.0	0.0	0.0	0	0.0	0.0	0.0
54	қ.а.п. Шайх калъа	1.1	1.06	99.2	1.06	100.0	0.0	0.0	0.0	0.8		0.0	0.0	0.0	0	0.0	0.0	0.0
55	қ.а.п. Чакча	1.0	0.98	99.5	0.98	100.0	0.0	0.0	0.0	0.5		0.0	0.0	0.0	0	0.0	0.0	0.0
56	қ.а.п. Тоза қалъа	0.3	0	0.0	0	0.0	0.0	0.0	0.3	100.0		0.0	0.1	0.0	0	0.0	0.1	44.4
57	қ.а.п. Шарау қалъа	0.2	0	0.0	0	0.0	0.0	0.0	0.2	100.0		0.0	0.2	0.0	0	0.0	0.0	0.0
58	қ.а.п. Махсум овул	0.4	0	0.0	0	0.0	0.0	0.0	0.4	100.0		0.0	0.1	0.0	0	0.0	0.3	72.6
59	қ.а.п. Мурат Камол	0.5	0.448	99.3	0.448	100.0	0.0	0.0	0.0	0.7		0.0	0.0	0.0	0	0.0	0.0	0.0
60	қ.а.п. Кизил йул	0.4	0	0.0	0	0.0	0.0	0.0	0.4	100.0		0.0	0.2	0.0	0	0.0	0.1	31.6
61	қ.а.п. Ушок	0.2	0	0.0	0	0.0	0.0	0.0	0.2	100.0		0.0	0.1	0.0	0	0.0	0.1	44.7
62	қ.а.п. Нугай Эшон	0.6	0.572	99.0	0.572	100.0	0.0	0.0	0.0	1.0		0.0	0.0	0.0	0	0.0	0.0	0.0
63	қ.а.п. Қассоб калъа	0.2	0	0.0	0	0.0	0.0	0.0	0.2	100.0		0.0	0.1	0.0	0	0.0	0.1	54.6
64	қ.а.п. Қора кипчак	1.0	0.976	95.0	0.976	100.0	0.0	0.0	0.1	5.0		0.0	0.1	0.0	0	0.0	0.0	0.0
65	қ.а.п. Октов	0.3	0	0.0	0	0.0	0.0	0.0	0.3	100.0		0.0	0.1	0.0	0	0.0	0.2	63.7
66	қ.а.п.. Қорамон	0.8	0	0.0	0	0.0	0.0	0.0	0.8	100.0		0.0	0.5	0.0	0	0.0	0.3	36.4
67	қ.а.п.. Юқари тувлига	0.5	0.184	40.3	0.184	100.0	0.0	0.0	0.3	59.7		0.0	0.2	0.0	0	0.0	0.1	39.9

	о.ф.й. Қиличбой	**13.8**	**11.1**	**80.5**	**9.2**	**82.9**	**0.0**	**0.0**	**2.7**	**19.5**		**0.0**	**1.7**	**0.0**	**0**	**0.0**	**0.9**	**35.1**
68	қ.а.п.. Иккинчи қишлоқ	3.9	3.102	80.2	2.102	67.8	0.0	0.0	0.8	19.8		0.0	0.6	0.0	0	0.0	0.1	16.2
69	қ.а.п. Беш овул	2.4	1.935	80.2	1.035	53.5	0.0	0.0	0.5	19.8		0.0	0.2	0.0	0	0.0	0.3	55.3
70	қ.а.п. Қозоқ овул	0.8	0.531	65.6	0.531	100.0	0.0	0.0	0.3	34.4		0.0	0.2	0.0	0	0.0	0.1	35.1
71	қ.а.п. Тош қалъа	2.5	2.437	99.1	2.587	106.2	0.0	0.0	0.0	0.9		0.0	0.0	0.0	0	0.0	0.0	90.5
72	қ.а.п. Юқори қишлоқ	1.7	1.155	69.2	1.005	87.0	0.0	0.0	0.5	30.8		0.0	0.3	0.0	0	0.0	0.2	45.8
73	қ.а.п. Туркман овул	0.5	0.459	88.1	0.459	100.0	0.0	0.0	0.1	11.9		0.0	0.1	0.0	0	0.0	0.0	0.0
74	қ.а.п. Тозаёп	1.02	0.794	77.8	0.794	100.0	0.0	0.0	0.2	22.2		0.0	0.1	0.0	0	0.0	0.1	46.0
75	қ.а.п. Олмазор	1.05	0.701	66.8	0.701	100.0	0.0	0.0	0.3	33.2		0.0	0.2	0.0	0	0.0	0.1	29.2
	о.ф.й. Кангли	**7.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**7.9**	**100.0**		**0.0**	**3.9**	**0.0**	**0**	**0.0**	**4.0**	**50.3**
74	қ.а.п. Канжигали	1.0	0	0.0	0	0.0	0.0	0.0	1.0	100.0		0.0	0.0	0.0	0	0.0	1.0	97.1
75	қ.а.п. Пишкакли	0.5	0	0.0	0	0.0	0.0	0.0	0.5	100.0		0.0	0.5	0.0	0	0.0	0.0	0.0
76	қ.а.п. Вахум ёп	0.9	0	0.0	0	0.0	0.0	0.0	0.9	100.0		0.0	0.9	0.0	0	0.0	0.0	0.0
77	қ.а.п. Матар ёп	1.3	0	0.0	0	0.0	0.0	0.0	1.3	100.0		0.0	1.3	0.0	0	0.0	0.0	0.0
78	қ.а.п. Қум ёп	1.9	0	0.0	0	0.0	0.0	0.0	1.9	100.0		0.0	0.4	0.0	0	0.0	1.5	77.3
79	қ.а.п. Қорагай	0.6	0	0.0	0	0.0	0.0	0.0	0.6	100.0		0.0	0.3	0.0	0	0.0	0.2	43.3
80	қ.а.п. Жумабой соға	1.2	0	0.0	0	0.0	0.0	0.0	1.2	100.0		0.0	0.0	0.0	0	0.0	1.2	98.2
81	қ.а.п. Буз	0.4	0	0.0	0	0.0	0.0	0.0	0.4	100.0		0.0	0.4	0.0	0	0.0	0.0	0.0
	қ.ф.й. Амир темур	**4.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**4.2**	**100.0**		**0.0**	**4.2**	**0.0**	**0**	**0.0**	**0.0**	**0.0**
82	қ.а.п. Мусофир	1.6	0	0.0	0	0.0	0.0	0.0	1.6	100.0		0.0	1.6	0.0	0	0.0	0.0	0.0
83	қ.а.п. Чарбоғ	0.8	0	0.0	0	0.0	0.0	0.0	0.8	100.0		0.0	0.8	0.0	0	0.0	0.0	0.0
84	қ.а.п. Кун узак	0.2	0	0.0	0	0.0	0.0	0.0	0.2	100.0		0.0	0.2	0.0	0	0.0	0.0	0.0
85	қ.а.п. Мехнаткаш	0.9	0	0.0	0	0.0	0.0	0.0	0.9	100.0		0.0	0.9	0.0	0	0.0	0.0	0.0
86	қ.а.п. Отов	0.6	0	0.0	0	0.0	0.0	0.0	0.6	100.0		0.0	0.6	0.0	0	0.0	0.0	0.0
	қ.ф.й. Дурман	**9.8**	**4.6**	**46.4**	**4.6**	**100.0**	**0.0**	**0.0**	**5.3**	**53.6**		**0.0**	**5.3**	**0.0**	**0**	**0.0**	**0.0**	**0.0**
87	қ.а.п. Ача	1.7	1.002	57.4	1.002	100.0	0.0	0.0	0.7	42.6		0.0	0.7	0.0	0	0.0	0.0	0.0
88	қ.а.п. Қарамон	2.5	1.454	59.1	1.454	100.0	0.0	0.0	1.0	40.9		0.0	1.0	0.0	0	0.0	0.0	0.0
89	қ.а.п. Буз солма	2.4	0	0.0	0	0.0	0.0	0.0	2.4	100.0		0.0	2.4	0.0	0	0.0	0.0	0.0
90	қ.а.п. Бузчи	3.2	2.112	65.2	2.112	100.0	0.0	0.0	1.1	34.8		0.0	1.1	0.0	0	0.0	0.0	0.0
	қ.ф.й. Бобур	**8.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**8.8**	**100.0**		**0.0**	**3.6**	**0.0**	**0**	**0.0**	**5.2**	**58.5**
91	қ.а.п. Сейт овул	1.0	0	0.0	0	0.0	0.0	0.0	1.0	100.0		0.0	0.4	0.0	0	0.0	0.6	62.8
92	қ.а.п. Нукус овул	1.0	0	0.0	0	0.0	0.0	0.0	1.0	100.0		0.0	1.0	0.0	0	0.0	0.0	0.0
93	қ.а.п. Конграт овул	1.8	0	0.0	0	0.0	0.0	0.0	1.8	100.0		0.0	0.6	0.0	0	0.0	1.3	68.4
94	қ.а.п. Қўрғон	0.4	0	0.0	0	0.0	0.0	0.0	0.4	100.0		0.0	0.4	0.0	0	0.0	0.0	0.0
95	қ.а.п. Аёққалъа	0.4	0	0.0	0	0.0	0.0	0.0	0.4	100.0		0.0	0.4	0.0	0	0.0	0.0	0.0
96	қ.а.п. Ишон қалъа	1.5	0	0.0	0	0.0	0.0	0.0	1.5	100.0		0.0	0.2	0.0	0	0.0	1.2	83.0
97	қ.а.п. Жумуртов овул	2.8	0	0.0	0	0.0	0.0	0.0	2.8	100.0		0.0	0.7	0.0	0	0.0	2.1	73.8

