

# Environmental Monitoring Report

Semestral Report  
Reporting Period: January-June 2016  
July 2016

## Uzbekistan: Water Supply and Sanitation Services Investment Program, Tranche 4

Prepared by Sayyora Tillyakhodjaeva, Social and Environmental Specialist of the Project Coordination Unit for the Uzbek Communal Services Agency ("Uzkommukhizmat") and the Asian Development Bank.



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# Bi-Annual Environmental Monitoring Report

Project Number: 42489

Reporting Period: January-June 2016

## Uzbekistan: Water Supply and Sanitation Services Investment Program, Tranche 4

Loan No. 3064

Financed by the Asian Development Bank

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Tashkent, Uzbekistan

For: "Uzkommunhizmat" Agency

Endorsed by: Mavlyanov B., Director of Project Coordination Unit, July 12, 2016

**July 2016**

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## ABBREVIATION

|        |   |   |
|--------|---|---|
| ADB    | - | Asian Development Bank                                  |
| EA     | - | Executive Agency  |
| EIA    | - | Environmental Impact Statement                          |
| EMP    | - | Environmental Management Plan                           |
| EMR    | - | Environmental Monitoring Report                         |
| ICB    | - | International Contract Bidding                          |
| IEE    | - | Initial Environmental Examination                       |
| FAM    | - | Facility Administration Memorandum                      |
| FFA    | - | Financing Framework Agreement                           |
| MFF    | - | Multitranches Financing Facility                        |
| PIU    | - | Project Implementation Unit                             |
| PPMU   | - | Project Preparation and Management Unit                 |
| SCE    | - | Supervision Consultant Engineer                         |
| SEC    | - | Statements of Environmental Consequences                |
| SEMP   | - | Site Environmental Management Plan                      |
| SPS    | - | Safeguards Policy Statement                             |
| WDC    | - | Water distribution station                              |
| WSSSIP | - | Water Supply and Sanitation Services Investment Program |
| UCSA   | - | Uzbek Communal Services Agency (“Uzkommuhizmat”)        |





## **PART I - INTRODUCTION**

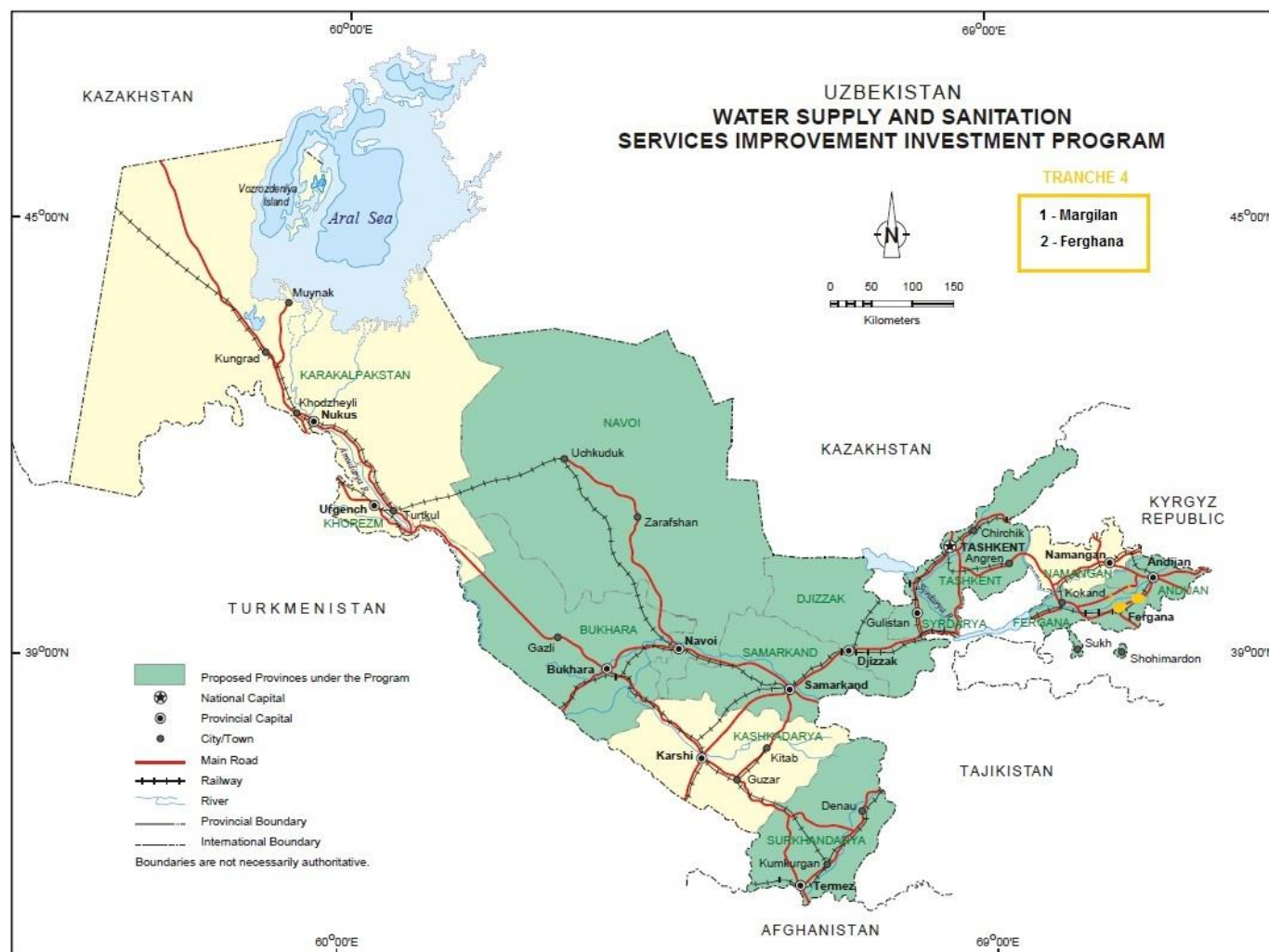
### **1.1 Construction activities and project progress during the previous 6 months**

#### **A. General Information**

1. In 2009, the Government of the Republic of Uzbekistan (the Government) signed a Financing Framework Agreement (FFA) with the Asian Development Bank (ADB) for a Multitranchise Financing Facility (MFF) to finance the Water Supply and Sanitation Services Investment Program (WSSSIP), in total cost of Investment program is 300 mln.USD. On 29 September 2009, the ADB Board of Directors approved the MFF Program with the Uzbekistan Agency “Uzkommunhizmat” (UCSA) as the Executing Agency (EA).
2. Tranche 4 (Loan 3064-UZB) for \$42 million was approved on 25 November 2013, became effective on 5 September 2014 with loan closing date of 31 March 2018.
3. Tranche 4 includes rehabilitation of sewerage treatment facilities and rehabilitation/construction of sewerage networks in Fergana and Margilan cities of Fergana province.
4. There are 2 construction contracts were awarded for implementing civil works under Tranche 4:
  - 3064/ICB/1. Sewerage networks and Pump stations in Fergana and Margilan cities;
  - 3064/ICB/2. Sewerage treatment facilities in Fergana and Margilan cities.
5. During reporting period both contracts were on-going. As part of the Financing Framework Agreement all contracts need to be implemented in compliance with environmental requirements, described in Initial Environmental Examinations conducted for each sub-project. Each IEE includes Environmental Management Plan.

#### **B. Objectives, Scope and Methodology**

6. The main objective of this report is to provide information about progress on implementation of Site Environmental Management Plans (SEMPs) including environmental monitoring, to report any environmental concerns occurred during projects implementation, to suggest correction actions.
7. The report is also prepared to comply with environmental safeguards of the Government of Uzbekistan and ADB Safeguards Policy Statement (SPS), (2009) as well as to fulfill the Loan covenant as described in Loan Agreement UZB 3064 between ADB and Uzbekistan.
8. To achieve the objectives the following activities were undertaken: (i) revision of the available program documentation related to environmental performance and institutional set up, (ii) EMR preparation including proposing recommendations on IEEs implementation.
9. The location of sub-projects under Tranche 4 is given in **Figure 1** below.



**Figure 1: Project area on Tranche 4**

### C. Construction activities and project progress during the reported period

10. The following activities are planned to be implementing under the Tranche 4: (i) Reconstruction and construction of sewerage networks in Fergana and Margilan cities; (ii) Reconstruction of three existing sewerage pumping stations in Margilan city and equipping them with new pumps, electric equipment and automation devices; (iii) Reconstruction of Vodokanals' bases in Fergana and Margilan cities; (iv) Construction of sink; (v) Reconstruction of Zagorodniy collector.

