

# SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT

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## # 11 Semi-annual Report

(Reporting Period: July-December 2023)

Project Number: 43405-027

**GEORGIA: URBAN SERVICES IMPROVEMENT INVESTMENT PROGRAM  
(TRANCHE 5)**

**(FINANCED BY THE ASIAN DEVELOPMENT BANK)**

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**For:** The Ministry of Regional Development and Infrastructure of Georgia and the Asian Development Bank

January 2024

## ABBREVIATIONS

<b>ADB</b>	Asian Development Bank
<b>CAP</b>	Corrective Action Plan
<b>DC</b>	Design Consultant
<b>DEPP</b>	Department of Environmental protection and Permit
<b>PMD</b>	Projects Management Department
<b>EA</b>	Executing Agency
<b>EARF</b>	Environmental Assessment and Review Framework
<b>EHS</b>	Environmental Health & Safety
<b>EIA</b>	Environmental Impact Assessment
<b>EIP</b>	Environmental Impact Permit
<b>EMP/ SSEMP</b>	Environmental Management Plan/ Site-Specific Environmental Management Plan
<b>ES/ EMS</b>	Environmental Specialist/ Environmental Monitoring Specialist
<b>GoG</b>	Government of Georgia
<b>GRC</b>	Grievance Redress Committee
<b>GRM</b>	Grievance Redress Mechanism
<b>IPMO</b>	Investment Program Management Office
<b>USIIP</b>	Urban Services Improvement Investment Program
<b>IA</b>	Implementing Agency
<b>IEE</b>	Initial Environmental Examination
<b>MFF</b>	Multi-tranche Financing Facility
<b>MoEPA</b>	Ministry of Environment Protection and Agriculture
<b>MoRDI</b>	Ministry of Regional Development & Infrastructure
<b>NEA</b>	National Environmental Agency
<b>SC</b>	Supervision Consultant
<b>TN</b>	Total Nitrogen
<b>TP</b>	Total Phosphorus
<b>USIIP</b>	Urban Sector Improvement Investment Program
<b>UWSCG</b>	United Water Supply Company of Georgia
<b>WS</b>	Water Supply
<b>WSS</b>	Water Supply & Sanitation
<b>WWTP</b>	Waste Water Treatment Plant

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## I. INTRODUCTION

### 1.1 Preamble

1. This report represents the Semi - Annual Environmental Monitoring Review (SAEMR) for the Urban Services Improvement Investment Program, Tranche 5 for the period of July-December 2023.
2. This report is the 13<sup>th</sup> Environmental Monitoring Review (EMR) of Tranche 5 under USIIP.

### 1.2 Headline Information

3. In the reporting period, civil work within the framework of the USIIP/T5 was not carried out, since all construction activities under REG-03a and ZUG-02 sub-projects have been completed in September 2021. During the reporting period, the Post-construction Environmental Audit was conducted under the ZUG-02 (construction of the sewerage System in Zugidi) and REG-03a (Construction of Waste Water treatment Plants in Zugdidi) sub-projects. The Post Construction Environmental Audit reports are attached to this SAEMR (please see Annex A and Annex B).

## II. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

### 2.1 Project Description

4. The Urban Services Improvement Investment Program was developed as the Government's response to the lack of adequate and/or safe water supply, sewerage and sanitation in urban areas of Georgia. This is intended to optimize social and economic development in selected urban areas through improved urban water and sanitation services, and is financed by the ADB through its Multi-tranche Financing Facility. The Ministry of Regional Development and Infrastructure is the Executing Agency and the "United Water Supply Company of Georgia", LLC is the Implementing Agency of the Investment Program. UWSCG is a 100% state-owned company.
5. The Investment Program improves infrastructure through the development, design and implementation of a series of subprojects, each providing improvements in a particular sector (water supply and/or sanitation) in one town. Sub-projects rehabilitate existing infrastructure and/or create new and expanded infrastructure to meet the present and future demand. Water supply improvements include source augmentation and head works, pumping systems, treatment facilities, transmission and distribution network; and, sewerage improvement works include sewer network, pumping stations, main collectors and waste water treatment plants.
6. **Tranche 5 of the Investment Program includes:**
  - Construction of Sewage System in Zugdidi (ZUG-02);
  - Construction of Wastewater Treatment Plants in Zugdidi (A) – REG-03a
  - Construction of Waste Water treatment Plant in Mestia (B) - REG-03b/MES-03

#### **The following projects are financed under Tranche 5:**

7. **Construction of Sewage System in Zugdidi (ZUG-02).** The Zugdidi wastewater project envisages the rehabilitation and extension of the sewer network with gravity sewers and pressure lines and the construction of wastewater pumping stations. The project measured for the sewer network comprise the laying of 160 km new gravity pipes (DN 100 to DN 800) and 9.7 km new pressure pipes (OD 110 and OD 630). There were 24 new wastewater pumping stations. The new network conveyed the wastewater to a new wastewater treatment plant, which was constructed under Reg-03 – Zugdidi (A) WWTP project.
8. The contract No P43405-ICB-Zug-02 was signed on February 1, 2017 with Ludwig Pfeiffer Hoch-und Tiefbau GmbH & Co.KG, initial completion date was 31st Jan 2020. The Contract has been extended till 2nd August 2021 through contract addendum no. 07 and was substantially completed by that date.

#### **Post Construction Environmental Audit under ZUG-02 Sub-project**

9. The Post Construction Environmental Audit was conducted by Supervision Consultant – Posch and Partners Consulting Engineers in October 2023 under ZUG-02 sub-project, the main findings of the report are presented below and the Post-construction audit report is attached to this SAEMR (please see Annex A).
10. The above noted Audit has been carried out in order to eradicate a number of mitigation measures and possible problems under ZUG-02 sub-project, therefore proper and timely implementation of correction actions will significantly reduce the expected negative future impact.

11. Most of the predicted impacts are associated with the unsecured manholes and failure to perform periodical maintenances, it look like that area is abandoned. In addition, it seems that abundant atmospheric precipitation and intense snow melting and consequently water erosion to the river bank, has to be better considered during detailed engineering and better protected during the construction. More detailed information about the identified impacts and the mitigation measures to be implemented are presented in Annex A to this report.
12. **Construction of Wastewater Treatment Plant in Zugdidi (REG-03a).** The project comprises of the construction of new Wastewater Treatment Plant with the capacity of 22,000 m<sup>3</sup>/day.
13. The contract No UWSCG-USIIP-ICB-REG-03a was signed on February 1, 2017 with “JV “Pfeiffer - EMIT” comprised by “Ludwig Pfeifer Hoch – and Tiefbau GmbH Co. KG (Germany)” and “EMIT Group – Ercole Marelli Impianti Tecnologici S.r.l. (Italy)”, completion date was: September 2021. Construction activities on REG-03a sub-project are completed. At this stage commissioning works are on-going.

### **Post Construction Environmental Audit under REG-03a Sub-project**

14. Post Construction Environmental Audit under the REG-03a sub-project was conducted by UWSCG/USIIP Environmental Specialist Ms. Kate Chomakhidze in November 2023.
15. The above noted Audit has been carried out in order to eradicate a number of mitigation measures and possible problems under REG-03a sub-project, therefore proper and timely implementation of correction actions will significantly reduce the expected negative future impact.
16. Most of the predicted impacts are associated with the sludge management during the Zugdidi WWTP operation. Currently sludge dewatering equipment is not fully operational and from the sludge line only the mechanical pre-thickening is operating. For the safe operation of the digester the boiler and the gas line is missing, therefore without these it was not permitted to operate the digester with pre-thickened sludge.
17. The contractor - “Pfeiffer - EMIT” left the site at the end of 2021 due to bankruptcy in December 2021. There were not any construction activities and physical progress and therefore did not complete most parts of the sludge treatment stages. The contractor only completed the pre-thickening stage, all other stages for sludge treatment remain uncompleted and are not commissioned.
18. With the present status, it is impossible to extract sludge from the system, only liquid can be extracted. Since August 2022 one out of two fine screens is not operative anymore. It is mechanically damaged and there is no contractor to repair or exchange them. However, the screens have been investigated and it is clear which parts would be needed that so that UWSCG can repair them.
19. As there is no contractor available any more emergency measures provided in paragraph 20 below were implemented by UWSCG through the Consulting service under the contract with the supervision consultant - Posch&Partners Consulting Engineers.
20. To address the above-mentioned non-compliances, including the completion of the centrifuge, the gas line, the heating system for digester and the gas holder, as well as ensuring smooth operation of the fine screen, UWSCG and SC/Posch have decided to go for local contract of all works and services, which will take approximately 4-6 months. To

achieve this goal, at the end of January 2024, the Supervision Consultant/ Posch prepared and submitted to the UWSCG tender documents for the emergency procurement of all the above services and works, which will ensure that all defects are eliminated, including sludge dewatering and that all problems identified during the preliminary commissioning of the WWTP will be finally improved (for more details please see Annex B – Post-construction Audit Report for REG-03a sub-project).

