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ENVIRONMENTAL SCOPING STATEMENT:

FOR MUNICIPAL FLOOD PROTECTION

GEORGIA MUNICIPAL INFRASTRUCTURE AND IDP HOUSING REHABILITATION PROJECT

DCN: 2010-GEO-033

March 2012; Revised June 2012

DISCLAIMER

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TETRA TECH

25 June 2012

Mr. Bradley Carr
Water Irrigation and Infrastructure Advisor
Office of Economic Growth
US Agency for International Development
11 George Balanchine Street
Tbilisi, 0131
Georgia

Re: Environmental Scoping Statement for Component 1 Municipal Roads for the Municipal Infrastructure and IDP Housing Rehabilitation Project

Dear Mr. Carr:

This report is being submitted to you in accordance with the requirements of task order no. AID-114-TO-11-00002 of contract AID-EDH-I-00-08-00027-00. It provides Tetra Tech's revised Environmental Scoping Statement for Component 1 Flood/River Bank Protection Activities for the Municipal Infrastructure and IDP Housing Rehabilitation Project based on BEOs comments.

We look forward to your review and welcome your comments and suggestions.

Very truly yours,

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ABBREVIATIONS AND ACRONYMS

BEO	USAID Europe and Eurasia Bureau Environmental Officer
CCN	Cooperating Country National
CFR	Code of Federal Regulations
CO	USAID Contracts Office
COP	Chief Of Party
DCOP	Deputy Chief Of Party
DRC	Danish Refugee Council
EA	Environmental Assessment
EC	European Commission
EIA	Environmental Impact Assessment
EMMP	Environmental Mitigation and Monitoring Plan
EPI	Economic Prosperity Initiative USAID Project
ESS	Environmental Scoping Statement
GEL	Georgian Lari
Geo	Geo Ltd
GMIP	Municipal Infrastructure And IDP Housing Rehabilitation Project (the project)
GoG	Government of Georgia
HO	Home Office
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Persons
IL	Implementing Letters
Kav	Kavgiprotransi-Mg Ltd
KfW	Kreditanstalt für Wiederaufbau (German International Development Banking Agency)
LTTA	Long Term Technical Assistance
M&E	Monitoring and Evaluation
M&M	Mitigation and Monitoring
MDF	Municipal Development Fund
MEO	USAID/Georgia Mission Environmental Officer
MLHSA	Ministry of Labor Health and Social Affairs
MRA	Ministry of Refugee Affairs
MRDI	Ministry of Regional Development and Infrastructure
NEO	New Economic Opportunities (USAID Project)
NGO	Non-Government Organization
NTP	Notification to Proceed
PE	Licensed Professional Engineer
PEA	Programmatic Environmental Assessment
PMC	Project Management Committee
PMP	Performance Monitoring Plan
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Corporation Agency
SOW	Scope of Work
SS	Scoping Statement
STTA	Short Term Technical Assistance
TBD	To Be Determined
TOCOTR	USAID Task Order Cognizant Technical Officer
Tt	Tetra Tech EM Inc.
UNHCR	United Nations High Commissioner for Refugees
UNTC	United Nations Treaty Commission
USAID	United States Agency For International Development
USG	U.S. Government
WB	World Bank

1. BACKGROUND AND PURPOSE

Georgia's economic and political stability has been challenged by the 2008 conflict with Russia and the global economic downturn. The conflict, crisis, and subsequent slowdown in economic growth and foreign direct investment has strained Georgia's national budget and its ability to finance core investments in critical regional development initiatives. Many years of decline in the quality, coverage and maintenance of basic services, including water supply, sewage, local roads, solid waste services, and irrigation systems have dramatically reduced Georgia's quality of life in rural areas and constrained private sector growth. Such degradation and instances of conflict-related damage have resulted in significant constraints to the productive capacity and quality of life of thousands of Georgians, including old and new Internally Displaced Persons (IDPs), rural poor, and persons directly or indirectly affected by the 2008 conflict with Russia.

USAID is providing assistance to the Government of Georgia (GoG) under the Georgia Municipal Infrastructure and IDP Housing Rehabilitation Project (GMIP). GMIP includes three components: Component 1, Municipal Infrastructure; Component 2, Rehabilitation of Irrigation Infrastructure; and Component 3, IDP (Internally Displaced Persons) Durable Housing. This Scoping Statement (SS) covers two municipal flood protection projects under GMIP Component 1: (1) Rehabilitation of Dusheti Gorge; and (2) Rehabilitation of the Riverbank in Gori Municipality (26 May Street).

1.1 Project Description

Municipalities impacted by the 2008 conflict were identified by the GoG as priority targets for USAID technical assistance under GMIP Component 1. The two municipalities – Dusheti and Gori – were invited to submit up to three infrastructure rehabilitation projects for GMIP financial assistance. Each project was expected to show evidence of civic participation, impact on significant municipal population, contribution to economic growth or greater efficiency, government commitment to maintain rehabilitated infrastructure and potential leverage of other donor funding.

Projects were evaluated based on potential for high impact and benefits. The two selected projects focus on flood protection including structural rehabilitation and riverbank improvements. Under GMIP Component 1, USAID will rehabilitate the riverbank and culvert bridges in Dusheti, benefiting 7,000 residents in local settlements (Kobiaantkari, Sulikiantkari, Shalikiantkari and Mtvareliantkari) and 300 residents living in the immediate Dushetiskhevi project site. GMIP will rehabilitate the riverbank in Gori, benefiting 51,000 residents.

These municipal projects are covered in this scoping statement.

1.1.1 Project Purpose

The purpose of these projects is to improve the riverbanks and rehabilitate structures that restrict river flow rates and cause flooding in Dusheti and Gori. These infrastructure rehabilitation projects will save lives and protect residents living under the constant threat of flooding. Projects will also contribute to economic growth of the municipality and improve the social condition of the local population.

1.1.2 Project Need

The August 2008 conflict with Russia and the global economic downturn have reduced Georgia's ability to finance core investments in critical regional infrastructure rehabilitation. Many years of decline in the quality, coverage and maintenance of municipal infrastructure have dramatically reduced Georgia's quality of life and constrained private sector growth. Such degradation and instances of conflict-related damage have significantly impacted thousands of Georgians. GMIP addresses these needs.

Specifically, the proposed activities are responding to the needs of two municipalities (Dusheti and Gori) impacted by the 2008 conflict and identified by the GoG as priority targets for USAID technical assistance to rehabilitate infrastructure.

1.1.3 Technical Overview

USAID selected a GoG contracting arrangement with the Municipal Development Fund (MDF) as the financing vehicle for GMIP. Such an arrangement places the MDF in a key implementation role as this organization will be responsible for program management, procurement of goods and services, oversight and implementation. To support this arrangement, the MDF has been certified by USAID as having adequate financial, technical and procurement management capacity to perform its responsibilities under this program.

USAID contracted with Tetra Tech to support USAID in the oversight and monitoring of MDF activities. Tetra Tech will help select projects, monitor processes and practices, identify and mitigate areas of risk, and carry out oversight and quality control efforts to ensure that selected projects are implemented effectively and in accordance with both US and Georgian standards and regulations. Tetra Tech will also focus on the environmental aspects of the program, including development of an environmental scoping statement and environmental assessment for these flood protection activities.

An implementation contract for the GMIP municipal infrastructure component was signed between the MDF and Ltd Kavgiprotransi (Contract No. USAID/NS/02-2011). The Kavgiprotransi contract was designed to meet two major objectives, Objective A and Objective B as described below.

Objective A. This objective is to obtain technical and logistical services to support USAID's efforts to carry out environmental scoping and develop a scoping statement. This should identify significant environmental issues relating to Component 1, determine the range of alternatives and identify those issues to be analyzed in depth in the follow-on environmental impact assessment. The scoping process will help to set aside further examination of issues that are not significant and/or that have been addressed by prior studies. The environmental scoping will focus on alternatives and probable significant environmental impacts to be considered, with a detailed description of associated elements of the built and natural environment.

Objective B. This objective is to carry out a technical assessment and prepare pre-feasibility studies (e.g., construction sustainability, cost, benefit) for future design of the rehabilitation projects, which will then be used for the tendering. The pre-feasibility studies will examine both the technical and economic aspects of proposed projects and will provide sufficient technical information to allow the MDF and USAID to select those proposed projects with the highest benefit per investment cost and that are the most feasible to implement.