11. Information about performed civil works during the reported period is given in **Table 1**.

**Table 1:** Information about the progress of construction activities performed under Tranche 4

| # of Contract/<br>Subproject<br>Name  | Construction Activities Performed   | Percentage<br>of Works<br>Performed |
|---|---|-------------------------------------|
| <b>3064/ICB/1</b><br><br>Sewerage<br>networks and<br>Pump stations in<br>Fergana and<br>Margilan cities | <ul style="list-style-type: none"> <li>(a) Rehabilitation and construction of 18.5 km sewerage networks in Fergana and Margilan cities d160 - 530 mm;</li> <li>(b) Rehabilitation of three existing pump stations in Margilan and equipment with new pumps, electrical equipment and automation devices</li> <li>(c) Rehabilitation of Vodokanals' buildings in Fergana and Margilan;</li> <li>(d) Construction of Drain station;</li> <li>(e) Reconstruction of the Country collector</li> </ul>   | 60%                                 |
| <b>3064/ICB/2</b><br><br>Sewerage<br>treatment<br>facilities in<br>Fergana and<br>Margilan cities       | <p>The project provides the rehabilitation and construction of wastewater treatment plants by increasing their capacity to 300 000 m<sup>3</sup>/day.</p> <ul style="list-style-type: none"> <li>1. Inlet chamber</li> <li>2. Bar screen building</li> <li>3. Distributing chamber, the main pump station</li> <li>4. Horizontal sand traps and sand traps building</li> <li>5. Primary settlers Ø 40m</li> <li>6. Raw sludge pumping station</li> <li>7. Aeration tank 4 way</li> <li>8. Aerobic stabilizer</li> <li>9. Secondary settlers Ø 40m</li> <li>10. Chlorination plant</li> <li>11. Gravitational concentration tank Ø 30m</li> <li>12. Pumping station of concentration tank</li> <li>13. Sludge pumping station</li> <li>14. Blowing station</li> <li>15. Drainage Pump Station</li> <li>16. Sludge site</li> <li>17. Grit dewatering bay</li> <li>18. Sludge tanks</li> </ul> | 12%                                 |

| # of Contract/<br>Subproject<br>Name | Construction Activities Performed  | Percentage<br>of Works<br>Performed |
|--------------------------------------|--|-------------------------------------|
|                                      | 19. Transformer substation<br>20. Complex of water intake facilities<br>21. Process Communication<br>Ancillary buildings and facilities:<br>1. Control post<br>2. Laboratory office<br>3. Machinery and repair shop<br>4. Garage<br>5. Material warehouse<br>6. Sanitary inspection room |                                     |

## 1.2. Changes in project organization and environmental management team

12. “Uzkommunhizmat” Agency (USCA) is the project Executive Agency which is based in Tashkent. According to Facility Administration Memorandum (FAM) (2009), PCU is responsible for managing, executing and monitoring project implementation and should be staffed with safeguards unit. Safeguards unit has to consist of environmental and social specialists. The PCU needs be supported by Consultant under Project Management Facility.

13. As per FAM, in term of environmental aspects, PCU is responsible for:

- a) monitoring and evaluating the implementation progress and impact,
- b) checking and guiding safeguards compliance,
- c) coordinating among government agencies, and
- d) consolidating and preparing required reports.

14. Covenants # 14, Schedule 5 of Loan Agreement, between ADB and Republic Uzbekistan (2014) states, that progress reports on implementation of mitigation and monitoring measures for subprojects shall be submitted to ADB on a semi-annual basis.

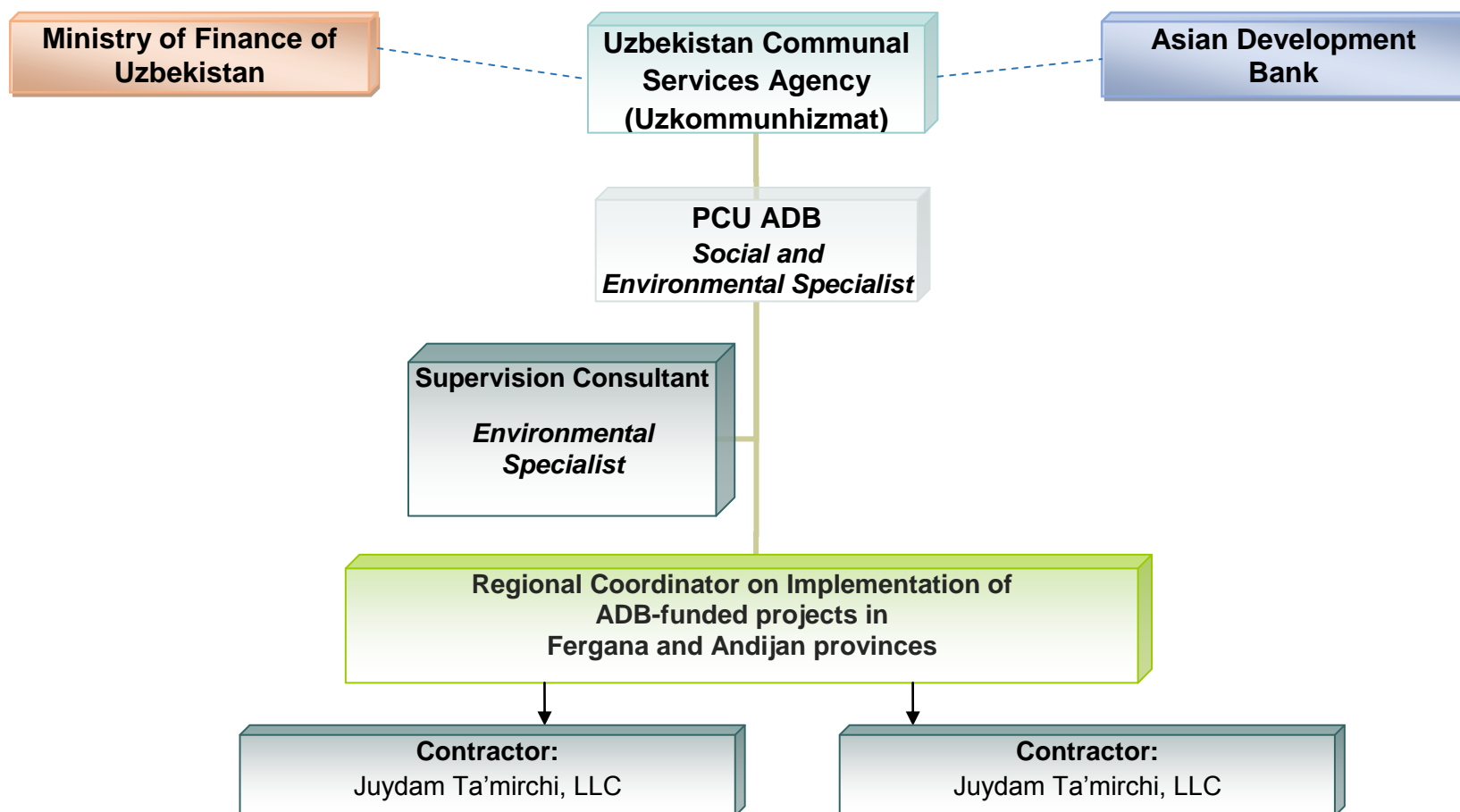
15. According to the Resolution of the Cabinet of Ministers of Uzbekistan No.334 dated November 23, 2015 it was reorganized the PPMU and PIUs activity in the regions (8 project regions) into one PCU and the number of PIUs staff was also reduced. During reported period (January-June 2016) in PCU worked a new social and environmental specialist.

16. In Q2 EPTISA Supervision Consultants’ Team appointed new Environment specialist to provide technical support to PCU in:

- preparation an overall environmental monitoring work plan;
- updating, as necessary, requirements under the water supply and wastewater effluent standards;
- monitoring and assessment compliance with the environmental safeguards of the project;
- training PCU and various project consultants on environmental issues;
- supporting the PCU in establishing an environmental monitoring program; and

- provision inputs on environment safeguards for preparation of the quarterly project progress report.
- Conducting Final Environmental Audits and preparing Final Environmental Audit Report.

17. Contractor selected for **3064/ICB/1 and 3064/ICB/2** was involved in Tranche II as well. The Contractor hired Environmental Specialists who are responsible for environmental safeguards implementation at construction sites. Designated Contractors' Environmental Specialists are in charge for preparation environmental monitoring reports as well. They conduct environmental audits on project sites and trainings for workers (**Figure 2**).



**Figure 2:** Institutional Chart of the Environmental Safeguards Performance on Tranche 4

### **1.3. Relationships with contractors, owner, lender**

18. Sub-projects' organization for awarded contract under Tranche 4 is given in the **Table 2**.

19. Reviewing the documentation showed that the environment protection requirements were included in contracts (section B – Special Terms, paragraph 4.18, 4.21). The documents describe requirements to the Contractor on observance of the environment-related national laws and statutory instruments. The Contractor's responsibilities include requirements on: (a) approval of the functional system on environmental impact management, (b) implementation of the monitoring and mitigation measures specified in EMP, enclosed as the Annex 1, and required funds distribution. They also include the requirements on submission of semiannual reports on these measures implementation.

20. Requirements on SEMP development were not included in contract documents for **3064/ICB/1**. However, since Contractor has experience on working under this MFF, Tranche 2, he fully recognizes own responsibility on environmental performance and ready to implement it as required.

21. At the beginning stage, Contractor has started work on receiving necessary permissions from local municipal agencies on disposal of wastes generating during civil works.