- 21. Construction of Wastewater Treatment Plant in Mestia (REG-03b).** The project comprises of the construction of new Wastewater Treatment Plant with the capacity of 3,200 m<sup>3</sup>/day.
- 22.** The contract No UWSCG-ICB-MES-03-2019 was signed on 5 November 2019 with “JV of Toshiba Water Solutions Pvt. Ltd and IN-SI” LLC (India/Georgia)”. Contract completion date was April 2021. The contract became formally effective by 12th Dec 2019 after the Contractor agreed to postpone one of the preconditions for effectiveness, the “irrevocable confirmed letter of credit” to be submitted later (e.g. after design phase). The resulting initial contractual completion date was 04th June 2021. But no teams have been mobilized to Mestia, no site establishments for the contractor have been erected. There was delay in preparing final design of the Waste Water Treatment Plant in Mestia as well. Finally Contract activities were stopped.

## 2.2 Project Contracts and Management

- 23.** The main institutions that are involved in implementation of the EMP are UWSCG executing agency (EA), Supervision Consultant (SC) the Contractor and to a lesser extent the Ministry of Environment and Natural Resources Protection (MoENRP).
- 24.** The Investment Program Management Office (IPMO) under UWSCG which is the Donors Funded Project Management Department, is responsible for the day-to-day management of the project, including the implementation of the EMP. IPMO has an Environmental Specialist who is responsible for managing the environmental aspects of the USIIP. The head of the department is Ms.Irina Chikhladze.
- 25.** The IPMO Environmental Specialist (Ms.Kate Chomakhidze) responsibilities in respect of implementation of the EMP are as follows:
  - (i) Approve the Site-Specific Environmental Management Plan (SSEMP) before Contractor takes possession of construction site;
  - (ii) Monitor implementation of EMP and ensure the environmental safeguards compliance;
  - (iii) Review the updated IEE and/or SEMP and send it for clearance to ADB;
  - (iv) Ensure that contractors have access to the EMP and IEE report;
  - (v) Finalize SAEMRs (and Final EMRs upon project completion), send it to ADB and address potential ADB’s comments until SAEMR disclosure; Provide ENG and GEO final versions of SAEMRs to be uploaded on UWSCG website;
  - (vi) Review and approve the Corrective Action Plan and provide to ADB for review and comments if any;
  - (vii) Participate in public consultations during project implementation;
  - (viii) In case of need assist IPMO Social/Resettlement Consultant in resolving process of environmental safeguards related complaints;
  - (ix) Assist in organizing trainings for the Contractors in coordination with ADB/RETA consultant;

(x) Participate in external trainings in environmental management and environmental auditing

26. The SC's team includes a full time Environmental Specialist to assist the IPMO supervise and monitor implementation of the EMP during construction.
27. The Contractors under USIIP/T5 also appoint a full time Environmental specialists to be a senior member of the construction management team based on site for the duration of the contract. The ESs a university degree in Environmental Science and related discipline and have about 10 years work experience in environmental management of infrastructure project
28. Department of Permits, Environmental Protection and Social Affairs is working alongside IPMO to address the environmental and social issues of USIIP. The head of the department is Ms. Maka Goderdzishvili. The Department of Environmental Protection have two divisions, the Division of Permits and the Division of Environmental Protection and Social Affairs. Ms. Salome Mosidze is the Head of the Division of Environmental Protection and Social Affairs. More detailed description of implementation arrangements; responsibilities and staffing are provided in the Table 1 below.



**Table 1: Institutional Arrangement, Responsabilités and Staffing**

#	Millstones/Actions	Contractor (Environmental Specialist)	Construction Supervision Consultant (Environmental Specialist)	IPMO (Environmental Specialist)	Department of Permits, Environmental Protection and Social Affairs (Environmental Specialist)
1	<b>Environmental planning and management Contractors Environmental Management Plan (site-specific EMP)</b>	Prepare Specific EMP (SEMP) with supplemented Topic Specific EMPs at pre-construction stage based on IEE/EMP Implement SEMPs approved by IPMO.	Review and endorse the SEMPs; Monitor implementation of SEMPs on daily basis; Monitor monthly environmental monitoring reports or results prepared by the Contractor and report to IPMO.	Review and approve the SEMPs; Monitor implementation of EMP and ensure the environmental safeguards compliance.	Work together with IPMO on addressing the environmental non-compliance issues, if any.
2	<b>Changes in design</b>	Provide details of design changes to CSC required to update IEE/EIA, or SEMPs; Implement updated SEMPs.	Approve the design change to be submitted to IPMO; Make environmental assessment of the change and update the IEE and/or SEMPs.	Review the updated IEE and/or SEMPs and send it for clearance to ADB	Liaise with CSC in preparing updated IEE and/or SEMPs; Upload the approved IEE/SEMP provided by IPMO to UWSCG website for Public Disclosure.
3	<b>Unanticipated impacts</b>	Inform CSC about unanticipated impact and follow the instructions received from IPMO.	Make environmental assessment of the unanticipated impact and update the IEE and/or SEMPs	Review the updated IEE and/or SEMPs and send it for clearance to ADB	Liaise with CSC in preparing updated IEE and/or SEMPs

#	Millstones/Actions	Contractor (Environmental Specialist)	Construction Supervision Consultant (Environmental Specialist)	IPMO (Environmental Specialist)	Department of Permits, Environmental Protection and Social Affairs (Environmental Specialist)
4	<b>Reporting</b>	Prepare monthly environmental monitoring reports and send it to CSC and IPMO	<ol style="list-style-type: none"> <li>1. Prepare inputs to environmental part of quarterly construction progress reports;</li> <li>2. Prepare inputs to semi-annual environmental monitoring report (SAEMR) to be submitted to IPMO for further review, comments and improvement.</li> <li>3. Conduct Post-Construction Final Environmental Audit and prepare final environmental audit report.</li> </ol>	<ol style="list-style-type: none"> <li>1. Finalize SAEMRs (and Final EMRs upon project completion), send it to ADB and address potential ADB's comments until SAEMR disclosure;</li> <li>2. Provide ENG and GEO final versions of SAEMRs to be uploaded on UWSCG website.</li> </ol>	Upload the approved reports (ENG and GEO) provided by IPMO to UWSCG website for Public Disclosure
5	<b>Permits and clearances</b>	NA	NA	NA	Obtaining environmental permits and clearances
6	<b>Non-compliances</b>	Prepare a corrective action plan (CAP)	Assist contractor in preparing the CAP.	Review and approve the CAP and provide to ADB for review and comments if any.	
7	<b>Public consultations</b>	Participate in public consultations during project implementation	Organize public consultations: inform people about activities and prepare the record of consultations.	Participate in public consultations during project implementation	UWSCG & IPMO host PCs, CSC will present the topics related to environmental issues

#	Millstones/Actions	Contractor (Environmental Specialist)	Construction Supervision Consultant (Environmental Specialist)	IPMO (Environmental Specialist)	Department of Permits, Environmental Protection and Social Affairs (Environmental Specialist)
8	<b>Grievance Redress Mechanism</b>	Project site Focal person to record environmental grievances in the logbook and follow up with UWSCG established practice for grievance redress	<ol style="list-style-type: none"> <li>1. Ensure that grievances, if any, are being properly documented and addressed timely and effectively.</li> <li>2. Assist IPMO to develop consolidated GRM database and consolidation of GRM cases both for ENV and Social safeguards</li> </ol>	In case of need assist IPMO Social/Resettlement Consultant in resolving process of environmental safeguards related complaints; Assist IPMO Social/Resettlement Consultant in GRM database consolidation and data analysis.	UWSCG maintains GRM applicable to all projects. UWSCG will ensure IPMO information on grievances is consolidated into the UWSCG grievances (both - environmental and social) without duplication.
9	<b>Trainings</b>	Attend on-site trainings organized by IPMO and ADB/RETA Consultant	Assist the IPMO in organization of trainings for the Contractors on environmental safeguards requirements.	Organize trainings for the Contractors in coordination with ADB/RETA consultant. Participate in external trainings in environmental management and environmental auditing	Participate in external trainings in environmental management and environmental auditing

29. Main organizations involved in the USIIP/T5 and related to environmental safeguard are presented in the table 2 below:

**Table 2: List of Main Organizations under USIIP/T5**

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Lender	Asian Development Bank	Country Environmental Focal	Ninette R. Pajarillaga E-mail: npajarillaga@adb.org
		Associate Safeguards Officer Georgia Resident Mission Asian Development Bank	Nino Nadashvili Tel: +995 595 070442 <a href="mailto:nnadashvili@adb.org">nnadashvili@adb.org</a>
		ADB RETA, Environmental Consultant	George Kobaladze Tel: +995 599 689834 E-mail <a href="mailto:gkobaladze.consultant@adb.org">gkobaladze.consultant@adb.org</a> , <a href="mailto:me">me</a>
Borrower	UWSCG	UWSCG, Department of Environmental Protection and Permits, Head	Ms. Maka Goderdzishvili Tel: +995 599 229925 E-mail: <a href="mailto:m.goderdzishvili@water.gov.ge">m.goderdzishvili@water.gov.ge</a>
		UWSCG/IPMO Donor Funded Project Management Department, Acting Head	Ms. Irine Chikhldaze Tel: +995 598 179898 E-mail: <a href="mailto:ana.onashvili@water.gov.ge">ana.onashvili@water.gov.ge</a>
Borrower	UWSCG/USIIP/T5	Environmental Specialist	Ms. Ketevan Chomakhidze Tel: +995 577 380309 E-mail: <a href="mailto:Chomakhidzek@yahoo.com">Chomakhidzek@yahoo.com</a>