	қ.ф.й. Бузёп	**6.1**	**4.3**	**71.3**	**4.3**	**100.0**	**0.0**	**0.0**	**1.7**	**28.7**		**0.0**	**1.7**	**0.0**	**0**	**0.0**	**0.0**	**0.0**
98	қ.а.п. Буз ёп катта	0.2	0	0.0	0	0.0	0.0	0.0	0.2	100.0		0.0	0.2	0.0	0	0.0	0.0	0.0
99	қ.а.п. Анна Уроз	0.3	0.327	93.7	0.327	100.0	0.0	0.0	0.0	6.3		0.0	0.0	0.0	0	0.0	0.0	0.0
100	қ.а.п. Бажман қалъа	0.1	0.096	81.4	0.096	100.0	0.0	0.0	0.0	18.6		0.0	0.0	0.0	0	0.0	0.0	0.0
101	қ.а.п. Аланг овул	0.7	0.465	66.6	0.465	100.0	0.0	0.0	0.2	33.4		0.0	0.2	0.0	0	0.0	0.0	0.0
102	қ.а.п. Қанатбой	0.2	0	0.0	0	0.0	0.0	0.0	0.2	100.0		0.0	0.2	0.0	0	0.0	0.0	0.0
103	қ.а.п. Чордора	1.8	1.301	72.3	1.301	100.0	0.0	0.0	0.5	27.7		0.0	0.5	0.0	0	0.0	0.0	0.0
104	қ.а.п. Жанпас	1.2	1.051	90.7	1.051	100.0	0.0	0.0	0.1	9.3		0.0	0.1	0.0	0	0.0	0.0	0.0
105	қ.а.п. Қоражон	0.3	0.297	90.3	0.297	100.0	0.0	0.0	0.0	9.7		0.0	0.0	0.0	0	0.0	0.0	0.0
106	қ.а.п. Сари овул	0.7	0.421	59.0	0.421	100.0	0.0	0.0	0.3	41.0		0.0	0.3	0.0	0	0.0	0.0	0.0
107	қ.а.п. Яримчи	0.4	0.371	97.1	0.371	100.0	0.0	0.0	0.0	2.9		0.0	0.0	0.0	0	0.0	0.0	0.0
108	қ.а.п. Буз овул	0.1	0	0.0	0	0.0	0.0	0.0	0.1	100.0		0.0	0.1	0.0	0	0.0	0.0	0.0
	қ.ф.й. Тулқин	**8.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**8.3**	**100.0**		**0.0**	**4.1**	**0.0**	**927**	**0.0**	**4.1**	**50.0**
109	қ.а.п. Кабаш	0.8	0	0.0	0	0.0	0.0	0.0	0.8	100.0		0.0	0.8	0.0	0	0.0	0.0	0.0
110	қ.а.п. Ишчи кабаш	1.0	0	0.0	0	0.0	0.0	0.0	1.0	100.0		0.0	0.4	0.0	0	0.0	0.6	56.8
111	қ.а.п. Боганали	0.9	0	0.0	0	0.0	0.0	0.0	0.9	100.0		0.0	0.2	0.0	0	0.0	0.7	74.6
112	қ.а.п. Полванбой	0.4	0	0.0	0	0.0	0.0	0.0	0.4	100.0		0.0	0.3	0.0	0	0.0	0.1	24.8
113	қ.а.п. Чангал қалъа	0.7	0	0.0	0	0.0	0.0	0.0	0.7	100.0		0.0	0.4	0.0	0	0.0	0.3	43.0
114	қ.а.п. Туёкли	1.8	0	0.0	0	0.0	0.0	0.0	1.8	100.0		0.0	0.5	0.0	0	0.0	1.4	75.1
115	қ.а.п. Тома	1.6	0	0.0	0	0.0	0.0	0.0	1.6	100.0		0.0	0.5	0.0	0	0.0	1.1	68.6
116	қ.а.п. Буз ёп кичик	1.0	0	0.0	0	0.0	0.0	0.0	1.0	100.0		0.0	1.0	0.0	0	0.0	0.0	0.0
	қ.ф.й. Ташёп	**2.7**	**1.3**	**47.0**	**1.3**	**100.0**	**0.0**	**0.0**	**1.4**	**53.0**		**0.0**	**1.4**	**0.0**	**0**	**0.0**	**0.0**	**0.0**
117	қ.а.п. Бирлашган	1.1	0	0.0	0	0.0	0.0	0.0	1.1	100.0		0.0	1.1	0.0	0	0.0	0.0	0.0
118	қ.а.п. Такир қалъа	1.4	1.272	92.6	1.272	100.0	0.0	0.0	0.1	7.4		0.0	0.1	0.0	0	0.0	0.0	0.0
119	қ.а.п. Озодлик	0.2	0	0.0	0	0.0	0.0	0.0	0.2	100.0		0.0	0.2	0.0	0	0.0	0.0	0.0
	қ.ф.й. Холимбек	**11.5**	**3.9**	**33.8**	**2.9**	**74.3**	**0.0**	**0.0**	**7.6**	**66.2**		**0.0**	**7.8**	**0.0**	**0**	**0.0**	**0.0**	**0.0**
120	қ.а.п. Аякчи	4.3	2.914	67.5	1.914	65.7	0.0	0.0	1.4	32.5		0.0	1.4	0.0	0	0.0	0.0	0.0
121	қ.а.п. Уч ёп сога	1.9	0	0.0	0	0.0	0.0	0.0	1.9	100.0		0.0	1.9	0.0	0	0.0	0.0	0.0
122	қ.а.п. Бой овул	1.7	0	0.0	0	0.0	0.0	0.0	1.7	100.0		0.0	1.9	0.0	0	0.0	0.0	0.0
123	қ.а.п. Қумли	2.2	0	0.0	0	0.0	0.0	0.0	2.2	100.0		0.0	2.2	0.0	0	0.0	0.0	0.0
124	қ.а.п. Чагали ёп	1.4	0.98	71.2	0.98	100.0	0.0	0.0	0.4	28.8		0.0	0.4	0.0	0	0.0	0.0	0.0