22. During reporting period monthly and quarterly EMRs were submitted by Contractor to PIU.

**Table 2:** List of awarded contracts under the Tranche 4

| Project Location |                     | Subproject/ Site Name  | Supervision Consultant   | Contractors        |                                       | Contract Signature date | Contract Final Date |
|------------------|---------------------|--|--|--------------------|---------------------------------------|-------------------------|---------------------|
| Province         | City                |  |  | No of the Contract | Name of Contractor                    |                         |                     |
| <b>Fergana</b>   | Fergana<br>Margilan | Sewerage networks and Pump stations in Fergana and Margilan cities | <b>Eptisa<br/>Servicios de Ingenieria S.L.</b><br>in association with <b>UBI Consulting, LLC</b> | <b>3064/ICB/1</b>  | Juydam Ta'mirchi, LLC<br>(Uzbekistan) | 04.12.15                | 28.02.17            |
|                  |                     | Sewerage treatment facilities in Fergana and Margilan cities       | <b>Eptisa<br/>Servicios de Ingenieria S.L.</b><br>in association with <b>UBI Consulting, LLC</b> | <b>3064/ICB/2</b>  | Juydam Ta'mirchi, LLC<br>(Uzbekistan) | 29 April 2016           | 30.10.2017          |



23. Information about EMRs submitted by Contractors for reporting period is presented in Table 2.

**Table 3:** Information on the reports provided by Contractors to PCU

| # | Contract # and Contractor  | Reported period                       | Date of Submission        |
|---|--|---------------------------------------|---------------------------|
| 1 | <b>3064/ICB/1</b><br><br>Juydam Ta'mirchi, LLC<br><br>Sewerage networks and Pump stations in Fergana and Margilan cities | January-March 2016<br>April-June 2016 | April, 2016<br>July, 2016 |
| 2 | <b>3064/ICB/2</b><br><br>Juydam Ta'mirchi, LLC<br><br>Sewerage treatment facilities in Fergana and Margilan cities       | April-June 2016                       | July, 2016                |

#### 1.4. Project permitting status

24. Environmental expertise on Tranche 4 was conducted at the Republican level of Environmental Expertise Department.

25. In accordance with Uzbek Environmental Legislation (Cabinet Ministries Resolution #491 from December, 2001; #152 from June 5, 2009 — Statement on State Environmental Expertise, Annex 2), subprojects under Tranche 4 classified as Category 1 (high risk of environmental impact):

- Environmental Impact Statement of Reconstruction Sewerage Systems in Fergana and Margilan.

26. State Nature Protection Committee of the Republic of Uzbekistan approved mentioned EIA which is confirmed by a State Environmental Appraisal. The Environmental Appraisal confirms establishment of project's compliance with environmental legislation applicable to the scope and content of the EIA.

27. Briefly, in accordance with received Appraisal, during construction period special attention should be paid to safety for environment construction and solid wastes disposal, temporary storage of them in specially equipped places, inadmissibility of unauthorized subtraction of raw materials – broken stones, gravel and sand. Scanned copy of Environmental Appraisal on civil works under Tranche 4 is included in Attachment 1.

28. As a next stage of State Environmental Assessment process, Statement on Environmental Consequences (SEC) has to be developed prior project commissioning. The SEC has to include a schedule for monitoring of ground water quality.

29. In accordance with ADB's Safeguard Policy Statement, this Program is classified as category B, because potential adverse environmental impacts are less adverse than those of category A projects. An initial environmental examination is required.

30. Initial Environmental Examination (IEE) was prepared by the Borrower to identify potential negative impacts to the environment and mitigation measures related to works on Tranche 4. IEE was published at ADB website in February 2013.

31. In accordance with EMP included in IEE, the Contractor has to get a permission for use of road from relevant authorities. At the same time, in accordance with national procedure all infrastructure construction/rehabilitation works have to be conducted after approval by relevant agencies, such as gas supply, telecommunication and road agency as well. Without such permission Contractor is not allowed to start civil works.

## **PART II - ENVIRONMENTAL MONITORING**

32. EMPs for these sub-projects include two types of environmental monitoring: visual and instrumental. Visual monitoring is required for observation of the following parameters: dust, noise, transport, waste disposal, land clearing, water quality and traffic impacts (Attachment 2). In case of receiving any complaint on pollution air and deterioration water quality from communities, instrumental monitoring needs to be done.

33. For monitoring mentioned above parameters, inspectors responsible for environmental safeguards from Contractors side, PIU and Supervision Consultant has to be involved in implementation of visual monitoring of construction sites.

34. According to para 142 of IEE for this Tranche, "The nature of the projects and the project locations do not necessitate any specific measurements, such as noise level or quality of water in wastewater receiving water bodies, during the construction phase. However, if any unexpected impact arises, it is recommended that PPMU and PIU will take necessary actions".

35. According to the environmental monitoring reports submitted by Contractors during the reporting period, no pollution of air and water at the construction sites were observed. No complaints were received from local people living in project or surrounded area.

36. The Contractors have official agreements with the local communal services on removal of construction and domestic wastes to the municipal landfill. Depending to the stage of construction/reconstruction and remoteness of construction site from closest community, removal could be done once per week or 10 days.

37. All construction sites have first-aid kit available for workers. Workers have a special clothes and helmets and use them during working on sites.

### **Noise and vibration**

38. To avoid noise at the construction sites, the Contractor limits using of compressors and other heavy vehicles (i.e. trucks, excavators), to limit the dust at the construction sites adjacent to the sites area (roads) being watered in a due time.

39. The chief of a site of the Contractor - provides conformity of EMP, visually inspects safe use of the equipment, noise level of vehicles and mechanisms. The mechanic of a site checks a technical condition of the mechanisms that the Contractor has.

### **Water quality**

40. The sites for water supply-related structures have negligible or minimal adverse environmental impact, which was mitigated or resolved through design and have been mitigated during construction.

41. The subproject facilities were designed and being constructed to have no impact on the natural drainage pattern. The site selection was as described above mostly driven by the existing facilities and it is in accordance with local government land use planning.

### **Quality of atmospheric air**

42. Appropriate measures were taken to prevent the pollution of atmospheric air, to limit the dust level from working vehicles and enforce strict observance of safety rules at main road crossing, along main roads, the makhalla streets and near sub-project construction sites.

### **Flora and fauna monitoring**

43. The construction sites located in the area which is not related to the protected area. As some of the waterlines goes close to agriculture fields, all workers are informed and take necessary measures to prevent negative impact on vegetation and topsoil.

44. The impact on flora and fauna in the project area is minimal. Works are monitored and controlled in accordance with the EMP.

## **PART III - ENVIRONMENTAL MANAGEMENT**

### **3.1 Environmental Management System**

45. SEMP's should be developed based on EMP's included into IEE for each sub-project and approved by PIUs.

46. As to date of project preparation Contractor has not submitted SEMP's yet. Therefore, it is highly important to develop SEMP and submit to PIU for revision and approval the soonest.

47. As per EMP requirements in addition to SEMP, Inventory of wastes fraction needs to be prepared by Contractor. The document should provide information about type and amount of wastes which are expected to be generated during civil works. In addition, places of disposal of each type of waste and approved route from construction sites to disposal places need to be indicated in the document.

48. For the works which will be conducted inside of cities or settlements Traffic Management Plan needs to be developed by Contractor and approved by PIU. The plan should clearly indicate route of vehicle movement, allowed speed, organizing notification signs and permitted time for movement of heavy vehicles and techniques. In addition, procedure of informing local population about planning works on increasing traffic and measures for dust control could be included into the document as well.

49. In order to avoid possible soil erosion during heavy rain EMP also requires development of Plan for organizing civil works during such period. Since the evident of heavy rain in project area is very rare, such plan could be developed in case of forecast of rain season.

50. EMP also requires to develop oil spills response procedure which could be part of SEMP.

### 3.2 Inspection and Audit

51. Regular site monitoring visits were carried out during the reporting period by PCU Director, Regional Coordinator in Fergana and Margilan cities, EPTISA Deputy Team Leader and Construction Supervisors to check up realization of environmental protection measures parallel to civil works inspection. Environmental Specialist of SC (Eptisa) was hired on 17 May 2016, during the reporting period she conducted review mission only for tranche 1, for tranche 2, 3 and 4 she plans to conduct review missions as well as final environmental post-construction audits during July-December 2016 period. The results of monitoring and inspections will be reflected in the next Semi-annual EMR (Jul-Dec 2016). The list of all review missions conducted by PCU and Eptisa are described in the table 3 below:

**Table 4: List of review missions conducted by PCU and Eptisa**

| <b>Date of Review Mission</b> | <b>Conducted by</b>  | <b>Deadlines for Corrective Actions</b> |
|-------------------------------|--|---|
| April 2016                    | PCU Director and Environmental and Social Specialist together with Regional Coordinator in Fergana and Andijan Provinces | May 2016                                |
| May 2016                      | PCU Director together with Regional Coordinator in Fergana and Andijan Provinces   | June 2016                               |
| March 2016                    | EPTISA Deputy Team Leader and Construction Supervisors   | April 2016                              |
| April 2016                    | EPTISA Deputy Team Leader and Construction Supervisors   | May 2016                                |
| June 2016                     | EPTISA Deputy Team Leader and Construction Supervisors   | June-July 2016                          |

52. In accordance with IEEs requirements, Contractor signed contract with service station that provides small repairs, refueling and oil replacement and mechanisms maintenance including verification of emissions.

53. According to PCU Regional Coordinator and Contractors, workers are local and living in the neighboring area, and there was no construction camp available. There is no canteen in sites since the workers are local citizens and have lunch at home.