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Supervision Consultant	Posch&Partners Consulting Engineers	Environmental Specialist:	Ms. Eliso Barnova Tel: +995 551 300112 E-mail: <a href="mailto:tikozhizhiashvili@yahoo.com">tikozhizhiashvili@yahoo.com</a>
Contractor ZUG-02	Ludwig Pfeiffer Hoch-und Tiefbau GmbH & Co.KG	Environmental H&S Specialist	Mr. Nikoloz Neparidze Tel: +995 599 346821 E-mail: <a href="mailto:nikoloz.neparidze@ludwigpfeiffer.com">nikoloz.neparidze@ludwigpfeiffer.com</a>
Contractor REG-03a	JV "Pfeiffer - EMIT" comprised by "Ludwig Pfeiffer Hoch – and Tiefbau GmbH7Co. KG (Germany)" and "EMIT  Group – Ercole Marelli Impianti Tecnologici S.r.l. (Italy)	Environmental H&S Specialist  H&S Specialist	Mr. Nikoloz Neparidze Tel: +995 599 346821 E-mail: <a href="mailto:nikoloz.neparidze@ludwigpfeiffer.com">nikoloz.neparidze@ludwigpfeiffer.com</a>  Mr. Irakli Abuladze Tel: +995 568 012858 E-mail: <a href="mailto:irakli.abuladze.1974@gmail.com">irakli.abuladze.1974@gmail.com</a>

### 2.3 Project Activities During Current Reporting Period

30. In the reporting period, construction works under USIIP/T5 were not carried out, since all construction works under REG-03a and ZUG-02 have already been completed, and construction works on REG-03b: Construction of WWTP in Mestia has not been started (for detailed information please see para 4 above).

### 2.4 Description of Any Changes to Project Design

N/A

### 2.5 Description of Any Changes to Agreed Construction methods

N/A

### **III. ENVIRONMENTAL SAFEGUARD ACTIVITIES**

#### **3.1 General Description of Environmental Safeguard Activities**

**31.** No construction activities have been implemented during the reporting period under USIIP/T5.

#### **3.2 Site Audit**

**32.** Post-construction environmental audits were carried out under REG-03a and ZUG-02 sub-projects in November-December 2023. The main findings and recommendations of these reports are presented in Annex A and B to this report.

#### **3.3 Issues Tracking (Based on Non-Conformance Notices)**

N/A

#### **3.4 Trends**

N/A

#### **3.4 Unanticipated Environmental Impacts or Risks**

N/A

## IV. RESULTS OF ENVIRONMENTAL MONITORING

### 4.1 Overview of Monitoring Conducted during Current Period

33. No Environmental quality measurements were carried out during the reporting period under USIIP/T5, since all construction works under REG-03a and ZUG-02 have already been completed, and construction works on REG-03b (MES-03) has not been started.
34. Noise and air pollution standards defined by IFC/WHO 1999, are presented in the Table 3 and 4 below.

**Table 3: Noise Level Guidelines**

Noise	dBA		dBA	
	National Regulations		WHO	
Receptor	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00	Daytime 07:00- 22:00	Nighttime 22:00- 07:00
Residential; institutional; educational	55	45	55	45
Industrial; commercial	70	70	70	70

35. Air pollution standards by IFC/WHO 1999, are presented in the Table 4 below.

**Table 4: Air pollution Guidelines**

Contaminants	IFC/WHO Guideline Value (Limit mg/m <sup>3</sup> )
1	2
Inorganic dust	(*IFC does not have a standard for "inorganic dust". Instead IFC applies standards for PM2.5 and PM10). PM10 – 0,02/1 Year 0,05/24 Hour PM2,5-0,01/1 Year 0,025/24 Hour
Carbonic monoxide	n/a
Nitrogen dioxide (NO <sub>2</sub> )	0,2/ 1 Hour 0,04/1 Year
Aldehyde	n/a

36. No Environmental quality measurements were carried out during the reporting period due to completion of all construction activities under USIIP/T5 and therefore nothing is reported in this SAEMR.

## **4.2 Trends**

N/A

## **4.3 Summary of Monitoring outcomes**

N/A

### **4.4 Material resources Utilization**

#### **4.4.1 Current Period**

N/A

#### **4.4.2 Cumulative Resources Utilization**

N/A

### **4.5 Waste Management**

#### **4.5.1 Current Period**

N/A

#### **4.5.2 Cumulative Waste Generation**

N/A

## **4.6 Health and Safety**

### **4.6.1 Community Health and Safety**

N/A

### **4.6.2 Worker Safety and Health**

N/A

## **4.7 Training**

N/A



## V. FUNCTIONING OF THE SEMP

### 5.1 SEMP Review

37. SEMP for Zugdidi WWTP under Reg-03/a sub-project was prepared in 13 March 2018 and further updated in January 2020 due to the changes in project design, defined under the Variation Order #1, construction of the 105m long Bypass.
38. SEMP for ZUG-02 sub-project was prepared in April 2018 and further updated in January 2020 due to the changes to the project design defined under the Variation Order #5: construction of two new sewage pumping stations, construction steel bridge structure across the river Chkhoushia for 200 mm diameter steel casing pipe and construction of 500 mm pipe including steel casing for the western collector river crossing and reinstatement asphalt works, demolition and removal of existing manholes, connection of new pipelines to existing sewer manholes and replacing non-functional manhole covers on old lines.
39. All SSEMPs under USIIP/T5 were prepared by Contractor, endorsed by SC, approved by UWSCG and reviewed/commented by the RETA Regional Environmental Consultant of ADB under RETA 8663.

## VI. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

### 6.1 Good Practice

N/A

### 6.2 Opportunities for Improvement

N/A

## VII. SUMMARY AND RECOMMENDATIONS

### 7.1 Summary

40. During the reported period no construction activities were implemented under USIIP/T5 sub-projects, since all construction activities under these sub-projects have been already completed.
41. Construction work under the REG-03b (MES-03) sub-project has not started as yet, as the design project of the WWTP in Mestia was not completed during the reporting period. Finally Contract activities were stopped.
42. During the reporting period the Post-construction Environmental Audits were carried out under REG-03a and ZUG-02 sub-projects in November-December 2023. The main findings and recommendations of these reports are presented in Annex A and B to this SAEMR.

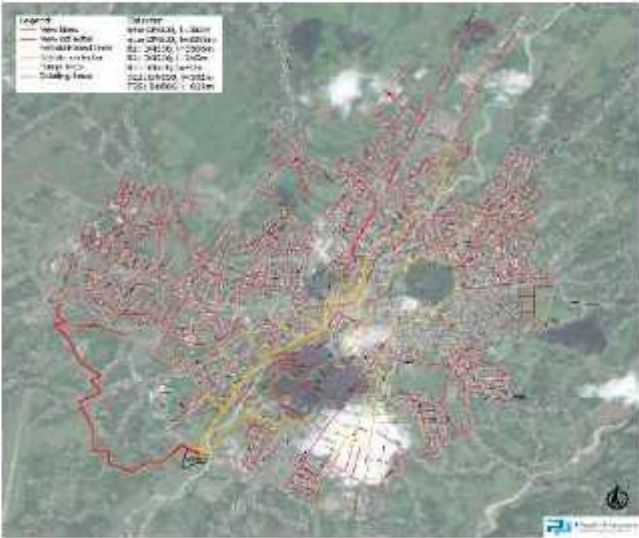
# ANNEXES

# ANNEX A: POST CONSTRUCTION ENVIRONMENTAL AUDIT REPORT, ZUG-02



ADB Project No: 43405-027  
The contract No: P43405-ICB-Zug-02  
Financed by: The Asian Development Bank

## Urban Services Improvement Investment Program Tranche 5 Project: Construction of Sewage System in Zugdidi



### Post - Construction Environmental Audit Report

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**ABBREVIATIONS**

<b>ADB</b>	Asian Development Bank
<b>CAP</b>	Compensation Action Plan
<b>EA</b>	Executing Agency
<b>EHS</b>	Environmental Health & Safety
<b>EIA</b>	Environmental Impact Assessment
<b>EIP</b>	Environmental Impact Permit
<b>EMP/ SSEMP</b>	Environmental Management Plan/ Site-Specific Environmental Management Plan
<b>EMS</b>	Environmental monitoring System
<b>ES</b>	Environmental Specialist
<b>GoG</b>	Government of Georgia
<b>IA</b>	Implementing Agency
<b>IEE</b>	Initial Environmental Examination
<b>MoEPA</b>	Ministry of Environment Protection and Agriculture of Georgia
<b>MoRDI</b>	Ministry of Regional Development & Infrastructure
<b>SDP</b>	Sector Development Program
<b>UWSCG</b>	United Water Supply Company of Georgia
<b>WS</b>	Water Supply
<b>WSS</b>	Water Supply and Sanitation Service
<b>WWTP</b>	Waste Water Treatment Plant

## I. INTRODUCTION

1. This report represents the Post Construction Environmental Audit Report for Urban Services Improvement Investment Program (USIIP) Tranche 5 - Construction of Sewage System in Zugdidi (ZUG-02).
2. This Post Construction Audit Report is being prepared to comply with the 2009 ADB's SPS and Georgian legislation, including safeguards requirement and aims to identify past and present concerns from the production and business activities of Project Company that related to impacts on environment. The specific objectives of the audit can be summarized as follows:
  - Determine and verify whether all environmental requirements, criteria and constraints, prescribed in IEE and SSEMP have been adhered to during the construction phase.
  - Determine and verify whether the mitigation actions and rehabilitation requirements contained in the SSEMP have been appropriate and successful to prevent or control environmental pollution and/or damage.
  - Ensure that an appropriate environmental monitoring and control program exists to follow up on mitigation and rehabilitation works completed during the construction phase.
  - To identify any shortcomings in the SSEMP and EMS system implemented during the construction phase and to recommend alterations to the EMS applicable to the operational phase.