Абонент бўлими бошлиғи: **К.Калимбетов**

Амударё тумани филиал бошлиги **А.Ражапов**

Амударё тумани филиал бош мухандиси **Б.Бобожонов**

Appendix 20. Findings of water, soil and ambient air sampling and testing (8 October 2021)

Формат А–4

Ўзбекистон Республикаси
Соғликни Сақлаш вазирлиги
КР СЭО ва ЖСБ
Муассаса номи

Ўзбекистон Республикаси
Санитария- эпидемиологик осойишталик ва жамоат саломатлиги хизмати бошлигининг 2021 йил 25 января №14-сонли буйруғи билан тасдикланган 13- рақамли тиббий хужжат шакли

ТУПРОҚ НАМУНАЛАРИНИ ТЕКШИРИШ БЎЙИЧА __140-141_СОНЛИ

БАЁННОМА (протокол)

2021____ йил «___08__»октябрь_____

Муассаса, корхонаномиваманзили __На территории ССГ <Кипчак> Амударьинского района

Намунаолинганвакт__05.10.2021 _____

Текширишмаксади __Физ-хим анализ_____

Қушимчамаълумотлар _-_____

Наму-наларта ртибрак ами	Намунаолинганманжой нуктаси	Микдоригра мларда.	Намунаолинганжой чукурлигисм.да	Намунаолишдагиасосл овчихужжатлар
1	2	3	4	5
140	Точко№3	400 гр	20см	Гост17.4.4.02-84
141	Точки№4	400гр	20см	

ТЕКШИРИШ НАТИЖАЛАРИ :

Тартиб №	Кўрсаткичлар номлари	Текшириш услубларини асословчи хужжат	Намуналарни текшириш натижалари ўлчов бирликларида			
			ПДК	результат		
1	2	3	4	5	6	7
138	Рн	Гост 26423-85	6-9	8,8		
	Медь	Гост 4388-72	3,0	0,0087 мг/кг		
	Свинец	Гост18293-72	32,0	Отсмг/кг		
	Цинк	Гост18293-72	23,0	Отсмг/кг		
	Нитрат	Гост26951-86	130	145мг/кг		
139	Рн	Гост 26423-85	6-9	8,5		
	Мед	Гост 4388-72	3,0	0,5мг/кг		
	Свинец	Гост 18293-72	32,0	Отсмг/кг		
	Цинк	Гост 18293-72	23,0	Отсмг/кг		
	Нитрат	Гост 26951-86	130	881мг/кг		

Текшириш ўтказган шахс фамилияси ва имзоси Б. Нурниязова [signature]

Санитария врачи хулосаси Аниқлан тупроқ намунаси СанПиН-0[illegible]-05 [illegible] 881мг/кг (N 130мг/кг) кўрсаткичи бўйича талабига жавоб бермайди. [illegible]

Санитария врачи исми-шарифи ва имзоси А. Мустафина [signature]

Формат А–4

Ўзбекистон Республикаси
Соғлиқни Сақлаш вазирлиги
КР СЭО ва ЖСБ
Муассаса номи

Ўзбекистон Республикаси
Санитария- эпидемиологик осойишталик ва жамоат саломатлиги хизмати бошлигининг 2021 йил 25 января №14-сонли буйруғи билан тасдиқланган 13- рақамли тиббий ҳужжат шакли

ТУПРОҚ НАМУНАЛАРИНИ ТЕКШИРИШ БЎЙИЧА __138-139_СОНЛИ

БАЁННОМА (протокол)

2021____ йил «___08__»октябрь_____

Муассаса, корхонаномивеманзили __На территории ССГ <Кипчак> Амударьинского района

Намунаолинганвакт__05.10.2021 __________________

Текширишмаксади __Физ-хим анализ_______________

Қушимчамаълумотлар _-__________________________

Наму-наларта ртибрак ами	Намунаолингананикжой нуктаси	Микдоригра мларда.	Намунаолинганжой чуқурлигисм.да	Намунаолишдагиасосл овчихужжатлар
1	2	3	4	5
138	Точко№1	400 гр	20см	Гост17.4.4.02-84
139	Точки№2	400гр	20см	

Ишкорийлик_-________1,6________________ мг*экв

Кислоталилик_-________________ мг*экв

Умумий қаттиқлиги 5,0________________ мг*экв/дм³

Қуруқ қолдиқ___384________________ мг/дм³

Калций_____-________________ мг/дм³

Магний____-________________ мг/дм³

Умумий темир_-__0,1________________ мг/дм³

Хлоридлар__131________________ мг/дм³

Сульфатлар_196________________ мг/дм³

Фтор ___-________________ мг/дм³

Маҳаллий шароитларга хос бўлган маҳсус моддалар

Нефт маҳсулотлари___-________________ мг/дм³

Феноллар_-________________ мг/дм³

Цианидлар__-________________ мг/дм³

Мис ___0,008________________ мг/дм³

Кўрғошин _отс________________ мг/дм³

Цинк ___ 0,009________________ мг/дм³

Хром 3 валентли _-________________ мг/дм³

Хром 6 валентли ___-________________ мг/дм³

Текширишни ўтказган шахс имзоси________________ Б.Нурниязова

Врач хулосаси Олинган сув сонамаси O'zDSt: 951-2011 кўрсаткичлари талабларига жувоб беради.

Сан.гиг. лабораторияси мудирининг имзоси________________ А. Мустафина

Коммунал гигиена бўлинмаси мудирининг имзоси________________

Ўзбекистон Республикаси
Соғлиқни Сақлаш вазирлиги
КР СЭО ва ЖСБ
Муассаса номи

Ўзбекистон Республикаси
Санитария-эпидемиологик осойишталик ва жамоат саломатлиги хизмати бошлигининг 2021 йил 25 январдаги №14-сонли буйруғи билан тасдиқланган 3 - рақамли тиббий ҳужжат шакли

ОЧИҚ СУВ ҲАВЗАЛАРИ, ОҚАВА СУВЛАРНИ ТЕКШИРИШ БЎЙИЧА 137-СОНЛИ

БАЁННОМА (протокол)

2021йил « 08 »__октябрь_____

Манбанинг номи___Открытый водоем ёшон ёп_____

Намуна олинадиган жой_ На территории ССГ «Кипчак» Амударьинского района _____

Намуна олиш куни ва вакти_05.10.2021г._____

Хаво харорати С даражасида _____-_____

Сув харорати С даражасида_____-_____

ХИДИ
Интенсивлиги бал хисобида__-_____
Характери (тасвирлансин)_-_____
(суюлтирилганда) йўк бўлиб кетиш холати__-_____