The Kavgiprotransi contract was completed in July 2011 and contributed to completion of this Scoping Statement. The GMIP Steering Committee met on September 15, 2011 to review the background documents on the municipal infrastructure component and identify priorities where allowable funds were not enough to finance all subprojects. For this activity, flood protection projects were selected in Dusheti and Gori.

1.2 22 CFR 216 Background

USAID's environmental regulations (22 Code of Federal Regulations 216 or Reg. 216) establish the conditions and procedures for environmental review. These procedures apply to new projects, programs, or activities authorized by USAID. Reg. 216 establishes a process for the review of environmental and social impacts; ensures that projects that are undertaken as part of programs funded under USAID are environmentally sound, are designed to operate in compliance with applicable regulatory requirements, and as required by the legislation are not likely to cause a significant environmental, health or safety hazard.

The Initial Environmental Examination (IEE) for GMIP was drafted and approved by the Europe and Eurasia Bureau Environmental Officer (BEO) on June 23, 2010 (DCN: 2010-GEO-033). Pursuant to Reg. 216 and the IEE's Positive Determination for Component 1, an Environmental Assessment (EA) is required. An EA is meant to ensure that environmental consequences and their significance are known and clearly identified prior to the approval of the final design and start of construction [216.3 (a) (4)].

Under the Positive Determination for GMIP, an EA is required and this SS is being prepared to determine the extent of and the approach to the EA [216.3 (a) (4)]. The scoping process should result in a written statement that includes the following:

(a) A determination of the scope and significance of issues to be analyzed in the EA, including direct and indirect effects of the project on the environment.

(b) Identification and elimination from detailed study of the issues that are not significant or have been covered by earlier environmental review, or approved design considerations, narrowing the discussion of these issues to a brief presentation of why they will not have a significant effect on the environment.

(c) A description of: (1) timing of the preparation of environmental analyses, including phasing (if/where appropriate); (2) variations required in the format of the EA; and (3) the tentative planning and decision-making schedule; and

(d) A description of how the analysis will be conducted and the disciplines that will participate in the analysis;

Georgian environmental legislation does not consider preparation of the SS as a part of the EA process, and thus, does not contain any specific requirements for the preparation of a Scoping Statement.

1.3 Purpose, Methodology and Findings of the Scoping Statement

This SS is being prepared in accordance with 22 CFR 216.3(a)(4) and the IEE. Reg. 216 stipulates scoping as a preliminary task within the EA process. The SS provides a mechanism for consulting on and agreeing to the content and methodology of the subsequent EA. The purpose and objectives of the GMIP scoping process are to identify the topics and significant issues for the EA, eliminate issues that are not significant and define the approach and methodologies to be applied to the EA process.

The Scoping Team consisted of Ltd Kavgiprotransi and Tetra Tech. To carry out the scoping process, the Scoping Team identified, reviewed, and prioritized environmental issues. This was accomplished through the following three tasks:

- Identifying and reviewing existing environmental information and studies related to GMIP Component 1;

- Carrying out site visit investigations to ascertain additional environmental issues; and,

- Obtaining stakeholder input and feedback in organized meetings to ensure that significant environmental issues are identified.

This SS describes the proposed project and alternative actions along with a brief description of the affected environment and significant issues to be analyzed further in the EA process. It then outlines the requirements of the EA team and EA schedule. This section describes the site visits and public meetings used in the scoping process.

Site Visits

Site visit investigations were conducted in August, 2011 and March, 2012. Visits were made to each municipality and the flood protection project areas were inspected from the beginning of planned improvements to the end. Municipal engineers accompanied the inspection team. The team inspected the conditions of the riverbank and structures such as bridges and culverts.

Engineers identified areas where riverbanks and structures need to be rehabilitated, and they developed detailed workplans specifying requirements for the repairs. Site visit inspection reports for Dusheti and Gori are provided in Appendix C. Pictures are provided of proposed river segments and structures to be rehabilitated.

New Hydrologic Study

A new Dusheti Gorge Hydrologic Study will be conducted to support the Dusheti Flood Protection Environmental Assessment (EA) and the project's engineering design. The Hydrologic Study will include a component aimed at hydrologic surveys, mapping and site investigations. This component supports the analyses of the Dushetiskhevi River floodplain, upstream causes of flooding and impacts/problems for Dusheti and downstream users. The Hydrologic Study will describe historic flooding and river flows, calculate cross section flows, low flow and high flows including the 100 year recurrence interval flow, and develop river velocity profiles and watershed sediment loadings. These hydrologic results will be used to develop a plan of action that includes structural changes and non-structural measures such as current and future land use restrictions and flood warning systems.

The Hydrologic Study will describe the current flooding regime including how much volume/area, how frequently, how much damage, including loss of life, who is affected (commercial property, residential, others), and other pertinent descriptive information.

Public Meetings

A public stakeholder scoping meeting was held on July 5, 2011 in Dusheti. The purpose of the meeting was to provide information and get community members' views of the project. Twenty-four local citizens attended the meeting. Several comments specifically addressed issues associated with flooding in Dusheti and Gori. The meeting summary reflects the discussions and points raised by participants before and during the meeting. The Scoping Team feels that through the site visits, document review, and meetings held during the scoping process, all potential concerns have been identified.

Aim of the Stakeholder Meeting

- To inform the local community about the goal of the project and ensure their involvement at the early planning stage;
- Identify community concerns, specifically related to environmental and social aspects of the project, and get their feedback;
- Ensure a collaborative approach towards the project and increase cooperation between IDPs and project developers.

The following questions/issues were used to try to elicit comments from stakeholders (these will also be used during the stakeholder meeting to be conducted during the EA):

- *What are the expected problems associated with the planned rehabilitation? What are the benefits to local citizens?*
- *What impact will the rehabilitation have on surface waters, wetlands and local ecosystems?*
- *Are there differences in men's and women's roles and relationships that may affect the long-term future of municipal improvements and the environment?*
- *What is happening to the quality of the soil in the area? Would this (and how would this) be affected by road rehabilitation plans?*
- *Are there any current problems with pathogens or water-borne diseases? Would this be affected by road rehabilitation plans?*
- *What are the long-term prospects for maintaining improvements? Who will maintain them? How? Who will pay for maintenance?*
- *What realistically may happen when the project ends? What will the project area look like in 30 years?*

Public Notice

A notice/advertisement on the planned stakeholder meeting was distributed, as follows:

- A statement about the meeting was placed on the web page of MDF
- A statement about the meeting was placed on the web pages of local municipalities
- A notice was placed in the local press.

- Notices were posted at prominent points in villages and settlements where municipal rehabilitation is proposed.

In addition, the stakeholder meeting was advertised using CENN's mailing list and Aarhus Centers web page: www.aarhus.ge. The date, place, and the scope of the meeting were agreed upon and the MRA and local municipality were requested to participate in the meeting. Meeting participants and minutes are contained in Appendix A.

2. SCOPE AND SIGNIFICANCE OF ISSUES TO BE ANALYZED IN EA

This section of the SS provides a description of Georgia's EIA legislation, the "Affected Environment" in the project area, and alternatives and significant environmental effects that will be analyzed in the EA.

2.1 Overview of National Environmental Legislation

Environmental Impact Permits are issued by the Ministry of Environment under a procedure involving (1) EIA, (2) ecological expertise and (3) public participation. The detailed procedures are mainly determined by the Law on Environmental Impact Permit (December 14, 2007), the Law on Licenses and Permits (June 25, 2004) and the Decree No 154 "On the Procedure and Terms for Issuance of an Environmental Permit" Sept 2005 amended February 3, 2006.

The Law on Environmental Impact Permit contains the list of activities subject to EIA and the related procedures and regulations governing the issuance of environmental impact permits (EIP). Flood protection projects such as rehabilitation of Dusheti Gorge and the Gori riverbank restoration of 26 May Street do not require an EIP and/or State Ecological Expertise (SEE) under Georgian legislation, since in accordance with Article 4 of the Law of Georgia on Environmental Impact Permits, local urban road rehabilitation is not listed as a type of project subject to EIP or SEE. Likewise, setting Norms for Maximum Permissible Level of air and water emissions specifically for the project are not required either. According to current legislation, water and air emissions during rehabilitation and operation of the project facilities should therefore comply with the existing norms established by the Technical Regulations of the Environmental Protection (Order of the Minister of Environment Protection No. 745, dated 13.11.2008).