## II. PROJECT DESCRIPTION

3. The Urban Services Improvement Investment Program was developed as the Government's response to the lack of adequate and/or safe water supply, sewerage and sanitation in urban areas of Georgia. This is intended to optimize social and economic development in selected urban areas through improved urban water and sanitation services, and is financed by the ADB through its Multi-tranche Financing Facility. The Ministry of Regional Development and Infrastructure is the Executing Agency and the United Water Supply Company of Georgia, LLC is the Implementing Agency of the Investment Program. UWSCG is a 100% state-owned company.
4. The Investment Program improve infrastructure through the development, design and implementation of a series of subprojects, each providing improvements in a particular sector (water supply and/or sewerage) in one town. Subprojects rehabilitate existing infrastructure and/or create new and expanded infrastructure to meet the present and future demand. Water supply improvements include source augmentation and head works, pumping systems, treatment facilities, transmission and distribution network; and, sewerage improvement works will include sewer network, pumping stations, main collectors and waste water treatment plants.

### 2.1 Category of Project

5. Based on the existing ADB Environmental Safeguards Policy (2009), this Project falls under ADB's project Category B. According to ADB SPS 2009 proposed project can be classified as Category B due to the following reasons:
  - adverse environmental impacts are less adverse than those of category A projects;
  - these impacts are site-specific, few if any of them are irreversible, and
  - in most cases mitigation measures can be designed more readily than for category A projects.
6. An initial environmental examination is required for category B projects. A category is assigned to a project by its most sensitive component, therefore, all of the outputs and activities to be undertaken under the Project fall under Category B as well.

## 2.2 Description of the ZUG-02 Sub-project

7. Construction of Sewage System in Zugdidi (ZUG-02) sub-project envisaged the rehabilitation and extension of the sewer network with gravity sewers and pressure lines and the construction of wastewater pumping stations. The project measured for the sewer network comprise the laying of 160 km new gravity pipes (DN 100 to DN 800) and 9.7 km new pressure pipes (OD 110 and OD 630). There were 24 new wastewater pumping stations. The new network conveyed the wastewater to a new wastewater treatment plant, which was constructed under Reg-03 – Zugdidi WWTP project.
8. The contract No P43405-ICB-Zug-02 was signed on February 1, 2017 with Ludwig Pfeiffer Hoch-und Tiefbau GmbH & Co.KG, initial completion date was 31st Jan 2020. The Contract has been extended till 2nd August 2021 through contract addendum no. 07 and was substantially completed by that date.

### 1.3 Main Stakeholders of the Project

9. The main institutions that are involved in implementation of the EMP are: executing agency (EA) - United Water Supply Company of Georgia (UWSCG), Supervision Consultant (SC) - Posch&Partners Consulting Engineers, the Construction Contractor - Ludwig Pfeiffer Hoch-und Tiefbau GmbH & Co.KG and to a lesser extent the Ministry of Environmental Protection and Agriculture (MoEPA). Investment Program Management Office (IPMO) established within UWSCG is responsible for the day-to-day management of the project including implementation of the EMP. The IPMO has an Environmental Specialist – Ketevan Chomakhidze who is responsible for management of the environmental aspects of USIIP, Tranches 1-6 of USIIP.
10. The SC included a full time Environmental Specialist Ms.Eliso Barnovi to assist the IPMO supervise and monitor implementation of the EMP during construction. Department of Permits, Environmental Protection and Social Affairs of UWSCG work together with IPMO on addressing the Environmental Safeguard issues of USIIP.
11. Environmental issues arising from the construction activities were immediately brought to the attention of the construction supervision team to coordinate efforts in order to immediately mitigate impacts, protect the environment, and safeguard the health and welfare of the local communities. All these are to be conducted within the framework of the overall construction management and supervision.
12. Main organizations involved in the project and related to environmental safeguards are presented in the Table 1 below:

Table 1. List of contracts under the Project, USIIP/T5

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Lender	Asian Development Bank	Country Environmental Focal	Ninette R. Pajarillaga E-mail: <a href="mailto:npajarillaga@adb.org">npajarillaga@adb.org</a>
		Associate Safeguards Officer Georgia Resident Mission Asian Development Bank	Nino Nadashvili Tel: +995 595 070442 E-mail: <a href="mailto:nnadashvili@adb.org">nnadashvili@adb.org</a>
		ADB RETA, Environmental Consultant	George Kobaladze Tel: +995 599 689834 E-mail: <a href="mailto:gkobaladze.consultant@adb.org.me">gkobaladze.consultant@adb.org.me</a>
Borrower	UWSCG	UWSCG, Department of Environmental Protection and Permits, Head	Ms. Maka Goderdzishvili Tel: +995 599 229925 E-mail: <a href="mailto:m.goderdzishvili@water.gov.ge">m.goderdzishvili@water.gov.ge</a>
		UWSCG/IPMO Donor Funded Project Management Department, Acting Head	Ms. Irine Chikhladze Tel: +995 598 179898 E-mail: <a href="mailto:ana.onashvili@water.gov.ge">ana.onashvili@water.gov.ge</a>

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Borrower	UWSCG/USIIP/T5	Environmental Specialist	Ms. Ketevan Chomakhidze Tel: +995 577 380309 E-mail: <a href="mailto:Chomakhidzek@yahoo.com">Chomakhidzek@yahoo.com</a>
Supervision Consultant	Posch&Partners Consulting Engineers	Environmental Specialist:	Ms. Eliso Barnova Tel: +995 551 300112 E-mail: <a href="mailto:tikozhizhishvili@yahoo.com">tikozhizhishvili@yahoo.com</a>
Contractor ZUG-02	Ludwig Pfeiffer Hoch-und Tiefbau GmbH & Co.KG	Environmental H&S Specialist	Mr. Nikoloz Neparidze Tel: +995 599 346821 E-mail: <a href="mailto:nikoloz.neparidze@ludwigpfeiffer.com">nikoloz.neparidze@ludwigpfeiffer.com</a>
Contractor REG-03a	JV "Pfeiffer - EMIT" comprised by "Ludwig Pfeiffer Hoch – and Tiefbau GmbH7Co. KG (Germany)" and "EMIT  Group – Ercole Marelli Impianti Tecnologici S.r.l. (Italy)	Environmental H&S Specialist  H&S Specialist	Mr. Nikoloz Neparidze Tel: +995 599 346821 E-mail: <a href="mailto:nikoloz.neparidze@ludwigpfeiffer.com">nikoloz.neparidze@ludwigpfeiffer.com</a>  Mr. Irakli Abuladze Tel: +995 568 012858 E-mail: <a href="mailto:irakli.abuladze.1974@gmail.com">irakli.abuladze.1974@gmail.com</a>

### III. LOCATION OF PROJECT

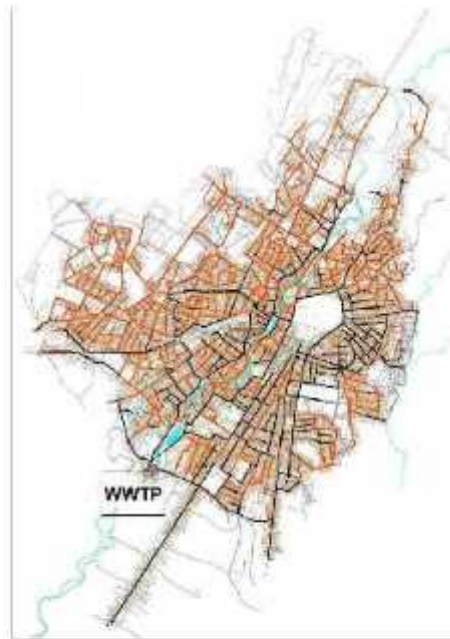
13. This project is located in Zugdidi, in the western part of the country in the Georgian historical province of Samegrelo, approximately 346 km west of Tbilisi, the capital of Georgia and 30 km east of Black Sea coast. The Zugdidi is a capital of Samegrelo-Zemo Svaneti region, the fifth largest city of Georgia and is located on the left bank of the Chkhoushi River. The total population of the town was 69,744 as per 2010 census. The total area of Zugdidi Municipality is 16.85 km<sup>2</sup> at approximate altitude of the 80 – 120 meters above sea level.