54. Old metal pipes were collected and disposed by Contractors. The Contractors have official agreements with the local communal services on removal of construction and domestic wastes to the municipal landfill. Depending to the stage of construction/rehabilitation and remoteness of construction site from closest community, removal could be done once per week or 10 days.

55. All construction sites have first-aid kit available for workers and there are regular trainings on H&S conducted by Engineers. Workers mostly have a special clothes and helmets and use them during working on sites.

56. On some sites residential facilities are located in the immediate closeness of construction works implementation area. According to the Contractors and PCU Regional Coordinator, there were no any complaints from the local citizens regarding the noise from construction site.

57. Work sites (cities streets) on the laying and rehabilitation of the sewerage supply networks are well fenced during the construction works with proper special warning signals, special light reflecting signs and safety tapes arranged.

### **3.3 Consultation and complaints**

58. In accordance with IEE, all ADB funded projects should have the grievance redress mechanism to receive and resolve affected people complaint related with the project. The Mahalla and the Vodokanal will become the receiver of complaints from affected people. The Mahalla and Vodokanal will inform PIU if there is any complaint received by them.

59. The PIU has to resolve the complaint within 15 days after receiving complaint. If within 15 days, complaint is not resolved or complainants not satisfied with the PIU the complainants could go directly to the PPMU or the EA. The PPMU on behalf of the EA should resolve within 15 days after receiving the complaint. If it is not resolved, the complainants could go to the higher level government institution, or ADB Accountability Mechanism.

60. The environmental consultant from PPMU, and PIU, together with the staff from local Vodokanal will conduct awareness campaign for people living around the project areas that there is a mechanism to solve their complaint, if any. If there is any complaint received by Mahalla or Vodokanal, PIU will also inform ADB.

61. Each construction site should have an Informative Banner with brief description and objectives of project, implementers, schedule of construction works, deadlines and contact information and logbooks for complaints and suggestions.

62. Staff and operative meetings should be conducted on regular base where additionally to project activities progress, environmental issues should be discussed as well.

63. By the time of report preparation, no consultations were conducted yet.

## **PART IV - ACTION PLAN FOR THE NEXT PERIOD**

64. Based on results of conducted audit the following need to be undertaken to fulfill with IEE requirements:

**Table 3: Recommended actions**

| # | Actions   | Responsible | Date of completion |
|---|---|-------------|--------------------|
| 2 | Current PIU staff consisted of one project coordinator for each site maybe not enough for effective environmental | UCSA        | Per PIU's decision |

|   |   |  |                                     |
|---|---|--|-------------------------------------|
|   | performance. Therefore, hiring one additional safeguards specialist for PIU will be necessary |  |                                     |
| 3 | Selected Contractor ( <b>3064/ICB/1</b> ) has to develop SEMP and submit to PIU for approval  | Contractor submits SEMP;<br>PIU reviews and approves.                    | August 15, 2016                     |
| 4 | Conduct Inventory of wastes fractions and prepare waste management plan                       | Contractor submits Waste management plan;<br>PIU reviews and approves.   | August 15, 2015                     |
| 5 | Develop Traffic Management Plan   | Contractor submits traffic management plan;<br>PIU reviews and approves. | August 15, 2015                     |
| 7 | Contractors need to ensure existence of complaints logbook on each construction sites         | Contractors  | 15 August 2016                      |
| 9 | Contractors have to make ensure proper implementation of SEMP and other relevant plans        | Contractors  | During whole period of civil works. |

## ATTACHMENTS

### Attachment 1. The Environmental Appraisal for subprojects under Tranche 4

|  |   |  |
|--|---|--|
| <b>O'ZBEKISTON RESPUBLIKASI</b><br><b>TABIIATNI MUHOFAZA QILISH</b><br><b>DAVLAT QO'MITASI</b>                             |  | <b>STATE COMMITTEE FOR</b><br><b>NATURE PROTECTION OF</b><br><b>THE REPUBLIC OF UZBEKISTAN</b> |
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| <a href="http://www.uznature.uz">http://www.uznature.uz</a> e-mail: <a href="mailto:info@uznature.uz">info@uznature.uz</a> |   |  |

20.11.2014 г. *с. 14. сент. 2014*

№ *18/7885*

### **ЗАКЛЮЧЕНИЕ** **государственной экологической экспертизы**

По объекту – Оценка воздействия на окружающую среду реконструкции систем канализации городов Ферганы и Маргилана.

Заказчик – ООО «Islotkonsaltservis».

Разработчик – ЧПФ «SUVOQOVA-XIZMAT».

Коммерческому директору  
ООО «Islotkonsaltservis»  
НУРМУХАМЕДОВУ Н.

копии: Председателю Ферганаоблкомприроды  
НОСИРОВУ И.А.

Директору ЧПФ «SUVOQOVA-XIZMAT»  
КАРМАЗИНУ В.М.

На государственную экологическую экспертизу представлены материалы первого этапа оценки воздействия на окружающую среду намечаемой реконструкции систем канализации городов Ферганы и Маргилана.

Проектом предусматривается увеличение общего охвата населения услугами водоотведения, строительство новых и реконструкция существующих канализационных коллекторов, а также реконструкция существующих канализационных насосных станций (КНС), реконструкция и расширение Ферганских канализационных очистных сооружений.

Ферганские очистные сооружения действуют с 1974 года и являются региональными, принимающими стоки от городов Фергана, Маргилан, р/ц Ташлак, Хамза, Вуадиль. Установленная мощность очистных сооружений 260 тыс. м<sup>3</sup>/сут. За 2010 год на очистные сооружения поступали стоки в объеме 195,67 тыс. м<sup>3</sup>/сут. Очистка стоков на КОС – полная механическая и биологическая, сооружения доочистки отсутствуют. Сбросной коллектор диаметром 2000 мм длиной 2,2 км транспортирует очищенные стоки в нижний Кызылтепинский коллектор, далее стоки по коллекторно-дренажной системе поступают в р. Сырдарью.



Анализ современного состояния канализационных сетей гг. Ферганы и Маргилана показал, что в результате их длительной эксплуатации большая часть канализационных коллекторов, выполненных в основном из керамических и асбоцементных труб, пришла в негодность. Утечка неочищенных стоков из нарушенных стыков канализационных труб приводят к загрязнению почв, грунтов, грунтовых и поверхностных вод азотными соединениями, нефтепродуктами, взвешенными веществами и органическими соединениями. Положение усугубляется еще и тем, что железобетонные коллекторы сильно заилены и загазованы, что привело к коррозии бетона и обрушению верхнего свода коллекторов.

Существующие насосные станции перекачки для бесперебойной подачи стоков КОС в г. Фергане (1 ед.) и в г. Маргилане (4 ед.) нуждаются в капитальном восстановительном ремонте. На территории города Ферганы находится здание решеток, предназначенное для сбора стоков от неканализованного населения. Объект не эксплуатируется из-за отсутствия технологического оборудования и пришедшего в негодность здания.

Ферганские очистные сооружения введены в эксплуатацию в 1974 г. Технология очистки сточных вод на КОС основана на методе использования активного ила. В состав очистных сооружений входят решетки, несколько, первичные отстойники, аэротенки, вторичные отстойники.

В настоящее время система аэрации в аэротенках вышла из строя. Очистка стоков происходит за счет оседания взвешенных веществ в отстойниках и аэротенках, вывода их из строя. Стоки, прошедшие КОС, обеззараживаются вручную гипохлоритом кальция и затем направляются в р. Сырдарью. За все время эксплуатации капитального ремонта зданий и сооружений не производилось. Вышли из строя вентиляционное оборудование и котельная. В настоящее время ведутся работы на КОС по замене насосного оборудования.

Стоки, сбрасываемые в р. Сырдарью, из-за нарушения технологии очистки не соответствуют установленным нормам ПДС загрязняющих веществ в водотоки рыбохозяйственного назначения. Река Сырдарья является источником питьевого водоснабжения республик Центральной Азии.

Представленным проектом предусматривается внедрение эффективных технологических процессов, техническое перевооружение сооружений, оборудования для отвода очистки и обеззараживания сточных вод; увеличение охвата централизованной системы канализации населения г. Ферганы с 73,3 % до 77,5 % и г. Маргилана с 46 % до 49 %.

Для реализации проектных решений предусматривается: строительство в г. Фергана 7,4 км канализационных коллекторов и сетей с применением стекловолоконных либо полиэтиленовых труб диаметром 300-500 мм с установкой стекловолоконных колодцев, а также колодцев из монолитного железобетона; реконструкция 11,7 км канализационных коллекторов и сетей, находящихся в аварийном состоянии; строительство сливной станции на территории существующего здания решеток.

В г. Маргилане проектом предусматривается: строительство 9 км канализационных коллекторов и сетей из стекловолоконных, либо полиэтиленовых труб диаметром 150-300 мм, а также установка на сети колодцев, выполненных из стекловолокна или монолитного железобетона; реконструкция существующих насосных станций: Ташлак, Водстрой и Атлас.

Проектом предусматривается реконструкция существующих канализационных очистных сооружений с увеличением их мощности по приему стоков с 260 тыс. м<sup>3</sup>/сут до 300 тыс. м<sup>3</sup>/сут. Намечаемая реконструкция КОС включает: ремонт и переоборудование приемной камеры, здания решеток, распределительной камеры, песколовок; реконструкцию песковых площадок, первичных отстойников с насосной станцией сырого осадка, аэротенков, воздухоподъемной станции, иловой насосной станции, существующих иловых площадок, технологических коммуникаций, площадки водопроводных сооружений, зданий лаборатории, вспомогательных зданий, ограждения; строительство здания хлораторной; ремонт объектов энергетического хозяйства.