An overview of relevant national legislation will be provided in the EA.

2.2 Affected Environment

The scoping team conducted field visits in August, 2011 and March, 2012. (See Appendix C for the inspection reports that cover flood protection activities in Dusheti and Gori.) Desk studies were conducted to gather baseline information and available information was collected from published sources including books, periodic publications, scientific journals, etc. This section provides information on ecological settings, archeology and cultural heritage, air quality, noise and socio-economic issues. The section is a brief description of the affected environment; the EA Team will provide more detail in the EA (see EA outline in Section 5).

Water Resources and Ecosystems

Georgia has about 25,000 rivers, some of which power small hydroelectric stations. Water drainage is into the Black Sea to the west and through Azerbaijan to the Caspian Sea to the

east. The largest river is the Mtkvari (known also by its Turkish name, *Kura*, used in Azerbaijan, Turkey and Russia), which flows 1,364 km from northeast Turkey across the plains of eastern Georgia, through the capital, Tbilisi, and into the Caspian Sea. The Rioni River, the largest river in western Georgia, rises in the Greater Caucasus and empties into the Black Sea at the port of Poti. The river flows in the Black Sea near Poti. The length of river is approx. 327 km, catchment area – 13,400 km^2 (almost half of the west Georgia). Georgia's renewable groundwater resources are estimated at 17.23 km^3/year, of which 16 km^3/year are drained by the surface water network. This is the equivalent of a total of 58.13 km^3/year as internal renewable water resources. The total actual renewable water resources is 63.33 km^3/year.

River rehabilitation is proposed for municipal areas with urban, disturbed vegetation. Existing vegetation is part of individual gardens or is roadside vegetation or planted in medians. Some of the vegetation is native to Georgia and specifically to the areas where the projects are proposed, but much of the vegetation is alien plantings that are used to improve visual quality of the sites. Habitat quality and wildlife are typical of urban areas or Georgia.

The feasibility study found that the rehabilitation works are not located within or in proximity to protected areas. Rehabilitation is not expected to disturb birds, mammals or wildlife, sighting of which is unlikely due to the urban setting. It is unlikely that there are endangered, threatened, or other protected species (TES) in the area to be rehabilitated; however, there is a possibility that protected species may migrate outside of the perimeter of local reserves. However, because of the urban setting of the flood protection projects, it is unlikely that such species may be found in the project areas. It is also unlikely that rehabilitation activities will have any biodiversity impacts or impacts to specific habitat features and species. Nevertheless, the EA Team will consider TES issues in more detail in the EA.

Archeology and Cultural Heritage

The preliminary studies conducted by Kavgiprotransi indicated that municipal rehabilitation activities would not be carried out within or in proximity to protected areas, and that there were no natural, cultural and/or archeological monuments within the work areas. In addition, the project's rehabilitation activities will be implemented in urban settings, reducing the chance of finding or impacting archeological monuments. Nevertheless, there may be chance-finds of important archeology or cultural resouces in proximity to project sites. Existing information is available to develop best practices to minimize this concern.

Air Quality and Noise

Potential impacts may occur from air pollution, dust and noise produced by heavy construction equipment and other vehicular movement into and out of the project site. However, these impacts are expected to be minor and short-term. There are receptors of air and noise pollution as works will be proceeding close to some households. Therefore, mitigation measures (best practices) and best equipment and construction practices should be applied.

Socio-Economic Characteristics

In Dusheti and Gori municipalities, employment opportunities are limited. From a countrywide perspective, economic development has been uneven for the last decade. From

2004 to 2007, the country underwent rapid economic growth ranging between 5.9-12.3% per year. Some factors such as armed conflicts and global economic crises severely influenced the country, and GDP fell to 2.3% in 2008 and to 3.8% in 2009. Perhaps of more concern than actual numbers of employed, is that according to UNDP (HDR, 2010), over 62% of employment countrywide is ranked as "vulnerable," or as unpaid family workers or self-employed. 17.4% of employed live on less than 1.25 US$/day. Even this data is misleading for these municipalities. Most economic activity takes place in the capital city, Tbilisi. Gori and Dusheti have suffered more than Tbilisi in the global economic downturn.

Besides employment, socio-economic status is also based on the availability and quality of private and public facilities. Municipal areas in the project affected area have continuous power supplies. However, problems with the power systems are common, such as powerline poles that are old and are knocked down during storms, causing power termination. In general, the affected populations have access to education and public health care facilities. Communication in the target communities is through cellular networks. The population has access to TV programs of the Georgian Public Broadcaster and Rustavi-2. Satellite and cable TV are also available. Georgian radio broadcasting is also available in the target municipalities. National newspapers are available in the municipal centers.

2.3 Existing Environmental Settings

The following sections provide information about the current environmental setting in Dusheti and Gori municipalities. Each section describes the municipality, geology and soils, hydrology and biodiversity (flora/fauna).

2.3.1 Existing Environmental Setting in Dusheti Municipality

Dusheti is an administrative centre of Dusheti Municipality. Dusheti is located in the east of Georgia and belongs to Mtskheta-Mtianeti Administration. It is bordered by Kazbegi Municipality and the Russian Federation to the north, Tianeti Municipality in the east, Akhalgori Municipality in the west and Mtskheta Municipality in the south. The region is characterized by mountainous relief. The cold season lasts for eight months.

Climate. The climate of Dusheti region is transitional towards the humid subtropical and is characterized by hot summer, and two minimums of precipitation. The annual amount of precipitation ranges between 525-585 mm. The maximum amount of precipitation comes in May - 84 mm, whilst the minimum amount comes in August - 34 mm. As for seasonal distribution of the precipitation, Dusheti region is characterized by maximum amount of precipitation in spring and summer and minimum amount of precipitation in autumn and winter.

Geology and Soils. Alluvial meadow carbonate and brown carbonate soils are found across the Dusheti plain. Geologically it belongs to the fold system of the Lesser Caucasus Mountain and is characterized by plain relief made up of Quaternary Age conglomerates, pebbles, sand and loamy sand. The south part is made up of paleogenic limestones and loam, while the northern part is neogenic loam and limestone. In the valley of riv. Mtkvari brown soils and gray forest soils (of medium and narrow thickness) are found. The soil is productive and is used for agricultural purposes. The territory is characterized by accumulative as well as denudative landslides. There are no important geodynamical processes at the proposed road rehabilitation locations.

Alluvial soils are found in the gorges of the rivers Didi Liakhvi, Patara Liakhvi, Mejuda, Ksani, Aragvi, Iori, Alazani, etc. In most of these gorges alluvial carbonate soils are at the initial stage of their development to the field soil. The alluvial soils of these type and old alluvial soils contain thick and medium thick loam and are characterized by low percent of humus.

Biodiversity. The flora of Dusheti is diverse. Cultural plants are spread across the plain areas. Of natural plants, meadow grasses are most common. Fauna that live in the region include aurochs (endemic to the Caucasus), chamois, bear, mole, marten, badger, forest cat, jackal, fox, marten, squirrel and rabbit, etc. Various types of hawks, kite, partridge, griffon (a vulture), etc. are the most common birds.

Hydrology. The Dushetiskhevi River borders Dusheti settlement from the west. The river's source is in the mountains and it flows into River Aragvi. The length of the river is about 13 km, catchment area about 36.3 km^2, collecting waters and sediments from its tributary streams. Specific flow data is not available for the Dushetiskhevi River and estimations have been used to develop hydrological parameters. The river is obviously subject to large variation as evidenced by conditions in the active channel (i.e., bank erosion, scouring and re-deposition). High flows generally occur in the spring and are associated with runoff and high spring precipitation. The river can be violent during the flood surge. For instance, in 2005, the entire opening of the bridge culvert was reportedly overtopped during the peak flow period.

Dushetiskhevi river gorge, which has a permanent flow of water and box-shaped cross profile, narrows within the limits of the Dusheti settlement to a 15-20 meter width between the dirt road running along the left bank (with local household properties protected in some places by additional retaining walls) and the less developed right bank. The right bank has a number of households and their agricultural plots along eroding banks with natural cliffs. Downstream of Dusheti area, the river gorge widens to a bottom width of 25-30 m.