**MAP 1: Location of Zugdidi**



14. The design of the Zugdidi sewage collection system is presented in the map below.

**MAP 2: Design of Zugdidi Sewerage System**



#### IV. SUMMARY OF PREVIOUS ENVIRONMENTAL AUDIT

15. In February 2017- August 2021, in the construction phase of Zugdidi Sewerage System, the environmental monitoring was conducted by several organizations, namely - ADB, Supervision Consultant (CSC), Construction Contractor (CC) and UWSCG/USIIP. A total of 20 Site visit have been carried out during the construction period of ZUG-02 sub-project and a total 20 non-compliances were identified during these site visits in 2017-2021. The Non-compliances revealed during the construction process under ZUG-02 sub-project are attached to this document, the identified non-compliances during the site visits were as follows:

- There were some oil spillages at some areas;
- Oil-based canisters scattered at the construction site, which are located next to the public yards, streets, open spaces;
- Deep trenches (>1.5m) were not strengthened by boards;
- No walkways/planks across trenches were available;
- Surplus waste soil were piled up at different areas;
- Soil and debris were found on commute routes to sites;
- No safety and informatics signs at site;
- Some areas at site, require adequate lighting;
- Residents around the site were not informed about the nature and duration of any work in advance.

#### V. AUDIT RESULTS

16. The Contractor had to design and build a Sewage System in Zugdidi (ZUG-02 sub-project) under the USIIP/T5 required to transfer sewage into the new constructed WWTP in Zugdidi (USIIP/T5/REG-03a), according to the European standard. Contract was signed with JV Ludwig Pfeiffer Hock und Tiefbau GmbH & Co. KG and ProtecnoSrl. The Post Construction Environmental Audit of the ZUG-02 sub-project was conducted in October 2023 by the supervision consultant Posch and Partners.

17. Following non-compliances were identified during the post construction environmental

- In general, no signs, information and Specification plate, warnings and numbering are available on manholes and stations. (see Pic 1-3).



- Some of manholes do not have a cover (see Pic 4 to 6).





- Previous piping system of old plant has not been removed or blocked (see Pic 7 -8).



- A few constructed manholes are blocked therefore sewage water is flowing out of the system into the surrounding and river; (see Pic 9 to 11).



- Surplus waste soil and debris were piled up at different areas (see Pic 12 - 13).



- Due to abundant atmospheric precipitation and intense snow melting since the construction of the project, the width of the Mestiachala River has increased therefore distance of a few manholes decrease below required standard. (see Pic 14 to 16).



- Cement blocks near river acting as a barrier are damaged (see Pic. 17)



- Un-fenced / un secured Pipeline cross river (see Pic. 18,19)







- An old ruined toilet used by students of the nearby school (see pic. 20,21)





## VI. CONCLUSIONS AND RECCOMENDATIONS:




18. This audit has been carried out in order to eradicate a number of mitigation measures and possible problems, therefore proper and timely implementation of correction actions will significantly reduce the expected negative future impact.
19. As it has been mentioned, most of the predicted impacts are associated with the unsecured manholes and failure to perform periodical maintenances, it look like that area is abandoned. In addition, it seems that abundant atmospheric precipitation and intense snow melting and consequently water erosion to the river bank, has to be better considered during detailed engineering and better protected during the construction.
20. Table 2 below gives the summary information about the non-compliances observed during the environmental audit and due corrective actions and probable terms of their realization.

Table 2: Summary information

N	Non – Compliances	Problem Cause	Corrective actions	Related Photos	Terms of accomplishment
					Responsibility
1	Signs, information and Specification plate, warnings and numbering	Locations cannot be identified  Dangers is not warned.  Stations cannot be identified	Information plates to be installed		Mid. of March  UWSCG  Local service center instructed to install information and warning signs at PS3
2	Manhole's cover	Objects and children may fall and drop into manholes.  Dropped objects may block the pipe Fatality	New covers to be prepared and placed		End of March  UWSCG  Local Service center stated purchasing of MH covers
3	Old plant materials	Some of the old plant pipelines are disconnected from the system, but left unattended and remain in the area	All old pipelines to be removed and disposed.		End of March  UWSCG  Included in defect remediation works
4	Blocked pipes	Some parts of the pipes are blocked by foreign objects and causes untreated sewage water to overflow into the	Blocked pipes to be cleared and provide proper covers for manholes to prevent it from happening again.  Daily check and maintenance of the pipelines and <b>manholes</b>		Mid. March 2024  50% is completed.  (problem was solved after putting in operation PSS)UWSCG

N	Non – Compliances	Problem Cause	Corrective actions	Related Photos	Terms of accomplishment Responsibility
		surrounding environment	training		
5	Reduction, of distance between sewage pipe manholes and river	<p>Article 20 (Law Of Georgia On Water - River water protection zone) of Protection of natural resources of the Black Sea, defines protection zone of a river shall be its adjacent territory, where a special regime is established to protect water resources from pollution, littering, fouling, and depletion.</p> <p>This zone may include its dry bed, adjacent terraces, natural elevated and steep riversides, as well as gullies directly adjacent to riversides.</p> <p>The width of a river water protection</p>	<p>As per mentioned article, minimum distance shall be 10 m, therefore one of the following actions should be confirmed and executed;</p> <p>Relocate manholes to a distance more or equal to the standard;</p> <p>Block manhole and install new one at another place.</p> <p>(Suggestion: A team of design engineers investigate the problem and find the best solution according to the process requirement).</p>		<p>End of March 2024</p> <p>UWSCG</p>

N	Non – Compliances	Problem Cause	Corrective actions	Related Photos	Terms of accomplishment Responsibility
		<p>zone shall be measured in meters from the edge of a riverbed to both sides under the following procedure:</p> <p>10 meters - in the case of a river up to 25 kilometers long,</p> <p>20 meters - in the case of a river up to 50 kilometers long,</p> <p>30 meters - in the case of a river up to 75 kilometers long,</p> <p>50 meters - in the case of a river over 75 kilometers long.</p>			
6	Damaged and broken cement blocks	These cement blocks were installed for the purpose of creating a barrier between river and land	All damaged blocks to be repaired or replaced		<p>End of March 2024</p> <p>UWSCG</p>

N	Non – Compliances	Problem Cause	Corrective actions	Related Photos	Terms of accomplishment Responsibility
7	Surplus soil and debris	<p>Visual pollution</p> <p>“Law on Soil Protection” provides the policy requirements and principles of the protection and preservation of fertility soil resources against negative impacts.</p>	<p>All garbage and debris to be collected, separated and disposed according to Georgian Law</p>		<p>Not relevant to this project. Asbestos waste was not produced during construction of Waste Water network.</p> <p>The problem was addressed by the local Municipality</p>
8	Un-fenced pipe	<p>Since pipeline is located near resident areas, children may use it as play ground</p>	<p>Fences to be installed at both sides of the pipe</p>		<p>End of march 2023</p> <p>River crossing will be Protected by local Municipality</p>
9	Old Toilet	<p>Pollutant</p>	<p>This toilet was part of the nearby school and a new one is constructed inside school; Therefore, it shall be removed completely.</p>		<p><b>Completed</b></p> <p>Already removed</p> <p>By local Municipality</p>



Zug-02

**Non-Compliance Notice**

Project: USIP	<b>Non-compliance Notice: Zugdidi</b>
Contract No: Zug-02	
Reference: Zugdidi – Camp site and networks	
<p>This notice is to advise you, the prime Contractor, on the referenced Contract, of the following notice on environmental measures to be implemented <b>urgently</b>.</p> <ul style="list-style-type: none"> <li>• All workers should be equipped with PPE during the construction and safety rules has to be followed</li> <li>• A flagman should be hired by contractor for the driver of caterpillar during the tranche excavation activities to avoid accidents related to transmission lines.</li> <li>• Hazardous waste containers should be placed with labels on secondary drip tray High visible safety signs/tapes and trench side barriers around of deep open trenches should be installed to avoid accident of population</li> <li>• Household Waste should be placed at the proper container; at special designated area, labeled and discharged timely</li> </ul>	
<p>23 March 2018. Kate Chomakhidze, ES of USIP</p>	

Zug-02

**Non-Compliance Notice**

Project: USIIP	<b>Non-compliance Notice</b> <b>Zugdidi</b>
Contract No: Zug-02	
Reference: <b>Zugdidi – Camp site and networks</b>	
This notice is to advise you, the prime Contractor, on the referenced Contract, of the following notice on environmental measures to be implemented <b>urgently</b> .	
Safety signs/tapes around of all open trenches should be installed to avoid accident of population	
Construction activities information signs should be installed at each construction segment	
Walls of the deep trenches (>1.5m) are not strengthened by boards to avoid landfall of the soil and accidents	
Surplus waste soil should be removed and disposed in a proper place	
Trench crossing bridges should be installed at the perimeter of open trenches. Proper access of the house entrances should be ensured	
Workers always should use complete PPE	
All network construction segments should be cleaned/well organized on regular bases	
Photos of existing problems with protective barriers on sites for residents and cattle	
	
September 2018. Kate Chomakhidze, ES of USIIP	

**NON-CONFORMANCE NOTICES ZUG-02, 28 FEBRUARY 2020**



If these conditions have to be remedied within one week by the prime Contractor (Ludwig Pfeiffer Hoch und Tiefbau GmbH&Co.KG).