Проектом предусматривается прокладка коллекторов и сетей под проезжей частью автомобильных дорог, на отдельных участках трасс коллекторы будут прокладываться под землей вдоль автомобильных дорог. В процессе проведения работ по реконструкции и строительству сетей и коллекторов снос жилых строений не предполагается. При необходимости использования щебня, гравия и песка для выполнения строительных работ, следует использовать только утвержденные и имеющие соответствующую лицензию месторождения. При проведении строительных работ транспортные перевозки должны осуществляться строго по выделенным проездам. Обслуживание используемых технических средств (автогрейдеры, автопогрузчики, бульдозеры, тракторы, краны, экскаваторы, автосамосвалы и др.) должно осуществляться на специально оборудованных площадках и заправочных станциях; отработанные масла должны собираться в герметичные металлические емкости с последующей их сдачей на нефтебазу для переработки. Перед началом строительства коллекторов должен сниматься плодородный слой почвы и размещаться во временном отвале, с целью его использования при проведении рекультивации нарушенных земель в местах разработки траншей. Разработка грунта в траншеях при пересечении ими всех видов подземных коммуникаций допускается лишь при условии наличия письменного разрешения организации, эксплуатирующей эти коммуникации и в присутствии ответственных представителей.

В целях реализации проектных решений по реконструкции Загороднего коллектора предполагается осуществить вырубку 18 деревьев: 9-тутовников, 7-тополей, 2-яблони). В этой связи на следующем этапе проектирования следует рассмотреть альтернативные варианты смещения трассы трубопроводов и сохранения деревьев от вырубки.

В период проведения строительных работ в атмосферный воздух будут поступать пыль неорганическая и отработавшие газы ДВС, содержащие оксиды углерода, азота, серы, углеводороды, сажу, альдегиды, бенз(а)пирен.



Для снижения выбросов загрязняющих веществ до безопасного для окружающей среды уровня должен быть рассчитан оптимальный вариант строительной техники с минимальным количеством одновременно работающих машин и механизмов. В местах пылевыделения должны быть приняты меры по пылеподавлению.

Во время проведения ремонтно-строительных работ канализационных сетей будут образовываться отходы, представленные фрагментами разрушенных канализационных сооружений и отходы механической очистки коллекторов от наносов, состоящие из мусора, минеральных и органических веществ, данные отходы предусматривается вывезти на специально отведенное для захоронения место.

Для выполнения проектных решений по реконструкции КОС планируется проведение следующих видов работ: опорожнение и очистка существующих емкостных сооружений от ила, песка, иловых наносов, вывоз отходов на специально отведенное для захоронения место, реконструкция зданий и сооружений, оснащение их современным технологическим оборудованием. В этот период ожидается образование строительных отходов – обломки бетона, кирпичный бой, стяжка, щебень, битые плитки и стекло, отходы будут вывозиться в специально отведенное место на захоронение.

На данном этапе проектирования не был проработан вопрос безопасного для окружающей среды с учетом санитарных норм размещения образующихся отходов. В этой связи на следующем этапе проектирования необходимо уточнить месторасположения предполагаемых площадок и условия захоронения образующихся отходов.

На реконструируемых КОС обеззараживание очищенных сточных вод предусматривается жидким хлором. В этой связи организуется контроль за содержанием хлора в воздухе дозаторной и остаточного хлора в воде. Для минимизации поступления хлора в атмосферный воздух, предусмотрена система вентиляции с очисткой воздуха в скруббере. Наличие хлора в производственных помещениях будет контролироваться автоматическими газоанализаторами.

В качестве возможной аварийной ситуации в процессе эксплуатации канализационных трубопроводов в проекте анализируются случаи нарушения их целостности, при этом не исключено попадание неочищенных стоков в почву, грунтовые и поверхностные воды. Городские сточные воды содержат большое количество поверхностно-активных моющих веществ, которые попадая в поверхностные водотоки губительно действуют на флору и фауну. С целью минимизации аварийных ситуаций предусматривается: прокладка трубопровода в месте перехода через канал в кожухе; использование труб из антикоррозийного материала.

Вероятная аварийная ситуация на КОС в хлораторной может возникнуть при разгерметизации контейнера с жидким хлором в помещении склада хлораторной или при разгерметизации трубопроводов с хлором в хлордозаторной.

При аварийной ситуации срабатывает газоанализатор, включается автоматически аварийная вентиляция и должна выключиться рабочая вентиляция, производится остановка утечки хлора.

По завершению намечаемой реконструкции систем канализации гг. Ферганы и Маргилана качество стоков, прошедших полную и механическую и биологическую очистку, должно соответствовать установленным нормам ПДС с учетом технически достижимых показателей очистных сточных вод.

Проектом предусматривается мониторинг уровня и минерализации грунтовых вод как в зоне городов так и расположения очистных сооружений. Также необходимо предусмотреть мониторинг уровня загрязнения и засоления грунтовых вод вблизи р. Сырдарья, качество воды в реке и других водотоках. Для проведения мониторинга в районе расположения КОС, необходимо организовать сеть наблюдательных скважин, расположенных ниже и выше очистных сооружений. Для определения возможной фильтрации неочищенных стоков в грунтовые воды, перечень подконтрольных ингредиентов (ионы хлоридов, сульфатов, кальций, магний) следует дополнить нефтепродуктами, азотом аммонийным и азотом нитритным.

По завершении запланированных работ необходимо осуществить техническую рекультивацию временно использованных и нарушенных земельных участков, а также произвести посадку кустарниковой и древесной растительности в счет компенсации за срубленные деревья при реконструкции канализационного коллектора.

Анализ проекта показал, что представленные материалы в достаточной степени соответствуют требованиям действующих природоохранных документов к первому этапу оценки воздействия на окружающую среду.

Государственная экологическая экспертиза Госкомприроды Республики Узбекистан **согласовывает** проект заявления о воздействии на окружающую среду намечаемой реконструкции систем канализации гг. Ферганы и Маргилана.

До завершения реконструкции объектов необходимо представить на государственную экологическую экспертизу Заявление об экологических последствиях в установленном законодательством порядке. В документе, наряду с разработанными экологическими нормативами, следует представить конкретные план-графики мониторинга состояния грунтовых вод в зонах городов, сооружений КОС, а также качества воды в р. Сырдарья.

**Ферганскому областному комитету по охране природы** следует взять под постоянный контроль соблюдение требований природоохранного законодательства при проведении работ по реконструкции систем канализации гг. Ферганы и Маргилана, а также сооружений Ферганских канализационных очистных сооружений, обратив особое внимание на безопасное для окружающей среды размещение образующихся отходов и недопустимость несанкционированного изъятия сырья - щебня, гравия, песка.

Председатель



Н. УМАРОВ

## Attachment 2. Environmental Management Plan as from IEE

| Items of activity                       | Potential Environmental Impacts   | Proposed Mitigation Measures  | Responsible Entities   | Cost Estimation (\$)   |
|---|---|---|--|--|
| <b>Pre-construction Project Stage</b>   |   |   |  |  |
| Accidents during operations             | Risk of accidents after completion causing damage of pipelines and further flooding if the area by wastewater due to inadequate designs | <ul style="list-style-type: none"> <li>Estimation of capacity and slope of pipelines should be prepared in accordance with Uzbekistan norms;</li> <li>Design structures to withstand seismic forces in accordance with Uzbek Construction Norms and Regulations (CNR) 2.01.03-98 "Civil Works within seismic areas";</li> <li>Ensure unhindered access to the facilities and availability of roads to them in case of emergencies.</li> </ul> | Consultants <ul style="list-style-type: none"> <li>provide conceptual design incorporating mitigation measures;;</li> </ul> Design-build contractors, if any, <ul style="list-style-type: none"> <li>provide detail design incorporating mitigation measures;</li> </ul> PIU <ul style="list-style-type: none"> <li>reviews conceptual and detail designs for compliance with mitigation measures</li> </ul> | Cost of consultants covered in the project budgets.<br><br>Required measures will be items included in costing of the construction budget.   |
| Leaks from sewerage network.            | Environmental pollution   | <ul style="list-style-type: none"> <li>Pipes used in the sewerage network should be corrosion-proof and have a long service life.</li> </ul>  | Consultants <ul style="list-style-type: none"> <li>provide conceptual design incorporating mitigation measures;</li> </ul> Design-build contractors, if any, <ul style="list-style-type: none"> <li>provide detail design incorporating mitigation measures;</li> </ul> PIU <ul style="list-style-type: none"> <li>reviews conceptual and detail designs for compliance with mitigation measures</li> </ul>  | Cost of consultants covered in the project budgets.<br><br>Required structures will be items included in costing of the construction budget. |
| STP operations causing raw sewage leaks | Environmental pollution (contamination of ground and surface water, soil)   | <ul style="list-style-type: none"> <li>Include settling ponds for filter backwash and sludge from clarifiers in design to avoid washing out contaminants during maintenance of plant.</li> <li>Include back-up power supply to run equipment during power failures in design. Provide observation wells and monitor groundwater quality at STP</li> </ul>   | Consultants <ul style="list-style-type: none"> <li>provide conceptual design incorporating mitigation measures;</li> </ul> Design-build contractors, if any, <ul style="list-style-type: none"> <li>provide detail design incorporating mitigation measures;</li> </ul> PIU reviews conceptual and detail designs for compliance with mitigation measures  | Cost of consultants covered in the project budgets.<br><br>Required structures will be items included in costing of the construction budget. |