From previous hydraulic studies by Georgian hydrologists (at a location several km downstream from the current activity), flow regimes, velocities, scour depths have been characterized for the river. The maximum flow for a 1:100 year return event was estimated to be 135 m^3/sec with a maximum velocity of 2.04 m/sec. The river is known for its mud-flow. The depth of erosion of the riverbed was assessed at these velocities and flows, with maximal generalized scouring depth estimated at 3.9 meters below the 100 year frequency flood level. Minimal diameter of rip-rap stones, if used, was estimated at 0.8 m.

New Hydrologic Study. A new Dusheti Gorge Hydrologic Study will be conducted to support the Dusheti Flood Protection Environmental Assessment (EA) and the project's engineering design. The Hydrologic Study will include a component aimed at hydrologic surveys, mapping and site investigations. This component supports the analyses of the Dushetiskhevi River floodplain, upstream causes of flooding and impacts/problems for Dusheti and downstream users. The Hydrologic Study will describe historic flooding and river flows, calculate cross section flows, low flow and high flows including the 100 year recurrence interval flow, and develop river velocity profiles and watershed sediment loadings. These hydrologic results will be used to develop a plan of action that includes structural changes and non-structural measures such as current and future land use restrictions and flood warning systems.

The Hydrologic Study will describe the current flooding regime including how much volume/area, how frequently, how much damage, including loss of life, who is affected (commercial property, residential, others), and other pertinent descriptive information.

2.3.2 Existing Environmental Setting in Gori Municipality

Gori is located in East Georgia on the Shida Kartli Plain. Riv. Mtkvari divides Gori into two parts. The main part of the city is located on the east side. Gori is bordered by the Kaspi region in the east, Tsalka region in the south, Kareli region in the west and Samachablo in the north. Gori is located 700m above sea level.

Geology and Soils. There are four main morphological parts in Gori municipality: 1) Gori plain, occupying 39.7 percent of the territory with the inclination towards South-east. 2) The valley of Shua Mtkvari with wide terrace plains. 3) Kvernaki ridge, which is located 100-120 m above the plain. 4) Northern slope of Trialeti Ridge very close to the Mtkvari Plain. Alluvial meadow carbonate and brown carbonate soils are spread in Gori plain. Gori belongs to the fold system of the Lesser Caucasus Mountains and is characterized of plain relief constructed by Quaternary Age conglomerates, pebbles, sand and loamy sand. The south part is constructed by paleogenic limestones and loam, while the northern part is constructed by neogenic loam and limestones. In the valley of River Mtkvari are found brown soils and gray forest soils (of medium and small thickness). The land is productive and is used for agriculture.

Alluvial soils are found in the gorges of the rivers Didi Liakhvi, Patara Liakhvi, Mejuda, Ksani, Aragvi, Iori, Alazani, etc. In most of these gorges alluvial carbonate soils are at the initial stage of their development to the field soil. The alluvial soils of these type and old alluvial soils contain thick and medium thick loam and are characterized by a low percent of humus.

Biodiversity. In Gori, agriculture is common land use in the plain areas. Since only existing urban site will be rehabilitated, only vegetation next to the site will be disturbed. The Gori bank protection project area constitutes highly disturbed urban area where the minimal amount of vegetation exists along the site. Fauna near the project area is degraded as a result of dense human population. Existing channels traverse urban land, which does not support rich fauna. Most affected with the project would probably be aquatic fauna in two rivers, Didi Liakhvi and Mejuda Rivers.

Hydrology. Rivers Didi Liakhvi and Mejuda flow through Gori, flowing into River Mtkvari. These rivers are mainly sourced by rain, underground waters and snow. The biggest volume of water flows in spring and the smallest in winter. The average water flow of River Mikvari near Gori is more than 170 m^3/sec.

River Didi Liakhvi originates at village Goluata, at 2337.7 m altitude and falls into River Mtkvari from the left side, at 972 m over the sea level at Gori. Length of the river is 98 km, total fall – 1755 m, average slope – 17.9%, area of the catchments basin – 2440 km^2, and average altitude of the basin – 1590 m. The river system includes numerous tributaries of 1800 km length, including Patara Liakhvi (63 km length) and Mejuda (46 km length). Didi Liakhvi River has an annual average flow of 29.8 m^3/s at the Tiriponi/Saltvisi irrigation diversion site. The river regime is characterized by spring floods and low flows in winter. The river is fed from rain, snow, glacier and groundwater.

The Mejuda River originates on the southern slope of Dzirisi Mountain (2994.6 m) and falls to the Didi Liakhvi River at Gori. The length of the river is 46 km with an average slope of 30%. There are 79 tributaries of 278 km total length which flow into the river. Among them, the most significant are Adzula (26 km length) and River Western Tortla (31 km length). The Mejuda River is fed from rain, snow and ground waters. Its regime is characterized with spring flood and variable low flows during the other seasons.

2.4 Alternatives Including the Proposed Actions

Reasonable alternatives are defined (by NEPA) as those alternatives that meet the project purpose and need and address significant issues (as identified in this Scoping Statement). This section describes the alternative actions that meet the project's purpose and need. The purpose of this project, as stated above, is to provide flood protection and improve the infrastructure in Dusheti and Gori municipalities. The project need is to rehabilitate municipal project areas that will protect residents, contribute to economic growth and improve the social condition of the local population.

Three alternatives have been identified: "No Action" (Alternative 1); "Proposed Action" (Alternative 2); "Reduce Source of Flooding" (Alternative 3); "Land Use Restrictions" (Alternative 4; and "Economic Growth Program" (Alternative 5). The Scoping Team identified these alternatives as feasible alternatives which meet the project purpose. No other alternatives were identified that are feasible and meet the project purpose. The alternatives are described below.

2.4.1 Alternative 1 -- No Action

The No Action Alternative means that USAID will not support the rehabilitation projects and therefore, residents will continue to live under the constant threat of flooding and economic growth would be reduced. This alternative provides a benchmark against which the action alternatives may be evaluated.

Under this No Action Alternative, GoG would be slowed in improving the conditions needed to improve economic growth. The employment opportunities that are expected as an indirect effect of rehabilitation are intended to benefit local residents including IDPs near Dusheti and Gori. Without rehabilitation, employment opportunities will be lost, and IDPs will remain unable to improve their living conditions.

2.4.2 Alternative 2 -- Proposed Action

The purpose of this project is to improve the riverbanks and rehabilitate structures that restrict river flow rates and cause flooding in Dusheti and Gori. These infrastructure rehabilitation projects will save lives and protect residents living under the constant threat of flooding. Projects will also contribute to economic growth of the municipality and improve the social condition of the local population.

Planned site activities in Dusheti Gorge include:

1. To ensure adequate capacity of the river flow through Dusheti municipality:
    - Dismantling of culvert bridges #1 and #2 and construction of new bridges.
    - Cleaning the riverbeds, removal of boulders, stones and macadam waste, and demolished structures.

2. To rehabilitate riverbank structures:
    - Construction of retaining walls or more flexible riverbank protection structures at locations where the riverbanks are outwashed.

The project envisages construction arrangement of two culvert bridges with piers of reinforced concrete and metallic (with concrete reinforcement beam) spans. The proposed distance between the piers is 15 m, which can be changed as a result of hydrological survey. The total proposed width of the bridge is 8 m. The width of the carriageway is proposed to be 6 m, with the width of sidewalks 1+1=2 m. The total length of the bridge including the piers is estimated to 25 m. Sketch of the bridge is provided in Figure 1.