**Date of site visits: 28.02.2020**

Tinatini Zhizhiashvili, Environmental Engineer at Poisch and Partners GMBH

Non-Compliance Notice

Project: USIP	<p><b>Non-Compliance Notice</b></p> <p><b>Zugdidi</b></p>
Contract No: ZUG-02	
Contractor: Ludwig Pfeiffer Hoch und Tiefbau GmbH&Co.KG	
Reference: Zugdidi – Network	
<p>This notice is to advise you, the prime Contractor, on the referenced Contract, of the following notice on environmental measures to be implemented <b>urgently</b>.</p> <p><b>NON-COMPLIANCE</b></p> <p>ZUGDIDI (ZUG-02)</p> <ul style="list-style-type: none"> <li>• Oil-based canisters should be removed from the construction site, which are located next to the public yards, streets, open spaces. If these canisters can be used a second time, they should be placed in a specially sealed, closed building. If not used for a second time, be transferred to the company with the appropriate permission. Submit relevant photo documentation;</li> <li>• Technical inspection of equipment before entering the construction site should be done to avoid accidental spills;</li> <li>• Remove and manage oil-contaminated soil, submit appropriate photo documentation;</li> <li>• Walls of the deep trenches (&gt;1.5m) should be strengthened by boards to avoid landfall of the soil and accidents (workers damage) ;</li> <li>• Providing wooden walkways/planks across trenches for pedestrians and metal sheets where vehicle access is required ;</li> <li>• Surplus waste soil should be removed and disposed in a proper place ;</li> <li>• All transmission line construction segments should be cleaned/well organized on regular bases ;</li> <li>• Construction activities information signs should be installed at each construction segment</li> <li>• Provide adequate lighting to avoid accidents ;</li> <li>• Informing all residents and businesses about the nature and duration of any work well in advance so that they can make necessary preparations if needed</li> </ul>	

**ANNEX 2: CORRECTICE ACTION PLAN ZUG-02**

**Correction Action Plan (CAP)**

**Zugdidi – Construction of the sewerage system**

<b>Project:</b> USIIP
<b>Contract No:</b> ZUG-02
<b>Contractor:</b> Ludwig Pfeiffer

**Contractor's information on Non-Compliance Notice (dated 28 February 2020)**

**CAP (12 March 2020)**

<b>Non-Compliance</b>	<b>Compliance</b>
Oil-based canisters should be removed from the construction site, which are located next to the public yards, streets, open spaces. If these canisters can be used a second time, they should be placed in a specially sealed, <b>closed</b> building. If not used for a second time, be transferred to the company with the appropriate permission. Submit relevant photo documentation;	All Oil-based canisters were removed from the construction site.
Technical inspection of equipment before entering the construction site should be done to avoid accidental spills;	Technical inspection of all equipment was done.
Remove and manage oil-contaminated soil, submit appropriate photo documentation	Oil-contaminated soil was removed and managed (we use special WIJRT absorber)
Walls of the deep trenches (>1.5m) should be strengthened by boards to avoid landfill of the soil and accidents (workers damage) :	Walls of the deep trenches (>15m) were strengthened
Providing wooden walkways/planks across trenches for pedestrians and metal sheets where vehicle access is required	Wooden walkways/planks across trenches for pedestrians and metal sheets were provided
Surplus waste soil should be removed and disposed in a proper place	Surplus waste soil was removed and disposed in a proper place
All transmission line construction segments should be cleaned/well organized on regular bases	All transmission line construction segments was cleaned and well organized
Construction activities information signs should be installed at each construction segment	Construction activities signs were installed at each construction segment
Provide adequate lighting to avoid accidents Informing all residents and businesses about the nature and duration of any work well in advance so that they can make necessary preparations if needed	Adequate lighting was provided All residents were informed about the construction activities

## Correction Action Plan (CAP)

### Photos



Walls of the deep trenches



Manage oil-contaminated soil

**Correction Action Plan (CAP)**



**Construction activities signs**



**Correction Action Plan (CAP)**



**Oil-based canisters were removed and construction sites are cleaned**

**ANNEX 3. ZUG-02, POST-CONSTRUCTION ENVIRONMENTAL AUDIT CHECKLIST**

Required mitigation measure of environmental impact	Measures implemented				Comment
	yes	partially	no	N/A	
Site territory fenced fully			x		All project zones are not fenced.
Top soil placed at original location		x			The rehabilitation works were carried out in all project zones, where the removed topsoil in the project zone was used.
Vegetation cover reinstated		x			The grass has been self-restored on the territory.
Construction waste and surplus/waste soil removed completely and disposed properly		x			All the construction equipment and construction materials were removed from the project zones.
Hazardous waste removed and disposed properly.	x				No facts of uncontrolled disposal of hazardous waste were fixed in the project area.
Fuels and lubricants spills eliminated	x				No traces of leakage were identified in the project area.
Contractor equipment and machinery removed	X				All the construction equipment was removed from the project zones.
All temporary facilities removed and cleaned up	x				The temporary auxiliary buildings are fully removed from the site.
Streets with installed network reinstated to pre-construction or better conditions	x				The access roads to the project zone are reinstated. Their physical state is satisfactory.
Post-Construction territory reinstated to pre-construction or better conditions		x			The project zone is reinstated in line with the requirements.



# **ANNEX B: POST CONSTRUCTION ENVIRONMENTAL AUDIT REPORT, REG-03a**

**ADB Project No: 43405-027**

**The contract No: UWSCG-USIIP-ICB-REG-03a**

**Financed by: The Asian Development Bank**

## **Urban Services Improvement Investment Program Tranche 5 Project: Construction of Waste Water Treatment Plant in Zugdidi (REG-03a)**



### **Post - Construction Environmental Audit Report**

**ABBREVIATIONS**

<b>ADB</b>	Asian Development Bank
<b>CAP</b>	Compensation Action Plan
<b>EA</b>	Executing Agency
<b>EHS</b>	Environmental Health & Safety
<b>EIA</b>	Environmental Impact Assessment
<b>EIP</b>	Environmental Impact Permit
<b>EMP/ SSEMP</b>	Environmental Management Plan/ Site-Specific Environmental Management Plan
<b>EMS</b>	Environmental monitoring System
<b>ES</b>	Environmental Specialist
<b>GoG</b>	Government of Georgia
<b>IA</b>	Implementing Agency
<b>IEE</b>	Initial Environmental Examination
<b>MoEPA</b>	Ministry of Environment Protection and Agriculture of Georgia
<b>MoRDI</b>	Ministry of Regional Development & Infrastructure
<b>SDP</b>	Sector Development Program
<b>UWSCG</b>	United Water Supply Company of Georgia
<b>WS</b>	Water Supply
<b>WSS</b>	Water Supply and Sanitation Service
<b>WWTP</b>	Waste Water Treatment Plant

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## I. Introduction

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2. This Post Construction Audit Report is being prepared to comply with the 2009 ADB's SPS and Georgian legislation, including safeguards requirement and aims to identify past and present concerns from the production and business activities of Project Company that related to impacts on environment. The specific objectives of the audit can be summarized as follows:
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## II. PROJECT DESCRIPTION

3. The Urban Services Improvement Investment Program was developed as the Government's response to the lack of adequate and/or safe water supply, sewerage and sanitation in urban areas of Georgia. This is intended to optimize social and economic development in selected urban areas through improved urban water and sanitation services, and is financed by the ADB through its Multi-tranche Financing Facility. The Ministry of Regional Development and Infrastructure is the Executing Agency and the United Water Supply Company of Georgia, LLC is the Implementing Agency of the Investment Program. UWSCG is a 100% state-owned company.
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### 2.1 Category of Project

5. Based on the existing ADB Environmental Safeguards Policy (2009), this Project falls under ADB's project Category B. According to ADB SPS 2009 proposed project can be classified as Category B due to the following reasons:
  - adverse environmental impacts are less adverse than those of category A projects;
  - these impacts are site-specific, few if any of them are irreversible, and
  - in most cases mitigation measures can be designed more readily than for category A projects.
6. An initial environmental examination is required and Prepared for category B projects. A category is assigned to a project by its most sensitive component, therefore, all of the outputs and activities to be undertaken under the Project fall under Category B as well.
7. In accordance with the requirements of the national legislation, an EIA has been prepared for the Zugdidi WWTP project and an Environmental Decision was issued by the MoEPA for the Construction of Zugdidi WWTP.

### 2.2 Description of the ZUG-03a Sub-project

8. The Construction of Wastewater Treatment Plant in Zugdidi (REG-03a) sub-project comprised of the construction of new Wastewater Treatment Plant in Zugdidi with the capacity of 22,000 m<sup>3</sup>/day.

9. The contract No UWSCG-USIIP-ICB-REG-03a was signed on February 1, 2018 with "JV "Pfeiffer - EMIT" comprised by "Ludwig Pfeifer Hoch – and Tiefbau GmbH7Co. KG (Germany)" and "EMIT (Group – Ercole Marelli Impianti Tecnologici S.r.l. (Italy)", project completion date was September 2022.