| Items of activity  | Potential Environmental Impacts   | Proposed Mitigation Measures  | Responsible Entities  | Cost Estimation (\$)   |
|--|---|---|---|--|
| Pipe-laying for new extensions   | No expected resettlement, but if it becomes relevant, the land acquisition and resettlement framework (LARF) will be reviewed and amended as necessary to ensure no adverse environmental impact from resettlement. | <ul style="list-style-type: none"> <li>Resettlement is addressed in the land acquisition and resettlement framework (LARF)</li> <li>Review LARF (if any) to ensure environmental aspects of resettlement are considered and addressed.</li> </ul>   | <ul style="list-style-type: none"> <li>Monitoring of implementation of LARF by PIU, EMU Consultants;</li> <li>Review of PPMU progress Reports By PIU and LARF Committee</li> </ul>  | in this phase of extension of sewerage networks are no re-settlement cost.   |
| Location of Hazardous Materials (Haz-Mat) storage and of noisy equipment and operations. | Health hazard and nuisance to people living in proximity to facilities and to workers on the site.  | <ul style="list-style-type: none"> <li>Design layout of facilities, which includes ample buffer distance (as per Uzbek CNR) to households living in close proximity to facilities and to worker facilities.</li> <li>Include acoustic assessments to determine if noise mitigation at source (noise barriers) is required to prevent nuisance to nearby households or the workers on the facilities.</li> <li>If predicted noise level at neighboring households is expected to exceed ADB/IFC guidelines include acoustic barriers in design.</li> <li>Include vibration from equipment, which is part of the network, in acoustic assessments.</li> </ul> | Consultants <ul style="list-style-type: none"> <li>provide conceptual design incorporating mitigation measures;</li> </ul> Design-build contractors, if any, <ul style="list-style-type: none"> <li>provide detail design incorporating mitigation measures;</li> </ul> PIU <ul style="list-style-type: none"> <li>reviews conceptual and detail designs for compliance with mitigation measures</li> </ul> | Cost of consultants covered in the project budgets.<br><br>Required structures will be items included in costing of the construction budget. |
| Effluent disinfection by chlorine gas at STP.  | Impacts on workers health and surrounding environment during operations.  | <ul style="list-style-type: none"> <li>Design chlorination facilities with equipment and facilities to ensure the protection of environment and workers</li> <li>For safe handling of chlorination, following design features should be considered as a minimum:               <ul style="list-style-type: none"> <li>Separate room for chlorination equipment will be provided. The room will be located in view of prevailing wind direction.</li> <li>The room will be equipped with inlet exhaust ventilation providing necessary exchange of air. The fan will discharge the air to the outside of the</li> </ul> </li> </ul>                          | Consultants <ul style="list-style-type: none"> <li>provide conceptual design incorporating mitigation measures;</li> </ul> Design-build contractors, if any, <ul style="list-style-type: none"> <li>provide detail design incorporating mitigation measures;</li> </ul> PIU <ul style="list-style-type: none"> <li>reviews conceptual and detail designs for compliance with mitigation measures</li> </ul> | Cost of consultants covered in the project budgets.<br><br>Required structures will be items included in costing of the construction budget. |

| Items of activity   | Potential Environmental Impacts | Proposed Mitigation Measures   | Responsible Entities   | Cost Estimation (\$)  |
|---|---------------------------------|--|--|---|
|   |                                 | <p>building and will not be connected to other exhaust system.</p> <ul style="list-style-type: none"> <li>- The room will have shatter-resistant inspection window mounted in the door or exterior wall.</li> <li>- The room will have locks so that it can be kept inaccessible to staff other than the operator of the equipment. The room door will open outward for easy exit in case of emergency.</li> <li>- Separate light and fan switches will be provided outside the room.</li> <li>- The room floor will have a non-slip surface and floor drains for spilled liquid.</li> <li>- A safety shower and eyewash will be provided near the chlorination room entrance.</li> <li>- The chlorination room will have continuous leak detection equipment with sound and visual warnings.</li> </ul> |  |   |
| Inadequate implementation of environmental requirements by contractor | Environmental pollution.        | <ul style="list-style-type: none"> <li>• Review of bidding and contract documents, to ensure sufficient leverage to facilitate compliance with specific contractual requirement, e.g. withholding of payment or penalty clauses, to ensure contractors' implementation of environmental mitigation measures.</li> <li>• Contracts to require contractor to have designated staff to oversee environmental issues and mitigation.</li> <li>• Contracts to include the requirement for the contractor to provide environmental induction training to all staff.</li> </ul>   | <p>Consultants</p> <ul style="list-style-type: none"> <li>• Review bidding and contract documents to ensure leverage options.</li> </ul> | <p>Cost of consultants covered in the project budgets<br/>Contractors' cost should be covered by contract sum, as it will be part of the contract requirements to follow EMP requirement.</p> |



| Items of activity  | Potential Environmental Impacts   | Proposed Mitigation Measures   | Responsible Entities   | Cost Estimation (\$)  |
|--|---|--|--|---|
| <b>Construction Project Stage</b>  |   |  |  |   |
| Contractor or workers not following contractual environmental requirements | Environmental pollution.  | <ul style="list-style-type: none"> <li>Monitor for contractors compliance with EMP requirements;</li> </ul>  | Technical Supervisor at site <ul style="list-style-type: none"> <li>ensures compliance with EMP PIU</li> <li>ensure monitoring of environmental requirements – by delegation to Environmental Specialist /Environment Focal Point of the PIU</li> </ul> PIU-Environment Focal Point <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP.</li> </ul>                         | Cost of construction supervision included elsewhere in project budget.  |
| Machines, equipment, and vehicles used for construction and transport      | Emissions from construction equipment exhaust; Dust from vehicles, land clearing, grading, excavation, etc; Noise and vibration from transport vehicles | <ul style="list-style-type: none"> <li>Excavated or stockpiled soil and sand shall be watered before loading, if there is a risk of dust generation, e.g. if it is fine materials or under windy conditions.</li> <li>Access roads passing through inhabited communities shall be watered to limit dust nuisance to roadside dwellings and mitigate road safety during transport of construction materials and equipment.</li> <li>Soil, sand and other construction materials on transport vehicles shall be covered.</li> <li>Speeds of such vehicles shall be limited, particularly on unpaved areas.</li> <li>All heavy equipment and machinery shall be fitted in full compliance with the national (SNPC) and local regulations with regards to emissions and noise.</li> <li>Fuel-efficient and well-maintained haulage trucks shall be employed to minimize exhaust emissions.</li> <li>Smoke-belching vehicles and</li> </ul> | Construction technical Supervisor <ul style="list-style-type: none"> <li>ensures compliance with EMP</li> <li>visually inspects safety equipment use, observes vehicle noise levels, etc.,</li> <li>check trucks entering site to assess emissions and licensing; etc</li> </ul> PIU-Environment Focal Point <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP</li> </ul> | Contractor's additional activities for EMP implementation already included in budget;<br>Cost of supervision included in project cost estimate<br>Cost of PIU supervision included elsewhere in project budget. |



| Items of activity | Potential Environmental Impacts | Proposed Mitigation Measures   | Responsible Entities | Cost Estimation (\$) |
|-------------------|---------------------------------|--|----------------------|----------------------|
|                   |                                 | <p>equipment shall not be allowed and shall be removed from the project sites.</p> <ul style="list-style-type: none"> <li>• Develop Traffic Management Plan to mitigate impact on local traffic conditions during construction.</li> <li>• Confine heavy construction related traffic to the least sensitive access roads to the construction sites to avoid accidents and nuisance to dwellers along the road and other road users ;</li> <li>• Require the owners of the transport vehicles to only use properly registered and well-maintained vehicles with mufflers to mitigate noise and emissions;</li> <li>• All vehicles shall be well-maintained and fitted in full compliance with the national (SNPC) and local regulations.</li> <li>• As a rule, the operation of heavy equipment shall be conducted in the time span 7am-7pm only unless otherwise agreed with local residents.</li> <li>• During nighttime (10pm to 7am) noise impact on sensitive areas, such as residential areas or hospitals shall not be more than 3dB above background noise levels, as measured at the nearest sensitive receiver (Leq15minutes) two weeks prior to the commencement of works.</li> <li>• Construction equipment, which generates excessive noise, such as compressors, jackhammers shall be enclosed to prevent noise nuisance.</li> <li>• Near sensitive locations, e.g.</li> </ul> |                      |                      |