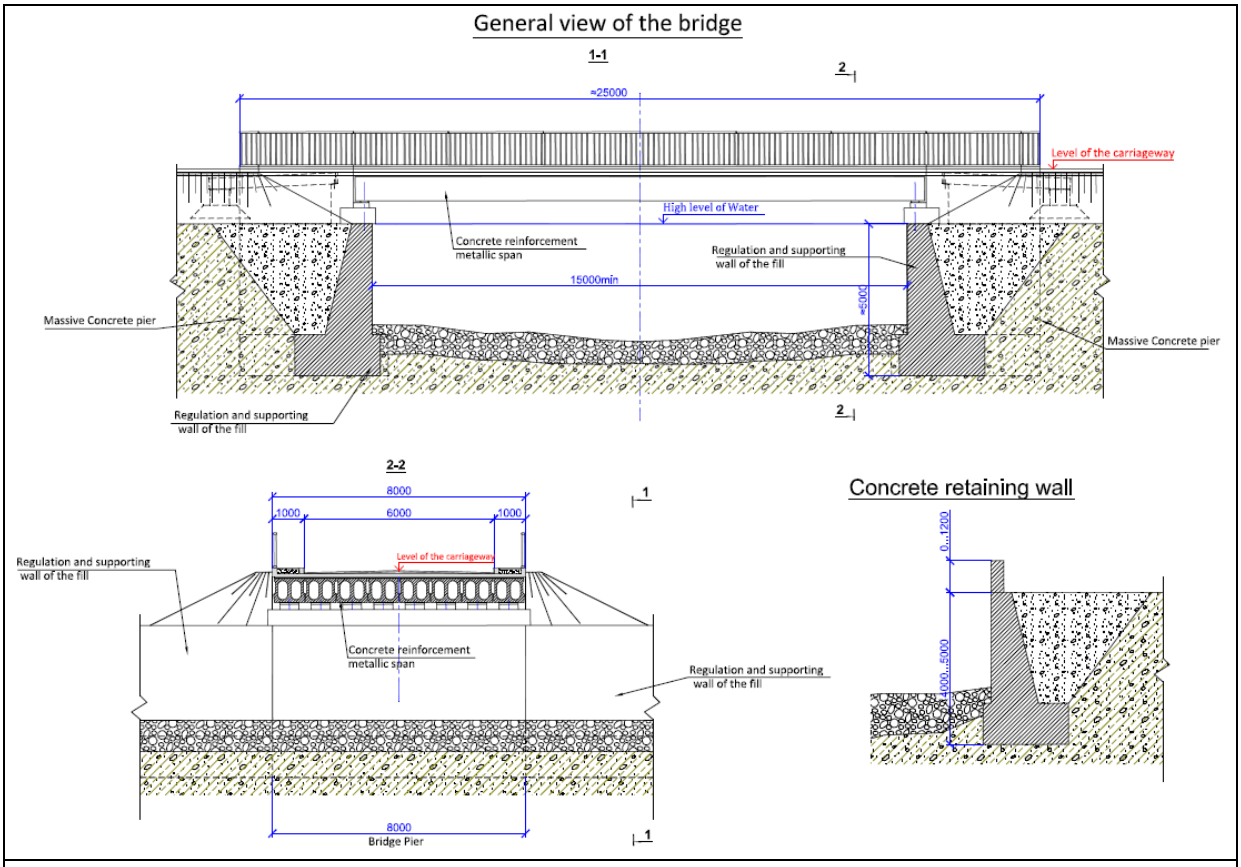


Figure 1. Proposed layout for Dusheti bridge design

The bed is proposed to be cleaned within the area 1300-1500 m in length and 1 m in depth. Activities are estimated to include movement of about 26,000 m^3 of boulders, stones and macadam waste and disposing them into a suitable site (3 km away). The height of concrete reinforcement walls will be 5 m. The total length of the walls will approximately be 500 m.

The following range of equipment will be used in the construction: two types of excavators, trippers and concrete trucks, compressor and hydro-hammer excavator, two types of cranes, roller and bulldozer.

Planned site activities for 26 May Street in Gori include:

1. To rehabilitate damaged riverbank:
    - Cut ditch for diverting river flow and build temporary dam
    - Use crane to place rip-rap rocks from borrow pit to riverbank

- Fill voids with gravel

2. To rehabilitate curbs, sidewalks and railing:
    - Dismantle curbs and build new curbs
    - Construct sidewalks with macadam base and asphalt-concrete layer
    - Install new sidewalks
    - Replace damaged concrete fence with decorative concrete fence

Rehabilitation of the 26 May Street riverbank in Gori includes restoration of riverbank protecting walls and the sidewalk along the riverbank near the confluence of the rivers Mejuda and Didi Liakhvi. Specifically, repair of 755 m of riverbank protection wall from Amilakhvari Bridge on River Mejuda to Kombinati Bridge on River Didi Liakhvi and partial restoration of reinforced concrete railing and construction of a new sidewalk and curb along 705 m length. (See Figure 2 for a sketch and photo of the site.)

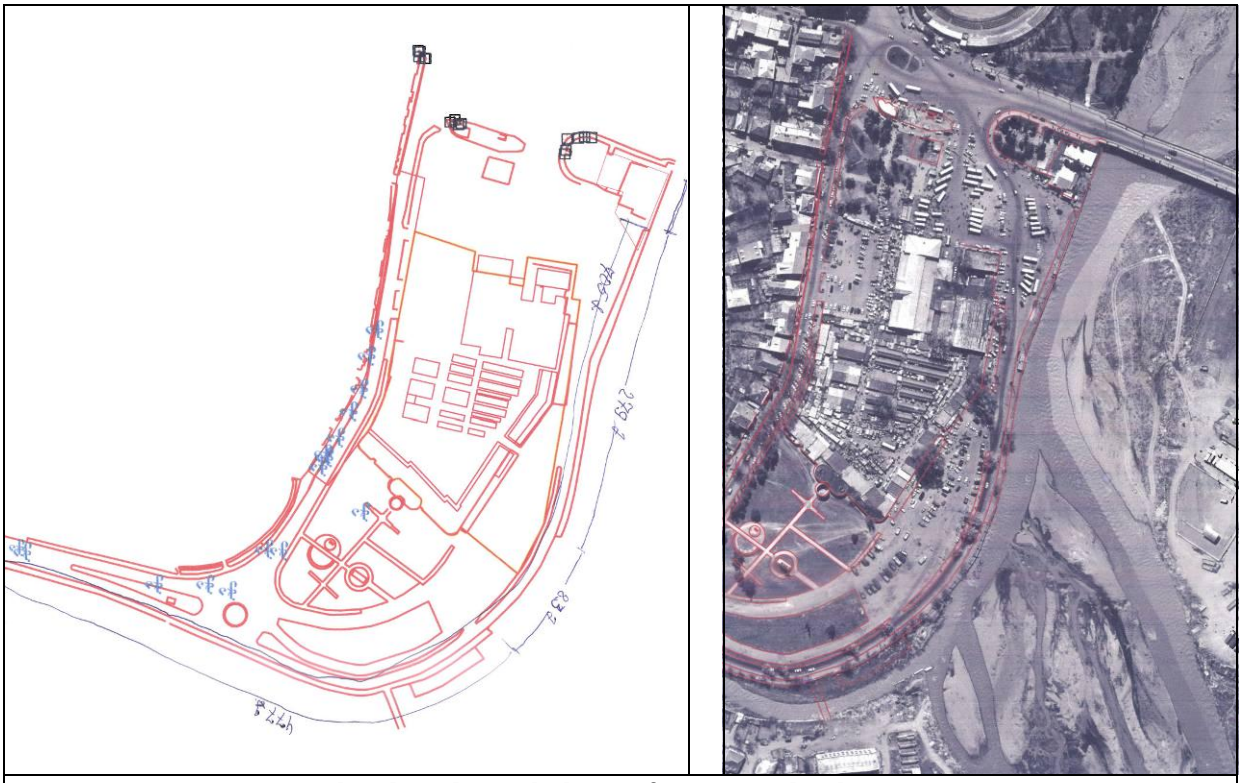


Figure 2. Sketch and aerial photo of Gori riverbank protection site.

A crane is the principal piece of heavy equipment needed for construction of this project.

2.4.3 Alternative 3– Reduce Source of Flooding

This alternative will reduce flooding with watershed improvement measures implemented in the upper watershed of the river's catchment area.. The Dushetiskhevi River begins in the mountains and flows 13 km to the Dusheti Gorge. The catchment area is about 36 km^2. Water and sediment controls along the river and its tributary streams may reduce flow velocity, erosion, scouring and scour depths, and its flow regime in Dusheti Gorge. Additional upstream data collection and runoff analysis will be conducted in the Hydrologic Study (See Section 2.3.1) that supports the Dusheti Flood Protection EA. The findings in this study will be helpful in reducing peak flood flows originating in the upper watershed. Water storage and flood warning systems will be considered.

Meetings will be used to determine if this alternative is feasible and whether it would provide more environmental and social benefits compared to the Proposed Action (Alternative 2).

2.4.4 Alternative 4– Land Use Restrictions

This alternative alters the land use in the flood zone to activities less adversely affected by flooding. Land use restrictions consider man-made structures and encroachments in the flow-way and the floodplain along Dusheti Gorge. Measures may include removal of existing structures and preventing further encroachment into the floodplain through municipal land use preventative actions.