Рангдорлик даражаси_-____5_____

Ранги (тасвирланган)_-_____

(суюлтирилганда) йўк бўлиб кетиш холати__-_____

Лойқа, чўкма (тасвирлансин)_ 1,0 мг/дм^3_____

Тиниқлиги _____-_____см

Сузиб юрган аралашмалар, парда қоплаши_-_____

Муаллақ моддалар _-_____мг/дм^3

РН_8,2_____

Эриган кислород____-_____мг/дм^3

Кислородга бўлган талаб 5-_____2,1_____мгO$_2$/дм^3

Кислородга бўлган талаб - 20__-_____мгO$_2$/дм^3

Оксидланувчанлик - 1,4 мгO$_2$/дм^3

ХПК___-_____мгO$_2$/дм^3

Ишкорийлик_-________1,8________________________________ мг*экв

Кислоталилик_-________________________________ мг*экв

Умумий қаттиқлиги 5,7________________________________ мг*экв/дм³

Қуруқ қолдиқ___384________________________________ _мг/дм³

Калций_____-________________________________ мг/дм³

Магний_____-________________________________мг/дм³

Умумий темир_-__0,05________________________________мг/дм³

Хлоридлар__118________________________________ мг/дм³

Сульфатлар_201________________________________ мг/дм³

Фтор ___-________________________________ мг/дм³

Маҳаллий шароитларга хос бўлган маҳсус моддалар

Нефт маҳсулотлари___-________________________________мг/дм³

Феноллар_-________________________________ мг/дм³

Цианидлар__-________________________________мг/дм³

Мис ___0,01________________________________мг/дм³

Қўрғошин _отс________________________________ мг/дм³

Цинк ____отс________________________________мг/дм³

Хром 3 валентли _-________________________________мг/дм³

Хром 6 валентли ___-________________________________ мг/дм³

Текширишни ўтказган шахс имзоси ____[signature]____ Б.Нурниязова

Врач хулосаси Анализ суу синамаси O'zDSt 951-2011 қорсеткишлери талапларына жуўап береди. [signature] А. Нормуродов

Сан.гиг. лабораторияси мудирининг имзоси ____[signature]____ А. Мустафина

Коммунал гигиена бўлинмаси мудирининг имзоси [signature] А. Нормуродов

Ўзбекистон Республикаси
Согликни Сақлаш вазирлиги
КР СЭО ва ЖСБ
Муассаса номи

Ўзбекистон Республикаси
Санитария-эпидемиологик осойишталик ва жамоат саломатлиги хизмати бошлигининг 2021 йил 25 январдаги №14-сонли буйруғи билан тасдиқланган 3 - рақамли тиббий ҳужжат шакли

ОЧИҚ СУВ ҲАВЗАЛАРИ, ОҚАВА СУВЛАРНИ ТЕКШИРИШ БЎЙИЧА 136-СОНЛИ

БАЁННОМА (протокол)

2021йил « 08 »__октябрь_____

Манбанинг номи___Открытый водоем источник_____

Намуна олинадиган жой_ На территории ССГ «Кипчак» Амударьинского района

Намуна олиш куни ва вақти_05.10.2021г._____

Хаво харорати С даражасида_____-_____

Сув харорати С даражасида_____-_____

ХИДИ
Интенсивлиги бал хисобида__-_____
Характери (тасвирлансин)_-_____
(суюлтирилганда) йўқ бўлиб кетиш холати__-_____

Рангдорлик даражаси_-____5_____

Ранги (тасвирланган)_-_____

(суюлтирилганда) йўқ бўлиб кетиш холати__-_____

Лойка, чўкма (тасвирлансин)_ 1,7 мг/дм^3_____

Тиниклиги _____-_____см

Сузиб юрган аралашмалар, парда коплаши_-_____

Муаллақ моддалар _-_____мг/дм^3

РН_8,4_____

Эриган кислород____-_____мг/дм^3

Кислородга бўлган талаб 5-_____1,9_____мгО$_2$/дм^3

Кислородга бўлган талаб - 20__-_____мгО$_2$/дм^3

Оксидланувчанлик - 1,1 мгО$_2$/дм^3

ХПК___-_____мгО$_2$/дм^3

Ишқорийлик_- 2,3 мг*экв

Кислоталилик_- мг*экв

Умумий қаттиклиги 5,5 мг*экв/дм³

Қуруқ қолдиқ 358 мг/дм³

Калций - мг/дм³

Магний - мг/дм³

Умумий темир - 0,25 мг/дм³

Хлоридлар 139 мг/дм³

Сульфатлар 244 мг/дм³

Фтор - мг/дм³

Маҳаллий шароитларга хос бўлган махсус моддалар

Нефт маҳсулотлари - мг/дм³

Феноллар - мг/дм³

Цианидлар - мг/дм³

Мис 0,1 мг/дм³

Қўрғошин отс мг/дм³

Цинк отс мг/дм³

Хром 3 валентли - мг/дм³

Хром 6 валентли - мг/дм³

Текширишни ўтказган шахс имзоси Б.Нурниязова

Врач хулосаси Анализ суви OzDSt 951-2011 кўрсаткичлари талабларига мувофиқ келади. А. Жолдасбаев

Сан.гиг. лабораторияси мудирининг имзоси А. Мустафина

Коммунал гигиена бўлинмаси мудирининг имзоси А. Жолдасбаев

Ўзбекистон Республикаси
Соғликни Сақлаш вазирлиги
КР СЭО ва ЖСБ
Муассаса номи

Ўзбекистон Республикаси
Санитария-эпидемиологик осойишталик ва жамоат саломатлиги хизмати бошлигининг 2021 йил 25 январдаги №14-сонли буйруғи билан тасдикланган 3 - рақамли тиббий ҳужжат шакли

ОЧИК СУВ ҲАВЗАЛАРИ, ОҚАВА СУВЛАРНИ ТЕКШИРИШ БЎЙИЧА 135-СОНЛИ

БАЁННОМА (протокол)

2021йил « 08 » октябрь

Манбанинг номи Открытый водоем Река Амударья

Намуна олинадиган жой На территории ССГ «Кипчак» Амударьинского района

Намуна олиш куни ва вақти 05.10.2021г.

Хаво ҳарорати С даражасида -

Сув ҳарорати С даражасида -

ХИДИ
Интенсивлиги бал хисобида -
Характери (тасвирлансин) -
(суюлтирилганда) йўк бўлиб кетиш холати -

Рангдорлик даражаси - 30

Ранги (тасвирланган) -

(суюлтирилганда) йўк бўлиб кетиш холати -

Лойка, чўкма (тасвирлансин) 10,6 мг/дм^3

Тиниклиги - см

Сузиб юрган аралашмалар, парда қоплаши -

Муаллак моддалар - мг/дм^3

РН 8,9

Эриган кислород - мг/дм^3

Кислородга бўлган талаб 5- 5,0 мгO$_2$/дм^3

Кислородга бўлган талаб - 20 - мгO$_2$/дм^3

Оксидланувчанлик - 3,0 мгO$_2$/дм^3

ХПК - мгO$_2$/дм^3

ТЕКШИРИШ НАТИЖАЛАРИ :

Тартиб №	Кўрсаткичлар номлари	Текшириш услубларини асословчи хужжат	Намуналарни текшириш натижалари ўлчов бирликларида			
			ПДК	результат		
1	2	3	4	5	6	7
140	Рн	Гост 26423-85	6-9	8,4		
	Медь	Гост 4388-72	3,0	0,3 мг/кг		
	Свинец	Гост18293-72	32,0	Отемг/кг		
	Цинк	Гост18293-72	23,0	0,02мг/кг		
	Нитрат	Гост26951-86	130	642мг/кг		
141	Рн	Гост 26423-85	6-9	8,8		
	Мед	Гост 4388-72	3,0	0,4мг/кг		
	Свинец	Гост 18293-72	32,0	Отемг/кг		
	Цинк	Гост 18293-72	23,0	0,5мг/кг		
	Нитрат	Гост 26951-86	130	997мг/кг		