| Items of activity            | Potential Environmental Impacts  | Proposed Mitigation Measures   | Responsible Entities   | Cost Estimation (\$)  |
|------------------------------|--|--|--|---|
|                              |  | <p>hospitals, schools, mosques, and schools, discuss and agree with the PIU – Environment Focal Point and the principals of the facilities the agreed time for operating noisy machinery.</p> <ul style="list-style-type: none"> <li>Minimize transportation during high traffic periods (e.g., when students are entering or leaving school) to minimize potential traffic accidents</li> </ul>   |  |   |
| Site preparation             | Erosion from site clearing, grading and excavation resulting in sedimentation of water bodies;                             | <ul style="list-style-type: none"> <li>Preserve existing ground cover wherever possible, and provide approved ground cover where necessary;</li> <li>Use appropriate stabilizing techniques to prevent cave-ins or landslides in excavated areas.</li> <li>Constructing buildings and facilities following the land protection activities stipulated in CNR 3.01.01-97 and CNR 3.05.03-97.</li> <li>If construction needs to take place during periods with expected rain, additional plan how to mitigate erosion and sedimentation must be agreed with PIU–Environment Focal Point prior to the work commences.</li> </ul> | <p>Specialist of technical inspection</p> <ul style="list-style-type: none"> <li>ensures compliance with EMP</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP</li> </ul> | <p>Contractor's additional activities for EMP implementation already included in budget;</p> <p>Cost of PIU supervision included elsewhere in project budget.</p>                             |
| Revegetation and landscaping | Erosion and sedimentation to water bodies, due to excessive clearing of vegetation or extended periods without vegetation. | <ul style="list-style-type: none"> <li>Prior to any clearing of vegetation, make a species inventory of the area to be cleared. Use vegetation inventory to identify appropriate local plant species to be used for revegetation.</li> <li>Avoid tree removal unless justified on engineering, safety, and environmental grounds.</li> <li>Store topsoil separately from other soil and re-use for revegetation upon completion of works.</li> <li>Monitor revegetation regularly, especially during initial growth to ensure</li> </ul>   | <p>Construction technical Supervisor</p> <ul style="list-style-type: none"> <li>ensures compliance with EMP</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP</li> </ul>  | <p>Expected that site cleaning, restoration and revegetation is included in contract estimate of the contract budget</p> <p>Cost of PIU supervision included elsewhere in project budget.</p> |

| Items of activity   | Potential Environmental Impacts  | Proposed Mitigation Measures  | Responsible Entities  | Cost Estimation (\$)   |
|---|--|---|---|--|
|   |  | <p>stable growth and lasting groundcover</p> <ul style="list-style-type: none"> <li>After civil work to create greenbelt of trees and shrubs on perimeter of STP to ensure esthetics of the area for adjacent residents.</li> </ul>   |   |  |
| Excavation for pipe-laying;<br>Road use for transport of material and equipment | <p>Damages to utilities by excavation;<br/>Temporary access cut-off to properties;<br/>Current access roads in poor condition may become worse due to construction vehicles.</p> | <ul style="list-style-type: none"> <li>Require contractors to carry out a utility survey before construction and take action during construction to minimize impact on utilities and attend to any damage;</li> <li>Provide temporary access during construction, if required;</li> <li>Contractor and PIU to ensure that coordination meetings are held and agreement has been obtained from Hokimiyat; prior to any construction beginning on the site</li> <li>Obtain permission for road use from relevant authorities and agreement to repair damages immediately after construction.</li> </ul> | <p>Construction technical Supervisor</p> <ul style="list-style-type: none"> <li>coordinates with PIU and relevant authorities and agencies.</li> <li>receives and records public complaints and resolves them</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors contractor's complaint resolution procedures and compliance with all provisions of the EMP</li> </ul> | <p>Contractor's additional activities for EMP implementation already included in budget;<br/>Cost of supervision included in contract cost estimate of the contract budget<br/>Cost of PIU supervision included elsewhere in project budget.</p> |
| Wastewater generated at construction site                                       | <p>Site rainwater runoff can wash away residues, garbage, leaves, grease, etc., thereby potentially polluting nearby surface water</p>   | <ul style="list-style-type: none"> <li>Store all liquid/solid waste properly above ground to avoid spills/ leaks;</li> <li>Store Haz-Mat, e.g. fuels, chemicals, and hazardous waste, in banded areas to avoid leaks escaping to the ground or nearby surface waters. Provide ample natural ventilation</li> <li>Develop spill response procedures and provide spill response kits at all Haz-Mat storage areas and work sites.</li> </ul>  | <p>Contractor's Site Supervisor</p> <ul style="list-style-type: none"> <li>ensures compliance with EMP</li> <li>periodic visual observation of run-off from construction sites</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP</li> </ul>  | <p>Contractor's additional activities for EMP implementation already included in budget;<br/>Cost of supervision included in cost estimate of the contract budget<br/>Cost of PIU supervision included elsewhere in project budget.</p>          |
| Solid Waste generated by construction activities                                | <p>Construction materials (wood, steel bar, cement, etc.), paper, packing, domestic/human waste from work sites causing environmental pollution and adverse aesthetic impact</p> | <ul style="list-style-type: none"> <li>Prior to start of construction, develop an inventory of waste fractions expected to be generated during construction for approval of disposal routes and sites by Hokimiyat and SES</li> <li>Provide refuse collection containers and used oil collection containers at all construction sites and labor camps.</li> <li>Sell paper, resin, iron, and steel and</li> </ul>   | <p>Technical Supervisor for construction process</p> <ul style="list-style-type: none"> <li>monitors waste stream to ensure maximum recycling.</li> <li>Ensures proper disposal</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions</li> </ul>  | <p>Contractors' cost included elsewhere in contract cost.<br/>Cost of PIU supervision included elsewhere in project budget.</p>  |

| Items of activity                         | Potential Environmental Impacts   | Proposed Mitigation Measures   | Responsible Entities   | Cost Estimation (\$)   |
|---|---|--|--|--|
|   |   | <p>other recyclable waste fractions to other enterprises for recycling.</p> <ul style="list-style-type: none"> <li>Dispose inorganic solid waste (concrete, bricks, etc.) properly after approval by Hokimiyat and SES.</li> <li>After completion of civil works, collect all garbage and waste construction materials from the sites, and dispose in specially designated places agreed by the SES</li> </ul>   | of the EMP   |  |
| Nuisance from Construction - complaints   | Nuisance and impacts from the construction activities to neighboring activities and households. | <ul style="list-style-type: none"> <li>Include in contract clauses to reflect this, including the contractor's responsibility to mitigate nuisances, noise, vibration, and dust impacts and other nuisances to neighbors.</li> <li>Ensure that contractor incorporates good construction management practices</li> <li>Ensure that contractor liaises with local community on approach to mitigation.</li> <li>Clarify by signboards on construction sites and/or stickers on equipment outlining how affected parties can lodge complaints.</li> <li>Ensure that contractor records complaints, response and resolution monitoring and includes complaints registration in regular progress reports.</li> </ul> | <p>Construction Technical Supervisor</p> <ul style="list-style-type: none"> <li>ensures good construction management</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP</li> </ul>   | No additional cost, for contract. Monitoring cost already in project budget<br>Cost of PIU supervision included elsewhere in project budget. |
| Use of local labor and from outside areas | Inadequate working and living facilities for workers  | <ul style="list-style-type: none"> <li>Construction sites <ul style="list-style-type: none"> <li>Provide adequate sanitary facilities, potable water supply, waste collection, portable/temporary toilets etc. on-site during construction.</li> </ul> </li> <li>Labor camps, if any <ul style="list-style-type: none"> <li>Provide adequate sanitary facilities, potable water supply, waste collection, etc.</li> <li>Test potable water supplies per Uzbek regulation</li> <li>Ensure that locations of all labor camps are approved by PIU -</li> </ul> </li> </ul>  | <p>Technical Supervisor for construction process</p> <ul style="list-style-type: none"> <li>ensures good construction management</li> <li>ensures adequate sanitary conditions for workers</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP</li> </ul> | Cost is included in the labor cost of the construction budget<br>Cost of PIU supervision included elsewhere in project budget.               |

| Items of activity               | Potential Environmental Impacts  | Proposed Mitigation Measures  | Responsible Entities  | Cost Estimation (\$)  |
|---------------------------------|--|---|---|---|
|                                 |  | <p>Environment Focal Point and Hokimiyat;</p> <ul style="list-style-type: none"> <li>Maximize use of local labor to minimize the need for temporary camps, and also to ensure socioeconomic benefit for the local population.</li> </ul>  |   |   |
| Use of labor from outside areas | Non-local construction crews may generate increased demand for camp followers, illegal drugs, gambling, etc. | <ul style="list-style-type: none"> <li>Maximize use of local laborers who will live at home during construction.</li> </ul>   | <p>Technical Supervisor for construction process</p> <ul style="list-style-type: none"> <li>ensures use of local labor</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP</li> </ul>  | No cost involved  |
| Workers' Safety                 | Inadequate safety during work  | <ul style="list-style-type: none"> <li>Contractor shall be required to use appropriate stabilizing techniques during excavations, especially during excavations for trenches to avoid cave-ins.</li> <li>Educate and train workers on regulations on work safety and risk prevention and to obey them</li> <li>Workers exposed to noise impact greater than 85 Db(A) shall wear hearing protection.</li> <li>Contractor shall make available all Personal Protection Equipment needed for workers, e.g. safety shoes, hard hats, safety glasses, and hearing protection</li> <li>Asbestos cement pipe provisions detailed under pre-construction project stage</li> </ul> | <p>Technical Supervisor for construction process</p> <ul style="list-style-type: none"> <li>ensures safe trenching methods</li> <li>ensures workers' safety</li> <li>ensure compliance with asbestos cement handling requirements</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP</li> </ul> | Cost of supervision included in cost estimate of the contract budget<br>Cost of PIU supervision included elsewhere in project budget.   |
| Physical Cultural resources     | Disturbance to PCR   | <ul style="list-style-type: none"> <li>Any known PCR shall be identified and marked prior to construction, in consultation with local expert prior to commencement of construction.</li> <li>A chance find procedure shall be in place prior to construction start and workers and site supervisors shall be familiarized with the procedure.</li> </ul>  | <p>Consultants</p> <ul style="list-style-type: none"> <li>Develops Chance Find Procedure.</li> </ul> <p>Construction technical Supervisor</p> <ul style="list-style-type: none"> <li>Ensures compliance with Chance Find Procedure during construction</li> </ul> <p>PIU-Environment Focal Point</p>  | Cost of consultants covered in the project budgets<br>Cost of supervision included in cost estimate of the contract budget<br>Cost of PIU supervision included elsewhere in project budget. |