The Hydrologic Study (See Section 2.3.1) that supports the Dusheti Flood Protection EA includes a provision for meeting with Dusheti city officials to discuss land use restrictions and other non-structural measures to prevent future flooding and minimize flood damage. Results from this study will determine whether this alternative is feasible and whether it would provide more benefits compared to the Proposed Action (Alternative 2).

2.4.5 Alternative 5– Economic Growth Program

This Economic Growth Program was chosen as an alternative to evaluate in the comparison of alternatives section because it meets GMIP's vision and objectives as well as addressing the need for significant job creation and income generation. Although this alternative does not address Scoping Statement-derived impacts and program issues, it addresses concerns of the public and the GoG—job creation and income generation.

The Economic Growth Program will focus on raising incomes of residents near the flood-prone areas in order to serve as engines of local economic growth. Through a competitiveness analysis, this program would identify value chains that, if strengthened, could result in significant, broad-based economic growth. Some value chains will likely be based on agricultural products and include a value-added processing component. Since the focus is job creation and income generation, workers may be hired to show economic growth results in the short-term.

This program alternative will be discussed with GoG and the GMIP Steering Committee during the EA preparation phase. Meetings will be used to determine if economic growth incentives would provide more environmental and social benefits compared to the Proposed Action (Alternative 2).

2.5 Scope and Significance of Issues

An important factor in determining the scale and significance of the environmental and social impacts generated by alternative interventions is that all construction/rehabilitation activities are taking place within municipal areas. The municipal areas are built up urban environments. An analysis of potential impacts for these municipal rehabilitation projects is provided in Appendix B. The environmental impacts are analyzed separately for the construction/rehabilitation phase and for the operational/maintenance phase. Impacts are assessed for the following environmental and social receptors:

- *Soils, Geology and Landscape*
- *Water Resources*
- *Air Quality*
- *Biodiversity (flora and fauna)*
- *Community, Socio-Economic, and Public Health (including cultural and historical assets, population, public health, temporary resettlement etc)*

The Scoping Team reviewed the results of the Public Stakeholder Scoping Meeting held in Dusheti on July 5, 2011. The comments and the GMIP response are included in Appendix A. The Scoping Team also reviewed the USAID/Africa Bureau Environmental Guidelines for Small-Scale Activities (EGSSA), which makes note of potential significant effects for municipal rehabilitation projects. These issues were reviewed by the Scoping Team:

- *Soil erosion: a potential concern for Dusheti and Gori*
- *Degradation of water quality: a potential concern for GMIP flood protection projects*
- *Adverse effects on quantities of water: not a concern for GMIPflood protection projects*
- *Altered hydrology and flooding: a potential concern for GMIP projects in Dusheti and Gori*
- *Deforestation: not a concern for GMIP flood protection projects*
- *Damage to valuable ecosystems: a potential concern for GMIP flood protection projects*
- *Damage to scenic quality and tourism: a potential concern for GMIP projects*
- *Adverse impacts on human health and safety: a potential concern for GMIP flood protection projects in Dusheti and Gori*
- *Changes to local culture and society: a potential concern for GMIP flood protection projects*
- *Cumulative Impacts: The Environmental Assessment needs to consider the cumulative impacts of municipal flood protection rehabilitation projects.*

2.6 Identification of Concerns and Significant Effects

Below, Table 1 shows the social and environmental concerns, the origin of those concerns, and how the Scoping Team intends to respond to the concerns during the EA. The social and environmental concerns from irrigation rehabilitation and operation are combined, as appropriate. Following this table, Table 2 describes the potentially significant impacts and specific issues that will be further evaluated in the EA. In Section 3, Table 3 shows concerns (from Table 1) that have been eliminated from further consideration in the EA.

Table 1: All Social & Environmental Concerns for GMIP Flood Protection Activities

All Social & Environmental Concerns	Origin of Concern	Scoping Team's Response
Change in river flow using series of temporary	Local concern	Potentially significant; to be

dams and flume pipes. Open excavation pits and trenching in riverbed. Pits dewatered with pumps discharging downstream. Trench backfilling. Dismantling of temporary dams and removal of diversions.	EGSSA	investigated further in the EA.
Impacts inside riverbed, heavy equipment removal of damaged concrete. Offsite disposal of damaged concrete. Removal and offsite disposal of stones and excavation spoil from riverbed.	Local concern EGSSA	Potentially significant; to be investigated further in the EA.
Disturbance of watercourse and interference with juvenile and adult fish migration. Construction during low flow when mitigation is most difficult.	Local concern EGSSA	Potentially significant; to be investigated further in the EA.
Damage caused by constructing temporary access roads and staging areas.	Local concern EGSSA	Potentially significant; to be investigated further in the EA.
Riverbank excavation and rehabilitation impacts. Repair of deep "head-cuts" in riverbanks and construction of access ramps. Soil erosion and sedimentation from installation of riverbank protection measures. Bank slumping.	Local concern EGSSA	Potentially significant; to be investigated further in the EA.
Impacts from solid waste removal from river. Disposal of waste and cleanup of accumulated waste.	Local concern EGSSA	Sufficient information is available to develop BPs to minimize this concern.
Deterioration of on-site and downstream water quality and impacts on downstream users. Ecological impacts from sediment loads and turbidity.	Local concern EGSSA	Potentially significant; to be investigated further in the EA.
Loss of vegetation, sedimentation and removal of topsoil and riverbank subsoil.	Local concern EGSSA	Sufficient information is available to develop BPs to minimize this concern.
Dust generation during rehabilitation; Air pollution from heavy equipment. Noise pollution from heavy machinery.	Local concern EGSSA	Sufficient information is available to develop BPs to minimize this concern.
Construction camps could result in pollution of surface and groundwater if inadequate sanitary facilities are not provided. Altered landscapes if the site is not returned to previous conditions. Alcohol and socially destructive practices introduced via construction crews.	Local concern	Sufficient information is available to develop BPs to minimize this concern. Mitigations to be included in the bidding document.
Contamination from heavy equipment leaks and construction spills.	Local concern EGSSA	Sufficient information is available to develop BPs to minimize this concern.
Impacts to threatened, endangered, and protected species. Disruption of sensitive ecological habitats.	Local concern	Available information is insufficient to determine; to be investigated further in EA.
Impacts to wetlands and other natural resources.	Local concern EGSSA	Potentially significant; to be investigated further in the EA.
Impacts to cultural resources	Local concern	Sufficient information is available to develop BPs to minimize this concern.
Weak land use restrictions increase number of residents threatened with flooding.	Local concern EGSSA	Potentially significant; to be investigated further in the

		EA.
Cumulative Impacts: The Environmental Assessment needs to consider the cumulative impacts of flood protection activities within the watershed.	Local concern EGSSA	Cumulative impacts will be evaluated in the EA.
Lack of environmental co-ordination. Lack of consultation. Participation and transparency. Lack of co-ordination. Inconsistent messages across projects.	NGO concern,	Scoping and EA processes are meant to encourage coordination, consultation, participation, and transparency and to provide clear, consistent messages; no further assessment needed.
Project sustainability. Lack of effectiveness. High expectations for project benefits.	NGO concern,	The project is designed for sustainability, effectiveness, and to balance expectations with benefits; no further assessment needed.
Lack of understanding of environmental issues	NGO concern,	This is an issue nationwide and is beyond the bounds of the project.
Eager for project to commence.	Local concern,	No action necessary
Pedestrian and traffic safety. Worker and public health and safety. Drowning.	Local concern	Sufficient information is available to develop BPs for inclusion in the bidding document.
Visual impacts due to flood protection structures.	Local concern EGSSA	Sufficient information is available to develop BPs to minimize this concern.