Текшириш ўтказган шахс фамилияси ва имзоси Б. Нурниёзова [illegible]

Санитария врачи хулосаси Олинган тупроқ намунаси СанПиН-0191-05 нитрат 997мг/кг (N130) кўрсаткичи бўйича талабга нуқтаи [illegible] [illegible] Р. [illegible]

Санитария врачи исми-шарифи ва имзоси А. Мустафина

ХУЛОСА

Заключения санитарного врача:

Концентрация газов в отобранных и исследованных пробах воздуха не превышают ПДК и соответствуют требованиям Сан ПиН РУз №0293-11

Санитария врач имзоси: _____ А. Жолмурзаев

Булим мудри имзоси: _____ А. Мустафина

Узбекистон Республикаси
Согликни саклаш вазирлиги
КР СЭО ва ЖСБ
Муассасанинг номи

Ўзбекистон Республикаси
Санитария- эпидемиологик осойишталик ва жамоат саломатлиги хизмати бошлигининг 2021 йил 25 января №14-сонли буйруги билан тасдикланган
8- рақамли тиббий ҳужжат шакли

АХОЛИ ЯШАЙДИГАН ЖОЙЛАР ХАВОСИНИ ТЕКШИРИШ № 166-173 ДАЁННОМАСИ
«5» октября 2021 г.

Хаво намунаси олинган жой На территории ССГ Кипчок Амударьинского района Республики Каракалпакстан
Намуна олишдан максад определение загазованности атмосферного воздуха
Намуна тури (бир мартали, уртача суткалик) максимально разовая
Намуна олишни асословчи хужжатлар: СанПиН РУз 0293-2011, Р.Д 52.04.186-89
Намуна олинган куни ва вакти : 05.10.2021 отказилган вакт 05.10.2021 в 17[20]
Ташиш усули автотранспорт саклаш шароитлари йюке
Консервация услублари: не консервируется
Намуна олишда кулланиладиган улчов воситалари: . Газоанализатор,метеоскоп
Давлат текшируви тугрисидаги маълумотлат серт.№71749 до 30.10.2023г
Жой таърифи: рельефи: открытая местность
Унинг баландлиги ифлослантирадиган манбагача: Источника загрязнения нет
булган масофа _____
Режалаштириш холати

Ифлослантирадиган манба таърифи нет
Шу манба баландлиги ва куввати _____
Машъала шакли _____

Жойни ифлослантирадиган манба ва хаво намунаси олинадиган нукталар (намуна олинадиган нукта тартиб сони %) курсатилган эскизи _____
Намуна олган шахснинг лавозими, фамилияси исми шарифи: _____

Врач лаборант: _____ О.Бакбергенова
Лаборант: _____ Б.Нурниязова
Протокол икки нусхада тузилди

Атмосфера ховаси метеорологик улчов натижалари:

Ракамлар		Намуналар олинадиган нукта	Об-хаво омиллари				Намуна олинган вакт, соат, минут			Аникланувчи воситанинг номи мг/м³	Текширув натижаси мг/м³		Текширув методикаси
Фильтрларнинг ва юттичларнинг	Эскиз буйича намуна олиш нукталари		Харорат C° Термометр курсаткич	Атм. босим мм.рт.ст	Нисбий намлик	Хаво харакати тезлиги	Бошланиши	тугаши	Аспирация тезлиги л/ мин		Аникланган концентрация	ПДК	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Точка №3	На территории ССГ Кипчок Амударьинского района	+15	754	45%	4м/с	11^{20}	11^{25}	Экспресс метод	CL_2	Необн	0.1 мг/м³	РД 52.04.186-89
			+15	754	45%	4м/с	11^{20}	11^{25}	Экспресс метод	SO_2	Необн	0.5мг/м³	РД 52.04.186-89
			+15	754	45%	4м/с	11^{20}	11^{25}	Экспресс метод	NO_2	Необн	0.085 мг/м³	РД 52.04.186-89
			+15	754	45%	4м/с	11^{20}	11^{25}	Экспресс метод	NH_3	Необн	0.2 мг/м³	РД 52.04.186-89
			+15	754	45%	4м/с	11^{20}	11^{25}	Экспресс метод	H_2S	необн	0.008 мг/м³	РД 52.04.186-89
			+15	754	45%	4м/с	11^{20}	11^{25}	Экспресс метод	CO	необн	5,0 мг/м³	РД 52.04.186-89
			+15	754	45%	4м/с	11^{20}	11^{25}	Экспресс метод	NO	необн	0.6мг/м³	РД 52.04.186-89
			+15	754	45%	4м/с	11^{20}	11^{25}	Экспресс метод	ЕО	необн	0.3мг/м³	РД 52.04.186-89

Тахлил утказган шахс, имзоси ______ Нурниязова

Санитария врачнинг хулосаси: Соответствует СанПиН - 0293-11

Сан врач имзоси ______ А. Жолмурзаев

ХУЛОСА

Заключения санитарного врача:

Концентрация газов в отобранных и исследованных пробах воздуха не превышают ПДК и соответствуют требованиям Сан ПиН РУз №0293-11

Санитария врач имзоси: _____ А.Жолдурасов

Булим мудри имзоси: _____ А.Мустафина

Узбекистон Республикаси
Согликни сакдаш вазирлиги
КР СЭО ва ЖСБ
Муассасанинг номи

Ўзбекистон Республикаси
Санитария- эпидемиологик осойишталик ва жамоат саломатлиги хизмати бошлигининг 2021 йил 25 января №14-сонли буйруғи билан тасдикланган
8- рақамли тиббий хужжат шакли

АХОЛИ ЯШАЙДИГАН ЖОЙЛАР ХАВОСИНИ ТЕКШИРИШ_ № 158-165 БАЁНОМАСИ
«5» октября 2021 г.

Хаво намунаси олинган жой На территории ССГ Кипчок Амударьинского района Республики Каракалпакстан
Намуна олишдан максад определение загазованности атмосферного воздуха
Намуна тури (бир марталик, уртача суткалик)_максимально разовая
Намуна олишни асословчи хужжатлар: СанПиН РУз 0293-2011, Р.Д 52.04.186-89
Намуна олинган куни ва вакти_: 05.10.2021 етказилган вакт 05.10.2021 в 17[20]
Ташиш усули автотранспорт саклаш шароитлари бюкс
Консервация услублари: не консервируется
Намуна олишда кулланиладиган улчов воситалари: , Газоанализатор,метеоскоп
Давлат текшируви тугрисидаги маълумотлат серт№71749 до 30.10.2023г
Жой таърифи: рельефи: открытая местность
Унинг баландлиги ифлослантирадиган манбагача: Источника загрязнения нет
булган масофа _____

Режалаштириш холати

Ифлослантирадиган манба таърифи нет
Шу манба баландлиги ва куввати
Машъала шакли

Жойни ифлослантирадиган манба ва хаво намунаси олинадиган нукталар (намуна олинадиган нукта тартиб сони %) курсатилган эскизи
Намуна олган шахснинг лавозими, фамилияси исми шарифи:

Врач лаборант: _____ О.Бакбергенова
Лаборант: _____ Б.Нуриязова
Протокол икки нусхада тузилди

Атмосфера ховаси метеорологик улчов натижалари:

Ракамлар		Намуналар олинадиган нукта	Об-хаво омиллари				Намуна олинган вакт, соат, минут			Аник ланув чи воситанинг номи мг/м³	Текширув натижаси мг/м³		Текширув методи каси
Филтрларнинг ва ютгичларнинг	Эскиз буйича намуна олиш нуктлари		Харорат С° Термометр курсаткич	Атм. босим мм.рт.ст	Нисбий намлик	Хаво харакати тезлиги	Бошлаганиши	тугаши	Аспирация тезлиги л/ мин		Аник ланган концентрация	ПДК	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Точка №2	На территории ССГ Кипчок Амударьинского района	+17	755	48%	4м/с	11^{05}	11^{10}	Экспресс метод	CL_2	Необн	0.1 мг/м³	РД 52.04.186-89
			+17	755	48%	4м/с	11^{50}	11^{10}	Экспресс метод	SO_2	Необн	0.5мг/м³	РД 52.04.186-89
			+17	755	48%	4м/с	11^{05}	11^{10}	Экспресс метод	NO_2	Необн	0.085 мг/м³	РД 52.04.186-89
			+17	755	48%	4м/с	11^{05}	11^{10}	Экспресс метод	NH_3	Необн	0.2 мг/м³	РД 52.04.186-89
			+17	755	48%	4м/с	11^{05}	11^{10}	Экспресс метод	H_2S	необн	0.008 мг/м³	РД 52.04.186-89
			+17	755	48%	4м/с	11^{05}	11^{10}	Экспресс метод	CO	необн	5,0 мг/м³	РД 52.04.186-89
			+17	755	48%	4м/с	11^{05}	11^{10}	Экспресс метод	NO	необн	0.6мг/м³	РД 52.04.186-89
			+17	755	48%	4м/с	11^{05}	11^{10}	Экспресс метод	EO	необн	0.3мг/м³	РД 52.04.186-89

Тахлил утказган шахс, имзоси Журнигдова

Санитария врачнинг хулосаси: Соответствует СанПиН 0293-11

Сан врач имзоси А. Нормурзаев

ХУЛОСА

Заключения санитарного врача:

Концентрация газов в отобранных и исследованных пробах воздуха не превышают ПДК и соответствуют требованиям СанПиН РУз №0293-11

Санитария врач имзоси: А. Ибрагимов

Булим мудри имзоси: А. Мустафина

Узбекистон Республикаси
Соғлиқни саклаш вазирлиги
КР СЭО ва ЖСБ
Муассасанинг номи

Ўзбекистон Республикаси
Санитария- эпидемиологик осойишталик ва жамоат саломатлиги хизмати бошлигининг 2021 йил 25 январи №14-сонли буйруғи билан тасдиқланган
8- рақамли тиббий хужжат шакли

АХОЛИ ЯШАЙДИГАН ЖОЙЛАР ХАВОСИНИ ТЕКШИРИШ № 150-1571 БАЁННОМАСИ

«5» октября 2021 г.

Хаво намунаси олинган жой На территории ССГ Кипчок Амударьинского района Республики Каракалпакстан
Намуна олишдан максад определение загазованности атмосферного воздуха
Намуна тури (бир марталик, уртача суткалик) максимально разовая
Намуна олишни асословчи хужжатлар: СанПиН РУз 0293-2011, Р.Д 52.04.186-89
Намуна олинган куни ва вакти : 05,10.2021 етказилган вакт 05.10.2021 в 17 [20]
Ташиш усули автотранспорт саклаш шароитлари бюкс
Консервация услублари: не консервируется
Намуна олишда кулланиладиган улчов воситалари: , Газоанализатор.метеоскоп
Давлат текшируви тугрисидаги маълумотлат серт№71749 до 30,10.2023г
Жой таърифи: рельефи: открытая местность
Унинг баландлиги ифлослантирадиган манбагача: Источника загрязнения нет
булган масофа

Режалаштириш холати

Ифлослантирадиган манба таърифи нет
Шу манба баландлиги ва куввати
Машъала шакли

Жойни ифлослантирадиган манба ва хаво намунаси олинадиган нукталар (намуна олинадиган нукта тартиб сони %) курсатилган эскизи
Намуна олган шахснинг лавозими, фамилияси исми шарифи:

Врач лаборант: О.Бакбергенова
Лаборант: Б.Нурниязова
Протокол икки нусхада тузилди

Атмосфера ҳавоси метеорологик улчов натижалари:

Ракамлар		Намуналар олинадиган нукта	Об-хаво омиллари				Намуна олинган вакт, соат, минут			Аник лануви вситанинг номи мг/м³	Текширув натижаси мг/м³		Текширув методи каси
Филтрларнинг ва ютгичларнинг	Эскиз буйича намуна олиш пукталари		Харорат С° Термометр курсаткич	Атм. босим мм.рт.ст	Нисбий намлик	Хаво харакати тезлиги	Бошланиши	тугаши	Аспирация тезлиги л/ мин		Аник ланган концентрация	П/К	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Точка №1	На территории ССГ Кипчок Амударьинского района	+14	763	36%	5м/с	10^{50}	10^{55}	Экспресс метод	Cl_2	Необн	0.1 мг/м³	РД 52.04.186-89
			+14	763	36%	5м/с	10^{50}	10^{55}	Экспресс метод	SO_2	Необн	0.5мг/м³	РД 52.04.186-89
			+14	763	36%	5м/с	10^{50}	10^{55}	Экспресс метод	NO_2	Необн	0.085 мг/м³	РД 52.04.186-89
			+14	763	36%	5м/с	10^{50}	10^{55}	Экспресс метод	NH_3	Необн	0.2 мг/м³	РД 52.04.186-89
			+14	763	36%	5м/с	10^{50}	10^{55}	Экспресс метод	H_2S	необн	0.008 мг/м³	РД 52.04.186-89
			+14	763	36%	5м/с	10^{50}	10^{55}	Экспресс метод	CO	необн	5.0 мг/м³	РД 52.04.186-89
			+14	763	36%	5м/с	10^{50}	10^{55}	Экспресс метод	NO	необн	0.6мг/м³	РД 52.04.186-89
			+14	763	36%	5м/с	10^{50}	10^{55}	Экспресс метод	EO	необн	0.3мг/м³	РД 52.04.186-89

Тахлил утказган шахс, имзоси _____

Санитария врачининг хулосаси: _____

Сан врач имзоси _____

ХУЛОСА

Заключения санитарного врача:

Концентрация газов в отобранных и исследованных пробах воздуха не превышают ПДК и соответствуют требованиям Сан ПиН РУз №0293-11

Санитария врач имзоси: А.Жомуратов

Булим мудри имзоси: А. Мустафина

Ўзбекистон Республикаси
Соғлиқни сақлаш вазирлиги
КР СЭО ва ЖСБ
Муассасанинг номи

Ўзбекистон Республикаси
Санитария- эпидемиологик осойишталик ва жамоат саломатлиги хизмати бошлигининг 2021 йил 25 января №14-сонли буйруги билан тасдикланган
8- рақамли тиббий ҳужжат шакли

АХОЛИ ЯШАЙДИГАН ЖОЙЛАР ХАВОСИНИ ТЕКШИРИШ № 142-149 БАЁННОМАСИ
«5» октября 2021 г.