| Items of activity                      | Potential Environmental Impacts   | Proposed Mitigation Measures   | Responsible Entities  | Cost Estimation (\$)   |
|--|---|--|---|--|
|  |   | <ul style="list-style-type: none"> <li>In case suspected PCR is found during construction appropriate local expert shall be consulted prior to advise on protective measures prior to continuation of the work.</li> </ul>   | <ul style="list-style-type: none"> <li>monitors contractor's compliance with all provisions of the EMP</li> </ul>   |  |
| <b>Maintenance Project Stage</b>       |   |  |   |  |
| Toxic material released to environment | Damage to the environment and to people handling Haz-Mat, e.g. chlorine.            | <ul style="list-style-type: none"> <li>Store all Haz-Mat in accordance with rules of storage of these substances.</li> <li>Develop spill response procedures and provide spill response kits at all Haz-Mat storage areas.</li> <li>Include routine training in proper handling of chlorine and other Haz-Mat in the O&amp;M staff training, which covers the full range of technical and management skills required to safely operate the STP;</li> <li>Regularly inspect all chlorine dosing equipment, storage facilities and safety equipment.</li> <li>Monitor all chlorine storage and dosing equipment and storage facilities for chlorine leaks.</li> </ul>                                | <p>Vodokanal plant manager</p> <ul style="list-style-type: none"> <li>ensures safe Haz-Mat handling and storage</li> <li>develops spill response procedure and provides spill response kits</li> <li>ensures that O&amp;M staff receives training in chlorination safety procedures from PIA</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors plant manager's compliance with all provisions of the EMP</li> </ul> | Operational cost and training cost included in annual recurrent budget of PIA; After rehabilitation for initial training of O&M staff appropriate expenditures included in project cost.                                 |
| Sludge handling at the STP             | Unsafe disposal of sediments and sludge from STP into water ways or the environment | <ul style="list-style-type: none"> <li>Solid wastes that are captured in the screen must be treated and disposed in specially designated areas agreed by the SES and Hokimiyat;</li> <li>Sand captured by the sand trap must be treated and disposed in a safe site agreed by the SES and Hokimiyat;</li> <li>Sediment processed in sludge drying bed can be used for fertilizing agricultural land, if analysis of samples confirm non-presence of toxic substances and as per Uzbek regulation.</li> <li>If analysis show toxic contents making it unsuited for fertilizing agricultural land, alternative disposal sites needs to be identified by agreement with Hokimiyat and SES.</li> </ul> | <p>Vodokanal plant manager</p> <ul style="list-style-type: none"> <li>ensures safe capture of waste water, sand, and sludge disposal</li> <li>ensures that O&amp;M staff receives training in sludge handling procedures from PIA</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors plant manager's compliance with all provisions of the EMP</li> </ul>  | Cost included in the annual recurrent budget of the implementing agency (Vodokanal) Rehabilitation of the laboratory including purchasing of new laboratory equipment for the STP at \$400,000 included in project cost. |

| Items of activity               | Potential Environmental Impacts  | Proposed Mitigation Measures   | Responsible Entities   | Cost Estimation (\$)  |
|---------------------------------|--|--|--|---|
| Effluent discharge from the STP | Contamination of water resources   | <ul style="list-style-type: none"> <li>Ensure effluent quality complies with national standards.</li> </ul>  | <p>Vodokanal plant manager</p> <ul style="list-style-type: none"> <li>ensures efficient operation of facilities that the effluent quality will be in compliance with standards of the State Nature Protection Committee</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors plant manager's compliance with all provisions of the EMP</li> </ul> | <p>Effluent quality monitoring cost included in budget of operating agency;</p> <p>Rehabilitation of the laboratory including purchasing of new laboratory equipment for the STP at \$400,000 included in project cost.</p> |
| Accidents                       | Risks to workers and facilities due to hazards related to fire and other disasters   | <ul style="list-style-type: none"> <li>Establish comprehensive safety regulations;</li> <li>Train and equip all O &amp; M staff to follow the regulations on occupational safety and risk prevention;</li> <li>Install proper alarm systems;</li> <li>Ground all electrical equipment and provide circuit breakers</li> <li>Provide back-up water supplies for fire fighting.</li> <li>Provide fire extinguishers at strategic locations around the site and monitor them for functionality</li> </ul> | <p>Vodokanal plant manager</p> <ul style="list-style-type: none"> <li>ensures that O&amp;M staff receives training in occupational safety from PIA</li> </ul> <p>PIU-Environment Focal Point</p> <ul style="list-style-type: none"> <li>monitors plant manager's compliance with all provisions of the EMP</li> </ul>  | <p>Cost involved in the annual budget of the implementing agency (Vodokanal)</p> <p>After rehabilitation for initial training of O&amp;M staff appropriate expenditures included in project cost.</p>                       |
| Contingency planning            | Emergency measures as to what options are available and what measures are to be followed in various emergency situations (emission of chlorine, fire and etc). | <ul style="list-style-type: none"> <li>Team of STP emergency situations should be established in the shortest time to identify a suitable solution to rectify the problem; When problem is identified and a solution is agreed upon, Vodokanal may involve for solution of emergency situation qualified specialists.</li> </ul>   | <ul style="list-style-type: none"> <li>O&amp;M staff and Vodokanal (technical specialists) jointly with relevant local authorities dealing with Health/ Science and Technology</li> </ul>  | <p>Vodokanal Contingency expenses:</p> <p>If reserve O&amp;M funds are insufficient, Vodokanal staff will work with the local authorities to meet supplemental funding.</p>   |

EMP = environmental management plan, EMU = Environmental Monitoring Unit, IFC = International Finance Corporation, HRD = Human Resources Department, LARF = land acquisition and resettlement framework, O&M = operation and maintenance, PIA = Project Implementing Agency, PIU = project implementation unit, SES = Sanitary and Epidemiological Services

### Attachment 3. Environmental Monitoring System as from IEE

| Mitigation Measure   | Parameters to be Monitored   | Location   | Measurements   | Frequency   | Responsibilities  | Cost   |
|--|--|--|--|---|---|--|
| <b>Construction Phase</b>  |  |  |  |   |   |  |
| Control of impacts of construction on people and environment                     | Dust, noise, transport, waste disposal, land clearing, utilities and traffic impacts                                   | All construction sites and access routes   | Visual observation and complaints by public                | Regularly during construction for compliance with the EMP requirements  | Work supervisors of the PIU and EMU   | Work supervisors are under project budgets for construction  |
| <b>Operation &amp; Maintenance Phase Wastewater Treatment</b>                    |  |  |  |   |   |  |
| Adequate treatment of wastewater before discharge                                | Parameters in accordance with SNPC WWTP effluent norms* and ADB/IFC  | Effluents released from the chlorine contact tank  | Laboratory analysis of samples at SNPC and WWTP Laboratory | In accordance with standard set by SNPC and standard operating procedures   | Provincial Goskomprirada and the Vodokanals (PIA)                           | There will be adequate laboratory facilities at WWTP after project completion for effluent analysis, SNPC has budgets for routine work on effluent quality measurement in their budget |
| Adequate treatment of industrial wastewater before discharge municipal sewerage  | Controlling parameters of industrial wastewater should meet household wastewater norms for inflow into sewerage system | Industries of Ferghana and Margilan cities discharging wastewater into municipal sewerage system | Laboratory analysis of samples at SNPC and WWTP Laboratory | Frequency is settled by Uzbekistan regulations in accordance with communal and environmental norms for inflor into sewerage | Provincial State Nature Protection Committee and the Vodokanals             | There will be adequate laboratory facilities at WWTP after project completion for effluent analysis, SNPC has budgets for routine work on effluent quality measurement in their budget |
| Assurance of quality of sludge for use as soil conditioner for agricultural land | Heavy metal and any other suspected toxic substance  | Sludge drying beds   | Stabilized dried sludge samples                            | Once for every batch of dried sludge and before use as soil conditioner for agricultural land                               | Vodokanals (PIA) Heavy metal analysis by specialized laboratory in Tashkent | There will be adequate laboratory facilities at WWTP after project completion for the analysis of sludge and other parameters  |

EMP = environmental management plan, EMU = Environmental Monitoring Unit, PIU = project implementation unit, SES = Sanitary and Epidemiological Services, SNPC = State Nature Protection Committee, WDU = water distribution unit.