Table 2: Potential Significant Impacts for GMIP Flood Protection Activities

Social & Environmental Concern to be evaluated in EA	**Potentially significant issue to be evaluated in EA**	**EA Requirements/ Work Tasks**
Change in river flow using series of temporary dams and flume pipes. Open excavation pits and trenching in riverbed. Pits dewatered with pumps discharging downstream. Trench backfilling. Dismantling of temporary dams and removal of diversions.	Changes in hydrology of river could affect sensitive ecosystems. Construction of temporary dams and flood protection structures could result in impacts similar to other small-scale construction projects.	Develop mitigation measures for construction /rehabilitation and decommissioning. Mitigations needed for heavy equipment used in riverbeds. Incorporate mitigation and monitoring into engineering contracts.
Impacts inside riverbed, heavy equipment removal of damaged concrete. Offsite disposal of damaged concrete. Removal and offsite disposal of stones and excavation spoil from riverbed.	Heavy equipment may damage riverbed/riverbank. If engineering contract does not include mitigation measures and a budget for implementation, project could result in adverse environmental impacts. Improper disposal of damaged concrete and spoil could adversely affect the local	Mitigation measures need to be developed for construction/rehabilitation and decommissioning. Mitigations needed for using heavy equipment. Incorporate mitigation and monitoring into project implementation contracts.

	environment.	
Disturbance of watercourse and interference with juvenile and adult fish migration. Construction during low flow when mitigation is most difficult.	Disturbance of river could affect fish migration and sensitive ecosystems. Without mitigation measures in project contracts, adverse environmental impacts are possible.	Develop mitigations for construction/rehabilitation and decommissioning. Mitigations needed for erosion and sediments. Identify fish species that may be impacted. Include mitigations in project engineering contracts.
Damage caused by constructing temporary access roads and staging areas.	Ecosystems sensitive to disturbances may be located near areas impacted by construction of access roads and staging areas. If engineering contract does not include mitigation measures. project could result in adverse environmental impacts.	Mitigation measures need to be developed for construction/rehabilitation and decommissioning. Mitigations needed for using heavy equipment. Incorporate mitigation into implementation contracts.
Riverbank excavation and rehabilitation impacts. Repair of deep "head-cuts" in riverbanks and construction of access ramps. Soil erosion and sedimentation from installation of riverbank protection measures. Bank slumping.	Heavy equipment may damage riverbanks and ecosystems. Soil erosion and sedimentation could degrade water quality. Without mitigation measures in project contracts, adverse environmental impacts are possible.	Develop mitigation measures for construction /rehabilitation and decommissioning. Mitigations needed for using heavy equipment. Incorporate mitigation into implementation contracts.
Deterioration of on-site and downstream water quality and impacts on downstream users. Ecological impacts from sediment loads and turbidity.	Downstream users may be impacted by sediments and pollution. If engineering contract does not include mitigation measures. Project could result in adverse environmental impacts.	Meet with Tbilisi water company (v. Natakhtari) to assess water quality impact from project activities and from past floods. Develop mitigation measures for protecting downstream users, incorporate into engineering contracts.
Impacts to threatened, endangered, and protected species. Disruption of sensitive ecological habitats.	Rehabilitation, including construction and operation phases, could impact TES and sensitive ecological habitats. This could occur through direct impacts (workers may disrupt habitats without oversight) or indirectly through habitat alterations during construction.	Identify presence of TES and/or sensitive habitat; Determine possible short and long-term habitat alterations.
Impacts to wetlands and other natural resources.	During the construction phase, wetflands or other natural resources may be disturbed and/or destroyed.	Identify wetlands or other natural resources of importance in the vicinity of the projects and as appropriate, measures to protect them.
Weak land use restrictions increase number of residents threatened with flooding.	Residents live near river and in floodplain. Additional residents may move into floodplain with	Identify possible land use restrictions for local municipality. Develop

	possible impacts from floods. Family gardens next to river.	mitigations to protect residents living next to the river.
Cumulative Impacts: The Environmental Assessment needs to consider the cumulative impacts of flood protection activities within the watershed.	Cumulative impacts may result from the combination of past, present, proposed, and reasonably foreseeable actions. A cumulative effects analysis is part of EA.	Identify the space, time, and assumptions to predict cumulative impacts.

2.7 Potentially Significant Impacts to be Analyzed in EA

Significant effects to be analyzed in the EA are based on the Scoping Team's assessment of flood protection construction/rehabilitation and operation/maintenance effects as well as the direct effects. Findings in Table 2 were used to identify potential significant impacts on rehabilitation and operation of municipal flood protection (Table 2). Potential significant rehabilitation/operation effects to be analyzed in the EA include:

- **Change in river flow using series of temporary dams and flume pipes. Open excavation pits and trenching in riverbed. Pits dewatered with pumps discharging downstream. Trench backfilling. Dismantling of temporary dams and removal of diversions.**

- **Impacts inside riverbed, heavy equipment removal of damaged concrete. Offsite disposal of damaged concrete. Removal and offsite disposal of stones and excavation spoil from riverbed.**

- **Disturbance of watercourse and interference with juvenile and adult fish migration. Construction during low flow when mitigation is most difficult.**

- **Damage caused by constructing temporary access roads and staging areas.**

- **Riverbank excavation and rehabilitation impacts. Repair of deep "head-cuts" in riverbanks and construction of access ramps. Soil erosion and sedimentation from installation of riverbank protection measures. Bank slumping.**

- **Deterioration of on-site and downstream water quality and impacts on downstream users. Ecological impacts from sediment loads and turbidity.**

- **Impacts to threatened, endangered, and protected species. Disruption of sensitive ecological habitats.**

- **Impacts to wetlands and other natural resources.**

- **Weak land use restrictions increase number of residents threatened with flooding.**

- **Cumulative Impacts: The Environmental Assessment needs to consider the cumulative impacts of flood protection activities within the watershed.**

During the EA, meetings will be conducted with agencies/ministries, local governments, non-governmental organizations, donor organizations and others as needed to assess the significance of impacts identified above. Additional inspections of the project sites will be conducted as necessary. Each impact will be analyzed and the EA Team will identify mitigation measures to minimize adverse social and environmental effects and develop an Environmental Mitigation and Monitoring Plan for flood protection activities. The EMMP will include best practices, as noted in Tables 1 and 3.

3. IDENTIFICATION AND ELIMINATION OF ISSUES THAT ARE NOT SIGNIFICANT

The identification of issues that are not significant is based on the analysis of direct effects provided in Appendix B for municipal flood protection activities, an analysis of comments received during scoping, review of literature and field visits. The analysis of environmental effects included consideration of both the construction/rehabilitation phase and the operational/maintenance phase.

The list of potential environmental impacts excluded from the EA is provided in Table 3. This table includes the issues identified as not significant as well as the reason they were excluded from further analysis in the EA.

Table 3: GMIP Concerns that have been eliminated from further evaluation

Social & Environmental Concern	Reason for Elimination
Impacts from solid waste removal from river. Disposal of waste and cleanup of accumulated waste.	Information is sufficient to provide best practices to minimize this concern; BPs to be included in the bidding document. No additional investigation is needed.
Loss of vegetation, sedimentation and removal of topsoil and riverbank subsoil.	Information is sufficient to provide best practices to minimize this concern; BPs to be included in the bidding document. No additional investigation is needed.
Dust generation during rehabilitation; Air pollution from heavy equipment. Noise pollution from heavy machinery.	Information is sufficient to provide best practices to minimize this concern; BPs to be included in the bidding document. No additional investigation is needed.
Construction camps could result in pollution of surface and groundwater if inadequate sanitary facilities are not provided. Altered landscapes if the site is not returned to previous conditions. Alcohol and socially destructive practices introduced via construction crews.	Information is sufficient to provide best practices to minimize this concern; BPs to be included in the bidding document. No additional investigation is needed.
Contamination from heavy equipment leaks and construction spills.	Information is sufficient to provide best practices to minimize this concern; BPs to be included in the bidding document. No additional investigation is needed.
Impacts to cultural resources	Information is sufficient to provide best practices to minimize this concern; BPs to be included in the bidding document. No additional investigation is needed.
Lack of environmental co-ordination. Lack of consultation. Participation and transparency. Lack of co-ordination. Inconsistent messages across projects.	Scoping and EA processes are meant to encourage coordination, consultation, participation, and transparency and to provide clear, consistent messages; no further assessment needed.
Project sustainability. Lack of effectiveness. High expectations for project benefits.	The project is designed for sustainability, effectiveness, and to balance expectations with benefits; no further assessment needed.
Lack of understanding of environmental issues	This is an issue nationwide and is beyond the

	bounds of the project.
Eager for project to commence.	No action necessary
Pedestrian and traffic safety. Worker and public health and safety. Drowning.	Sufficient information is available to develop BPs for inclusion in the bidding document.
Visual impacts due to flood protection structures.	Sufficient information is available to develop BPs to minimize this concern.