### 2.3 Main Stakeholders of the Project

10. The main institutions that are involved in implementation of the EMP are: executing agency (EA) - United Water Supply Company of Georgia (UWSCG), Supervision Consultant (SC) - Posch&Partners Consulting Engineers, the Construction Contractor - Ludwig Pfeiffer Hoch- und Tiefbau GmbH & Co.KG and to a lesser extent the Ministry of Environmental Protection and Agriculture (MoEPA). Investment Program Management Office (IPMO) established within UWSCG is responsible for the day-to-day management of the project including implementation of the EMP. The IPMO has an Environmental Specialist – Ms. Ketevan (Kate) Chomakhidze who is responsible for management of the environmental aspects of USIIP, Tranches 1-6 of USIIP.
11. The SC included a full time Environmental Specialist Ms. Eliso Barnovi to assist the IPMO supervises and monitor implementation of the EMP during construction. Department of Permits, Environmental Protection and Social Affairs of UWSCG work together with IPMO on addressing the Environmental Safeguard issues of USIIP.
12. Environmental issues arising from the construction activities were immediately brought to the attention of the construction supervision team to coordinate efforts in order to immediately mitigate impacts, protect the environment, and safeguard the health and welfare of the local communities.
13. Main organizations involved in the REG-03a sub-project and related to environmental safeguards are presented in the Table 1 below:

**Table 1. List of main organization under the Project, USIIP/T5**

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Lender	Asian Development Bank	Country Environmental Focal	Ninette R. Pajarillaga E-mail: <a href="mailto:npajarillaga@adb.org">npajarillaga@adb.org</a>
		Associate Safeguards Officer Georgia Resident Mission Asian Development Bank	Nino Nadashvili Tel: +995 595 070442 E-mail: <a href="mailto:nnadashvili@adb.org">nnadashvili@adb.org</a>
		ADB RETA, Environmental Consultant	George Kobaladze Tel: +995 599 689834 E-mail: <a href="mailto:gkbaladze.consultant@adb.org">gkbaladze.consultant@adb.org</a>

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Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Borrower	UWSCG	UWSCG, Department of Environmental Protection and Permits, Head	Ms. Maka Goderdzishvili Tel: +995 599 229925 E-mail: <a href="mailto:m.goderdzishvili@water.gov.ge">m.goderdzishvili@water.gov.ge</a>
		UWSCG/IPMO Donor Funded Project Management Department, Acting Head	Ms. Irine Chikhladze Tel: +995 598 179898 E-mail: <a href="mailto:ana.onashvili@water.gov.ge">ana.onashvili@water.gov.ge</a>
Borrower	UWSCG/USIIP/T5	Environmental Specialist	Ms. Ketevan Chomakhidze Tel: +995 577 380309 E-mail: <a href="mailto:Chomakhidzek@yahoo.com">Chomakhidzek@yahoo.com</a>
Supervision Consultant	Posch&Partners Consulting Engineers	Environmental Specialist:	Ms. Eliso Barnovi Tel: +995 551 300112 E-mail: <a href="mailto:tikozhizhiashvili@yahoo.com">tikozhizhiashvili@yahoo.com</a>
Contractor REG-03a	JV "Pfeiffer - EMIT" comprised by "Ludwig Pfeiffer Hoch – and Tiefbau GmbH Co. KG (Germany)" and "EMIT Group – Ercole Marelli Impianti Tecnologici S.r.l. (Italy)	Environmental H&S Specialist	Mr. Nikoloz Neparidze Tel: +995 599 346821 E-mail: <a href="mailto:nikoloz.neparidze@ludwigpfeiffer.com">nikoloz.neparidze@ludwigpfeiffer.com</a>
		H&S Specialist	Mr. Irakli Abuladze Tel: +995 568 012858 E-mail: <a href="mailto:irakli.abuladze.1974@gmail.com">irakli.abuladze.1974@gmail.com</a>

### III. LOCATION OF PROJECT

14. This project is located in Zugdidi, in the western part of the country in the Georgian historical province of Samegrelo, approximately 346 km west of Tbilisi, the capital of Georgia and 30 km east of Black Sea coast. The Zugdidi is a capital of Samegrelo-Zemo Svaneti region, the fifth largest city of Georgia and is located on the left bank of the Chkhoushi River. The total population of the town was 69,744 as per 2010 census. The total area of Zugdidi Municipality is 16.85 km<sup>2</sup> at approximate altitude of the 80 – 120 meters above sea level.

**MAP 1: Location of Zugdidi**



## IV. SUMMARY OF PREVIOUS ENVIRONMENTAL MONITORINGS AND AUDITS

### 4.1 General Description of Environmental Safeguard Activities

15. A Total 20 site visits were conducted and 43 non-compliances identified during the Individual and joint on-site monitoring activities carried out by Environmental Monitoring Specialist of SC Ms. Eliso Barnovi and Environmental Specialist of USIIP Ms. Kate Chomakhidze on a regular basis, during the project implementation period In February 2018 - September 2021. Also unscheduled monitoring visits were carried out, on-site verbal instructions have been given to the contractor and its environmental team and non-conformance notes has been issued to the contractor as needed. Mitigation measures to reduce major environmental impacts have been instructed to contractors during the monitoring visits.
16. The monitoring activities included:
  - The monitoring of mobilization activities under Reg-03/a project sites to the overall project EMP/SSEMP requirements;
  - The monitoring of compliance of construction activities under Reg-03/a project sites to the IEE/EMP requirements;
17. Environmental Monitoring Specialist hired under the Reg-03/a projects Mr.Nikoloz Meparidze conducted the day-to-day monitoring of the construction sites, filled the weekly checklist forms developed the monthly monitoring reports and submitted to SC/Posch.
18. Environmental Monitoring Specialist, Ms.Eliso Barnovi developed quarterly monitoring reports for UWSCG/USIIP/T5 based on the monthly reports submitted by Contractor, and on regular site inspections.
19. ES of USIIP performed monitoring of contractor's performance with the approved EMPs and SSEMPs, environmental standards and other environmental commitments of the contractor. ES developed Semi-annual environmental monitoring reports and submitted to ADB based on the quarterly reports prepared by SC and monitoring results.
20. The construction activities affecting the environment during the reporting period are as follows:
  - Excavation works
  - Removal of Surplus Soil
  - Workers PPE
  - Working on height
  - Reinstatement Activities
21. In February 2018 - September 2021, in the construction phase of Zugdidi WWTP, the environmental monitoring was conducted by several organizations, namely - ADB, Supervision Consultant (CSC), Construction Contractor (CC) and UWSCG/USIIP.



22. A total of 20 Site visits have been carried out during the construction period of REG-03a sub-project and up to 43 non-compliances were identified during these site visits in 2018-2021.

The identified non-compliances during the site visits were as follows:

- Poor housekeeping
- Power generator without secondary containment
- Construction materials improper storage
- Construction waste management and disposal
- Proper protection of construction site with lockable gate
- Environmental, Health and Safety issues on sites, workers PPE and working on the height
- Proper fuel/oil spill response items (sand, sawdust, special containers) should be available at the site
- All construction materials should be properly segregated and stored adequately
- Waste should be collected regularly at the site and placed only at the proper waste container
- Site internally should be arranged properly and cleaned regularly
- Safety signs/tapes around of all open trenches should be installed to avoid accident of workers and population
- Hazardous waste should be disposed in its intended bin and carried out by a permit company. Submit proof of removal process and photo documentation.

## V. AUDIT RESULTS

23. The Post Construction Environmental Audit of the construction of Zugdidi Waste Water Treatment Plant (REG-03a) sub-project was conducted by the UWSCG/SDP on December 2023. The non-compliances found during the above mentioned audit is presented below.
24. Currently sludge dewatering equipment is not fully operational and from the sludge line only the mechanical pre-thickening is operating. For the safe operation of the digester the boiler and the gas line is missing, therefore without these it was not permitted to operate the digester with pre-thickened sludge.
25. The contractor - "Pfeiffer - EMIT" left the site end of 2021 due to bankruptcy in December 2021, there were not any construction activities and physical progress and therefore did not complete most parts of the sludge treatment stages. The contractor only completed the pre-thickening stage, all other stages for sludge treatment remain uncompleted and are not commissioned.
26. With the present status, it is impossible to extract sludge from the system, only liquid can be extracted. As there is no contractor available any more emergency measures has to be implemented by UWSCG through the Consulting service under the contract with the supervision consultant - Posch&Partners Consulting Engineers.

### **Status on screens on the mechanical treatment stage:**

27. Since August 2022 one out of two fine screens is not operative anymore. It is mechanically damaged and there is no contractor to repair or exchange them.
- 28.
29. However, the screens have been investigated and it is clear which parts would be needed that so that UWSCG can repair them. It is proposed to directly order these part from the supplier until the end of December 2023.
30. In the absence of the digester and the sludge centrifuges a temporary sludge removal is established by UWSCG. Sludge is removed as follows: Primary sludge is thickened in the thickener and overflows from the thickener into the drainage pump sump, as no Primary Sludge (PS) can be withdrawn from the thickener. From hat drainage sump the scum layer is removed (by excavator!) to the emergency sludge storage hall for drying.



Drainage pump sump with scum layer after excavation end September 2023

- Sludge from drain sump is stored in the sludge storage area (about 100m<sup>3</sup>), and some sludge was buried in the trench next to the drainage sump (about 50m<sup>3</sup>):



Sludge storage area



Sludge dump next to storage hall

- Excess sludge (secondary sludge) is pumped from the Return Sludge into the sludge storage sump. From time to time a small volume is withdrawn via a hose connected to the socket for the manometer and pumped to the emergency sludge storage hall where it is dried and disposed at the dump site as above.
- Another portion of excess sludge (mainly floating sludge and scum) is manually removed from the open outlet/collection channel of the aeration tanks.