Хаво намунаси олинган жой На территории ССГ Кипчок Амударьинского района Республики Каракалпакстан
Намуна олишдан максад определение загазованности атмосферного воздуха
Намуна тури (бир марталик, уртача суткалик) максимально разовая
Намуна олишни асословчи хужжатлар: СанПиН РУз 0293-2011, Р.Д 52.04.186-89
Намуна олинган куни ва вакти : 05.10.2021 етказилган вакт 05.10.2021 в 17 30
Ташиш усули автотранспорт сақлаш шароитлари бюкс
Консервация услублари: не консервируется
Намуна олишда кулланиладиган ўлчов воситалари: , Газоанализатор.метеоскоп
Давлат текшируви тугрисидаги маълумотлат серт.№71749 до 30.10.2023г
Жой таърифи: рельефи: открытая местность
Унинг баландлиги ифлослантирадиган манбагача: Источника загрязнения нет
булган масофа

Режалаштириш холати

Ифлослантирадиган манба таърифи нет
Шу манба баландлиги ва куввати
Машъала шакли

Жойни ифлослантирадиган манба ва хаво намунаси олинадиган нукталар (намуна олинадиган пукта тартиб сони %) курсатилган эскизи
Намуна олган шахснинг лавозими, фамилияси исми шарифи:

Врач лаборант: О.Бакбергенова
Лаборант: Б.Нурниязова
Протокол икки нусхада тузилди

Атмосфера ховаси метеорологик улчов натижалари:

Ракамлар		Намуналар олинадиган нукта	Об-хаво омиллари				Намуна олинган вакт, соат, минут			Аник ланув чи воситанинг номи мг/м³	Текширув натижаси мг/м³		Текширув методикаси
Филтрларнинг ва ютгичларнинг	Эскиз буйича намуна олиш нуктала ри		Харорат С° Термометр курсаткичи	Атм. босим мм.рт.ст	Нисбий намлик	Хаво харакати тезлиги	Бошла ниши	туга ши	Аспирация тезлиги л/ мин		Аник ланган концентрация	ПДК	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Точка №4	На территории ССГ Кипчок Амударьинского района	+17	766	32%	4м/с	11^{35}	11^{40}	Экспресс метод	Cl_2	Необн	0.1 мг/м³	РД 52.04.186-89
			+17	766	32%	4м/с	11^{35}	11^{40}	Экспресс метод	SO_2	Необн	0.5мг/м³	РД 52.04.186-89
			+17	766	32%	4м/с	11^{35}	11^{40}	Экспресс метод	NO_2	Необн	0.085 мг/м³	РД 52.04.186-89
			+17	766	32%	4м/с	11^{35}	11^{40}	Экспресс метод	NH_3	Необн	0.2 мг/м³	РД 52.04.186-89
			+17	766	32%	4м/с	11^{35}	11^{40}	Экспресс метод	H_2S	необн	0.008 мг/м³	РД 52.04.186-89
			+17	766	32%	4м/с	11^{35}	11^{40}	Экспресс метод	CO	необн	5,0 мг/м³	РД 52.04.186-89
			÷17	766	32%	4м/с	11^{35}	11^{40}	Экспресс метод	NO	необн	0.6мг/м³	РД 52.04.186-89
			+17	766	32%	4м/с	11^{35}	11^{40}	Экспресс метод	EO	необн	0.3мг/м³	РД 52.04.186-89

Тахлил утказган шахс, имзоси Жан Нурниязова Б

Санитария врачнинг хулосаси: Соответствует СанПиН 0293-11

Сан врач имзоси А. Жамурзаев

Appendix 21. List of people met/consulted during the field visit towards finalization of the IEE

No.	Name	Position
1	Shukhrat Aberkulov	Deputy head of Karakalpakstan Republican Environmental Committee
2	Medet Nurjanov	Head of Water Resources Department, Karakalpakstan Republican Environmental Committee
3	Barno Kadyrbaeva	Head of ambient air laboratories, Karakalpakstan Republican Environmental Committee
4	Guljakhon Perinbetova	Head of soil laboratories, Karakalpakstan Republican Environmental Committee
5	Nurbek Uzakbaev	Head of Amudarya District Brunch of Karakalpakstan Republican Environmental Committee
6	Gayrat Iskanderov	Inspector at Amudarya District Brunch of Karakalpakstan Republican Environmental Committee
7	Abdullaeva Nilufar	Inspector at Amudarya District Brunch of Karakalpakstan Republican Environmental Committee
8	Durbek Bazarbaev	Representative of Amudarya District Branch of Karakalpakstan Republican Public Health Surveillance Services
9	Oybek Matkarimov	Head of Lower Amudarya State Biosphere Reserve
10	Bakhit Kamalov	Environmental engineer of Lower Amudarya State Biosphere Reserve
11	Nodir Kamolov	Deputy Khokim of Amudarya District Local Administration
12	Bobojonov Bekzod	Representatives of Amudarya Branch of Qaraqalpaq Suv Ta’minati
13	Khurshid Rakhmatullaev	Representatives of Amudarya Branch of Qaraqalpaq Suv Ta’minati
14	Rashid Abdigaliev	Head of community (Tulkin aul, Kipchak, Amudarya district) adjacent to the subproject site.
15	Olimjon Muratov	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
16	Maksad Muratbaev	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
17	Rustam Davlatbaev	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
18	Khudayor Kamolov	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
19	Murod Davlatboev	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
20	Rakhim Rakhmattulaev	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
21	Sayyora Artikboeva	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
22	Murod Oqmonov	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
23	Maksud Kuchkarov	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
24	Rashid Oqmonov	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
25	Kholmuratova Dilafruz	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)
26	Adil Jabbarov	Resident of Tulkin aul, adjacent to the subproject site (Kipchak, Amudarya district)

Appendix 22. SEE for the Project

ҚАРАҚАЛПАҚСТАН
РЕСПУБЛИКАСЫ ЭКОЛОГИЯ
ҲӘМ ҚОРШАҒАН
ОРТАЛЫҚТЫ ҚОРҒАЎ
КОМИТЕТИ

ҚОРАҚАЛПОҒИСТОН
РЕСПУБЛИКАСИ ЭКОЛОГИЯ
ВА АТРОФ-МУҲИТНИ
МУҲОФАЗА ҚИЛИШ
ҚЎМИТАСИ

230100 No'kis qalasi, Berdax gu'zari
Tel.: (361) 224-08-77, Faks.: 224-19-51

el pochta: nukus@uznature.uz; rktabiat@exat.uz;
Sayt: ecork.uz

№ 3-23-1/[illegible] 2018 j.

Директору «Инжиниринговая компания службы единого заказчика СМ РК»
Аташеву Е.

копия: - Вр.и.о. директору ГУП УЭМВ «Туямуюн-Нукус» Утениязову М.
- Амударьинской, Нукусской, Берунийской, Муйнакской, Кунградской и Караузякской райинспектору по экологии и охрана окружающей среды

Ўзбекистон Республикаси Президентининг
2018 йил 9. 04 дати
4271-сон қарори билан
ТАСДИҚЛАНГАН

ЗАКЛЮЧЕНИЕ
Государственной экологической экспертизы

По объекту: Оценка воздействия на окружающую среду «Развитие и модернизация систем водоснабжения Амударьинского, Нукусского, Берунийского, Муйнакского, Кунградского и Караузякского районов, а также содернизация станции 2-го подъёма Туямуюн в Республике Каракалпакстан» (ПЗВОС)

Заказчик: «Инжиниринговая компания службы единого заказчика СМ РК»

Разработчик: ООО «Узбеккоммуналлойихакурилиш»

На государственную экологическую экспертизу представлены материалы проекта заявления о воздействии на окружающую среду «Развитие и модернизация систем водоснабжения Амударьинского, Нукусского, Берунийского, Муйнакского, Кунградского и Караузякского районов, а также содернизация станции 2-го подъёма Туямуюн в Республике Каракалпакстан». Объект по виду деятельности относится к III категории (низкий риск) воздействия на окружающую среду (п.6 Водоводы областного и районного значения).