**Dried sludge at emergency storage hall**

32. In order to address the above-mentioned non-compliances, including the completion of the centrifuge, the gas line, the heating system for digester and the gas holder, as well as ensuring smooth operation of the fine screen, UWSCG and SC/Posch have decided to go for local contract of all works and services, which will take max. 4-6 months. To achieve this goal, at the end of January 2024, the Supervision Consultant/ Posch prepared and submitted to the UWSCG tender documents for the emergency procurement of all the above services and works, which will ensure that all defects are eliminated, including sludge dewatering and that all problems identified during the preliminary commissioning of the WWTP will be finally improved (for more details please see Annex B – Post-construction Audit Report for REG-03a sub-project).

## VI. CONCLUSIONS AND RECOMMENDATIONS

33. This Post Construction Environmental audit has been carried out in order to eradicate a number of mitigation measures and possible problems, therefore proper and timely implementation of correction actions will significantly reduce the expected negative future impact.
34. It should be mentioned that most of the non-compliances identified during the construction process is eliminated by contractor. Zugdidi WWTP site is adequately fenced and it was impossible for strangers as well as domestic animals to enter the sites. The whole territory is lightened 24 hours a day and locked with lockage gate. Information and warning signs are provided on the gate.
35. It should be noted that most of the inconsistencies identified during the construction process were eliminated by the contractor. The WWTP site in Zugdidi is properly fenced, so access to the territory by unauthorized persons and domestic animals is impossible. The entire area is lightened 24 during the night time and is locked with gates. Information and warning signs also exist on site.
36. As it has been described above, most of the predicted impacts are associated with improper management of sludge. The centrifuges, the gas line, the heating system for digester and the gas holder are not completed. Consequently, excess sludge, cannot be de-watered, which makes excess sludge extraction complicated. As a result of above, the system is causing operation problems to WWTP.
37. In order to improve the situation and ensure smooth commissioning of the system, UWSCG and SC/Posch have decided to go for local contract of all works and services. To achieve this goal, at the end of January 2024, the Supervision Consultant/ Posch prepared and submitted to the UWSCG tender documents for the emergency procurement of all the above services and works. More details information is provided in the Table 2 below, which gives the summary information about the non-compliances observed during the environmental audit and due corrective actions and probable terms of their realization.

**Table 2: Summary information about the non-compliances identified during the post-construction environmental audit**

#	Issues	Mitigation Measures	Time for improvement	Responsibility
1	The centrifuges, the gas line, the heating system for digester and the gas holder are not completed. Consequently, excess sludge, cannot be de-watered, which makes excess sludge extraction impossible.	A tender documentation was prepared and submitted to UWSCG by SC/Posch  The new tender can be launched soon	June 2024	UWSCG
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# ANNEXSES

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2	The huge sludge quantities in the system can no longer be kept and will lead to exceeding the effluent standards and further damages to the plant.	For procuring as Emergency Measures a bypass of the sludge line and commissioning of the centrifuges the tender documentation is prepared by SC/Posch	June 2024	UWSCG
3	Sine one year the fine screen is not operative anymore. This leads to problems in all downstream treatment stages of the plant.  Urgent action is needed	Procuring as Emergency Measures new screens	June 2024	UWSCG

**ANNEX A: NON-COMPLIANCE NOTICES IDENTIFIED DURING THE CONSTRUCTION PHASE OF ZUGDIDI WWTP, January 2019- January 2021**

January-June 2019				
Number of site visits	Number of Non-compliances	Issues	Status	Comments
<b>8 site visits</b>	<b>20 non-compliances</b>	1. Poor housekeeping	Completed	
		2. Power generator without secondary containment	Completed	
		3. Construction materials improper storage	Completed	
		4. Construction waste should be timely removed from the construction site and disposed properly,	Completed	
		5. The main problem on site is that there are too many actors on the ground who are not coordinated, and they claim each other about the disorder on the construction site.	Completed	
		6. Proper construction site gate should be arranged	Completed	
		7. Construction waste should be timely removed from the construction site and disposed properly	Completed	
		8. Environmental, Health and Safety officer should be regularly available at the site!	Completed	
		9. Proper fuel/oil spill response items (sand, sawdust, special containers) should be available at the site	Completed	
		10. Containers with fuel/lubricant should be managed properly (stored at the proper organized place with concrete floor and roofing) to avoid leakage and ground contamination	Completed	
		11. All construction materials should be properly segregated	Completed	



		and stored adequately		
		12. Waste should be collected regularly at the site and placed only at the proper waste container	Completed Completed	
		13. Site internally should be arranged properly and cleaned regularly	Completed	
		14. Construction waste should be timely removed from the construction site and disposed properly	Completed	
		15. Containers with fuel/lubricant should be managed properly (stored at the proper organized place with concrete floor and roofing) to avoid leakage and ground contamination	Completed	
		16. All construction materials should be properly segregated and stored adequately	Completed	
		17. Waste should be collected regularly at the site and placed only at the proper waste container	Completed	
		18. All construction materials should be properly segregated and stored adequately	Completed	
		19. Waste should be collected regularly at the site and placed only at the proper waste container	Completed	
		20. Workers always should use complete PPE	Completed	
July-December 2019				
Number of site visits	Number of Non-compliances	Issues	Status	Comments
10 site visit	15 non-compliances	1. Wash out pit is existing from which water directly discharged into the river. ADB Mission requested CC to make water tests to avoid pollution of the river.	Completed	
		2. Not completed, since contractor stopped the direct discharge of water from the wash	Completed	

out pit into the river and therefore no further pollution of the river occurred		
3. The generator unit on the territory of camp site running on diesel is not placed on a secondary tank.	Completed	
4. Cattle were observed within the construction territory due to damaging the fencing at few places around the construction site.	Completed	
5. CC to improve track record system and add Accident Record Log (with recorded near misses) and grievance log book	Completed	
6. Site internally should be arranged properly and cleaned regularly	Completed	
7. Waste should be timely removed from the construction site and disposed properly	Completed	
Surplus waste soil should be removed and disposed in a proper place	Completed	
8. Proper waste containers should be installed and labeled	Completed	
9. Waste should be timely removed from the construction site and disposed properly	Completed	
10. Site internally should be arranged properly and cleaned regularly	Completed	
11. Safety signs/tapes around of all open trenches should be installed to avoid accident of workers and population	Completed	
12. Surplus waste soil should be removed and disposed in a proper place	Completed	
13. Proper waste containers should be installed and labeled	Completed	

		14. Waste should be timely removed from the construction site and disposed properly	Completed	
		15. Site internally should be arranged properly and cleaned regularly	Completed	
<b>January-June 2020</b>				
Number of site visits	Number of Non-compliances	Issues	Status	Comments
2 site visits	8 non-compliances	1.Bins for solid household waste are disposed on site. Where necessary, bins for such waste shall be compactly disposed on several places. Place a sticker on it. Submit photo documentation.	Completed	
		2.Place the bin for hazardous waste on a roofed site and make appropriate marking. Submit photo documentation.	Completed	
		3.Hazardous and household waste at the entrance of the facility is mixed and disposed on a unsurfaced car park area.	Completed	
		4.Hazardous waste should be disposed in its intended bin and carried out by a permit company. Submit proof of removal process and photo documentation.	Completed	
		4.The parking area is contaminated with oils and other lubricants. Also, in some places the soil is contaminated with oils.	Completed	
		6.According to the legislation, remediation of contaminated soil and removal and storage of contaminated sand should be done separately.	Completed	
		7.Removing process should be done by a permit company. Submit a certificate of removal, photo documentation for remediation and cleaned areas.	Completed	
		8.Waste should be timely removed from the construction site and disposed properly	Completed	

**ANNEX 3. ZUG-03a, POST-CONSTRUCTION ENVIRONMENTAL AUDIT CHECKLIST**

Required mitigation measure of environmental impact	Measures implemented				Comment
	yes	partially	no	N/A	
Site territory fenced fully	x				The whole project area is adequately fenced.
Provide adequate lighting of the site avoid accidents	x				Adequate lighting of site is provided to avoid accidents
Information Warning signs	x				WWTP site is equipped with proper information signs
Prevent access of public to the reservoir site	x				WWTP site is fenced from all sides and equipped with lockable gate
Cattle within the construction territory due to damaging the fencing at few places around the construction site.					The whole project area is adequately fenced around the WWTP site and there is no damage on fence
Top soil placed at original location	x				The rehabilitation works were carried out in all project zones, where the removed topsoil in the project zone was used.
Vegetation cover reinstated	x				The grass has been restored on the territory.
Site internally should be arranged properly and cleaned regularly	x				WWTP site is cleaned and organized
Construction waste and surplus/waste soil removed completely and disposed properly	x				All the construction equipment and construction materials were removed from the project zones.
Hazardous waste removed and disposed properly.	x				No facts of uncontrolled disposal of hazardous waste were fixed in the project area.
Fuels and lubricants spills eliminated	x				No traces of leakage were identified in the project area.
Contractor equipment and machinery removed	x				All the construction equipment was removed from the project zones.
All temporary facilities removed and cleaned up	x				The temporary auxiliary buildings are fully removed from the site.

Required mitigation measure of environmental impact	Measures implemented				Comment
	yes	partially	no	N/A	
Post-Construction territory reinstated to pre-construction or better conditions	x				The project zone is reinstated in line with the requirements.