Проектом будут охвачены 6 административных районов, входящих в Республику Каракалпакстан, а именно: Нукусский, Муйнакский, Кунградский, Берунийский, Амударьинский и Караузякский районы.

Водоснабжение Республики Каракалпакстан базируется на использовании поверхностных вод реки Амударьи, каналов, питающих в вегетационный период их реки Амударьи и линз подземных вод, формирующих вдоль рек и каналов.

Проектом предусмотрено:

- Реконструкция и строительство водозаборных и очистных сооружений «Тахиаташ» на прирост производительности 60 000 м^3/сут для обеспечения централизованным водоснабжением Кунградского и Муйнакского районов;

• Реконструкция станции очистки воды и насосной станции 2-го подъема ш. «Гуямуюн» на восстановление подачи 140 000 м³/сут;

• Реконструкция водозабора и строительство станции очистки воды в Амударьинском районе, в г. Мангит на производительность 25 тыс.м³/сут;

• Строительство и реконструкция подводящих водопроводов в Амударьинском районе общей протяженность 54,99 км диаметром 160-400 мм;

• Строительство узлов распределения воды -2 шт;

• Реконструкция узлов распределения воды -3 шт;

• Строительство и реконструкция подводящих водопроводов в Берунийском районе общей протяженностью 46,17 км диаметрами 200-450 мм;

• Реконструкция узлов распределения воды -3 шт;

• Строительство и реконструкция подводящих водопроводов в Караузякском районе общей протяженностью 52,11 км диаметрами 160-315 мм;

• Строительство узлов распределения воды -1 шт;

• Реконструкция узлов распределения воды -7 шт;

• Строительство и реконструкция подводящих водопроводов в Кунградском районе общей протяженностью 21,85 км диаметрами 100-450 мм;

• Реконструкция узлов распределения воды -8 шт;

• Строительство и реконструкция подводящих водопроводов в Муйнакском районе общей протяженностью 58,75 км диаметрами 110-355 мм;

• Строительство узлов распределения воды -1 шт;

• Реконструкция узлов распределения воды -3 шт;

• Строительство и реконструкция подводящих водопроводов в Нукусском районе общей протяженностью 49,54 км диаметрами 200-400 мм;

• Реконструкция узлов распределения воды -4 шт;

• Строительство и реконструкция распределительных водопроводных сетей общей протяженностью -921,2 км;

• Устройство домовых подключений с установкой счетчиков.

В результате реализации проекта централизованным водоснабжением будет обеспечено 71 населенных пункта шести районов Республики Каракалпакстан. Реализация данного проекта позволит улучить работу системы водоснабжения и обеспечить гарантированную бесперебойную подачу качественной питьевой воды потребителям.

Проектируемая система водоснабжения характеризуется изъятием из окружающей среды:

-земельных площадей для размещения санитарно-защитных зон водовода;

-отбором природной поверхностной воды из реки Амударья.

В период проведения работ в атмосферный воздух будет привноситься неорганическая пыль и продукты сгорания топлива от строительной и передвижной техники. Нарушается состояние грунтов. Воздействие будет временным на эти компоненты среды с обратимыми последствиями.

На территории строительства в данное время не обнаружено исторических и культурных памятников, которые могут быть подвержены воздействию проекта.

Территория строительство после окончания строительно-монтажных работ очищается от мусора, благоустраивается и озеленяется.

Для снижения возможных негативных последствий воздействия проекта на окружающую среду в проекта ЗВОС разработан план смягчающих мер на период проведения работ, планы экологического мониторинга и управления на состоянием

Ўзбекистон Республикаси Президентининг
2009 йил «2» 04 даги
4291-сон қарори билан
ТАСДИҚЛАНГАН

окружающей среды. Проведенная комплексная оценка выявленных последствий воздействия от реализации проекта положительно отразится на комплексе природных условий и здоровье населения.

В случае выявления деревьев и кустарников на территории, попадающих под строительство трассы водовода и зданий вспомогательных объектов, для рубки древесных и кустарниковых насаждений необходимо получить разрешения органов государственной власти на местах и согласовать с государственным комитетом по охране природы. На основании Постановления КМ РУз №290 от 20.10.2014 года «Об урегулировании использования биологических ресурсов и о порядке прохождения разрешительных процедур в сфере природопользования».

Учитывая кратковременность проведения строительных работ и отсутствие постоянных источников загрязнения окружающей природной среды, разработка проекта следующего этапа оценка воздействия на окружающую среду (ЗЭП) не целесообразно.

Государственная экологическая экспертиза показала, что представленные на рассмотрение материалы соответствуют требованиям природоохранного законодательства, предъявляемым к первому этапу оценки воздействия на окружающую среду.

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

Государственная экологическая экспертиза Госкомприроды Республики Каракалпакстан, **согласовывает** представленные материалы оценки воздействия на окружающую среду «Развитие и модернизация систем водоснабжения Амударьинского, Нукусского, Берунийского, Муйнакского, Кунградского и Караузякского районов, а также содернизация станции 2-го подъёма Туямуюн в Республике Каракалпакстан» (ПЗВОС).

Заключение государственной экологической экспертизы о допустимости реализации проекта имеет юридическую силу **в течение трех лет**, в случае не осуществления проектируемых работ за этот период или изменений проектных решений, следует заново разработать проект ЗВОС и представить его на государственную экологическую экспертизу в установленных законодательном порядке (п.19 приложения к Постановлению КМ РУз №491 от 31.12.2001 г.).

«Заказчику» передать копию настоящего заключения государственной экологической экспертизы в хокимият для принятия решения на выбор земельного участка под строительство.

Амударьинской, Нукусской, Берунийской, Муйнакской, Кунградской и Караузякской районной инспекции по охране природы необходимо взять под контроль выполнения требования природоохранного законодательства при реализации данного проекта.

Председатель комитета Т.Хожаназаров

Аймаков К.

Узбекистон Республикаси Президентининг
2019 йил «9» 04 даги
4271-сон қарори билан
ТАСДИҚЛАНГАН

Appendix 23. Extended SEE for the Project and Sub-Project WU-CW-07

QORAQALPOG‘ISTON RESPUBLIKASI EKOLOGIYA VA ATROF-MUHITNI MUHOFAZA QILISH QO‘MITASI

QARAQALPAQSTAN RESPUBLIKASÍ EKOLOGIYA HÁM QORSHAĠAN ORTALÍQTÍ QORĠAW KOMITETI

230100 Nókis qalası, Tań nurı №181-úy Tel.: (361) 224-08-77, Faks.: 224-19-51
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2021-jıl “12” - noyabr № 02-01/18-11-2446 Nókis qalası

Директору
ООО «QARALPAQ SUW TA'MINATI»
Кудайназарову А.

На №ВЛ-02-08/2940 от 10.11.2021 года

Комитет по экологии и охране окружающей среды Республики Каракалпакстан изучив Ваше письмо для продления выданного заключения государственной экологической экспертизой Республики Каракалпакстан сообщает нижеследующее:

Согласно утвержденным Постановлением Кабинета Министров РУз № 541 от 07.09.2020 г. «О дальнейшем совершенствовании механизма оценки воздействия на окружающую среду» (приложения №2 п.53), в случаях, когда на реализацию объекта экспертизы необходимо более трех лет, заключение о допустимости реализации объекта продлевается ещё на два года.

Первый заместитель председателя **М.Жоллыбеков**

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