4. METHODOLOGY AND SCHEDULE FOR PREPARATION OF THE ENVIRONMENTAL ANALYSIS

This section covers the methodology that will be used for conducting the EA analyses.

4.1 Methodology for Conducting the Environmental Analysis

The scoping process has confirmed the utility of the EA methodology. The scoping process has also laid the foundation for the preparation of the EA for rehabilitation of flood protection activities in Georgia by achieving the following:

- Preparing reports on existing technical and environmental information.
- Conducting site investigations and stakeholders meetings
- Determining the significant issues to be assessed during the EA.
- Identifying the EA team disciplines needed for key EA issues.

The analysis completed in this SS provides the framework that will guide the work of the EA team pursuant to the process described in USAID's environmental procedures.

4.1.1 Impacts Identification/Screening and Significance Determination

The EA will address the types of activities involved with rehabilitation of flood protection riverbanks and structures. Site visits have been made during scoping and additional site inspections will be conducted as necessary. Issues identified during the scoping process will be addressed in the EA in greater depth. Based on scoping process findings and further studies, EA technical specialists identify significance criteria for all receptors. The EA will evaluate potential significant impacts associated with each alternative. Attention will be given to direct, indirect and cumulative impacts within the project's influence area. Mitigation measures (and best practices) for each significant impact will be identified. All aspects of the project's life (design, construction, rehabilitation, operation and maintenance) will be considered in the EA. Based on a discussion of environmental consequences, the team will determine the need for mitigation measures and whether mitigation is practicable. Where mitigation is not possible or if it is inadequate to minimize concerns, the team will note this as an irreversible and unavoidable consequence.

The EA Team will: 1) based on the SS, evaluate the significant issues associated with rehabilitation/construction and/or operation/maintenance; 2) propose mitigations for significant adverse impacts; 3) make a determination of the significance of impacts with mitigation incorporated; and 4) develop an EMMP for GMIP flood protection activities. The EA will serve as the environmental manual for GMIP flood protection projects. The EA will include an EMMP for municipal flood protection activities. Mitigation measures including best practices will be included in Environmental Mitigation and Monitoring Plans (EMMPs).

4.1.2 Data Sources

The EA team will use published sources including periodic publications, scientific journals and internet websites and data sources. Due to the different projects already existing in this area, there is data already in place within the country. Fieldwork will involve visits to proposed flood prevention sites and nearby areas. Appropriate government authorities, NGOs, and bilateral and multilateral donors will be consulted.

4.2 Schedules

In order to carry out the EA, the scoping team envisions the following additional arrangements, methods and timing to begin the EA.

4.2.1 Preparation of the EA

This SS will be reviewed and approved by the USAID/Georgia Mission Environmental Officer (MEO) and the Europe and Eurasia Bureau Environmental Officer (BEO). EA implementation covers the time for EA preparation.

EA Preparation: The proposed period for preparing the EA will be approximately three weeks broken down as described below. Throughout the process, meetings will be held with USAID to discuss results of each step.

- Week 1: Complete data analysis including baseline studies, information from reports and data from site visits and meetings with other projects. Visits to municipal flood prevention rehabilitation areas.
- Week 2: Final site visits and field work at proposed flood protection sites. Meetings with communities and others as needed. Begin writing EA.
- Week 3: Continue writing EA, complete site visits and field work. Additional meetings to fill critical information gaps as needed. Finalize EA and submit to USAID.

5. ENVIRONMENTAL ASSESSMENT FORMAT

5.1 EA Outline

This EA Outline describes the sections that will be part of the EA.

1. Summary

    1.1 Project Description
    1.2 Project Context
    1.3 Summary of 22 CFR 216 Requirements, IEE Summary, Scoping Process
    1.4 Major Conclusions
    1.5 Areas of Controversy and Issues to be Resolved

2. Underlying purpose and need to which the proposed action is responding.

    2.1 Project Description
    2.2 Purpose and Need for the Proposed Action
    2.3 Status of Environmental Compliance Documentation
        2.3.1 Summary of of 22 CFR 216 Requirements and the IEE
        2.3.2 Environmental Scoping Statement
        2.3.3 Stakeholder Engagement and Host Government Consultations
        2.3.4 Host Country Environmental Context

3. Alternatives Including the Proposed Action

    3.1 Description of the Alternatives
        3.1.1 Proposed Action
        3.1.2 Reduce Source of Flooding
        3.1.3 Land Use Restrictions
        3.1.4 Economic Growth Program
        3.1.5 No Action Alternative
    3.2 Alternatives Eliminated from Analysis and Rationale for Eliminating Alternatives
    3.3 Comparison of Environmental Impacts of Alternatives
    3.4 Discussion of Alternatives
    3.4 Ranking of Alternatives with Respect to Significance of Environmental Impacts

4. Affected Environment

    4.1 Population Characteristics
    4.2 Geographic Characteristics
    4.3 Environmental Baseline Information
      4.3.1 Dusheti Gorge Flood Protection
      4.3.2 Gori Riverbank Protection
    4.4 Policy, Legal, Regulatory and Permitting Requirements
        4.4.1 Host Country Government Policy, Legal and Regulations
        4.4.2 International Standards and Best Practices

6. ENVIRONMENTAL ASSESSMENT TEAM COMPOSITION

The EA team has been chosen based on the potential impacts identified in this SS. Data collection, field studies, analyses and EA preparation will be conducted by a specialized team of scientists and engineers from Tetra Tech. Each expert will focus on the impacts in their specialization areas and expertise. Backgrounds of principal members of the EA Team are highlighted below:

James Gallup, Ph.D., P.E., Team Leader and Environmental Specialist. Dr. Gallup is a senior environmental specialist with over 40 years of international experience, including projects in Georgia. He led a team that prepared a Programmatic Environmental Assessment (PEA) for the USAID AgVANTAGE Project implemented by ACDI/VOCA. He has provided direct technical support to the Europe and Eurasia Bureau Environmental Officer and he designed and implemented USAID's Global Environmental Pollution Prevention Project (EP3). Dr. Gallup, a registered professional engineer, earned his Ph.D. in Environmental Engineering from the University of Oklahoma. He holds a MS in Environmental Engineering and a BS in Microbiology.

Mamuka Gvilava, Ph.D., Environmental Specialist. Dr. Gvilava is an environmental specialist with fifteen years experience in field work, project management, policy and regional cooperation. He has experience with environmental and social impact assessment, remote sensing and green design. He served as national focal point to the Black Sea Commission and project director of the World Bank and GEF Coastal Zone Management Project. He has a Ph.D. in physics and math.

Mamuka Shaorshadze, Environmental Specialist. Mr. Shaorshadze has 12 years relevant experience, most recently as an environmental supervisor on two Millennium Challenge Georgia (MCG) fund infrastructure programs. He also served as an Environmental Field Officer for the Georgian Oil and Gas Corporation initiatives funded by the MCG. Mr. Shaorshadze earned his Bachelor's Degree in International Economics from Georgian Technical University.

7. APPENDICES

Appendix A: Details of Scoping Meetings

Appendix B: Summary of Impacts Identified for Municipal Road Rehabilitation Activities

Appendix C: Site Visit Engineering Reports
- Part 1: Inspection Report for Dusheti Flood Protection (August 26, 2011)
- Part 2: Environmental Site Visit Report for Gori Riverbank Protection (March 9, 2012)

1. Appendix A: Details of Scoping Meeting

This appendix provides the details of the Stakeholder Scoping Meeting held in Dusheti on July 5, 2011. The appendix includes meeting participants, speaker information and opinions, proposals and recommendations, photos, agenda and list of participants.

A. Meeting Participants

Representative of USAID: Giorgi Kokochashvili.
Representative of Municipal Development Fund of Georgia:

- Kartlos Gviniashvili
- Zurab Baratashvili.

Representative of Tetra Tech, Ltd:

- Jeffrey Fredericks;
- Ilia Eloshvili;
- Archil Lezhava;
- Mamuka Shaorshadze;

Representative of Kavgiprotransi-MG, Ltd:

- Kakhi Jashi – Director;
- Vazha Mirimanov – Chief Engineer;
- Vazha Kirmizov – Chief Specialist of Water Supply and Waste Water Projects;
- Nugzar Mirimanov – Chief Specialist of Road Projects
- Ilia Mtskhvetadze – Chief Environmentalist of the Project;

Representatives of local Executive Bodies:

- Tsaro Sadzaglishvili – Chairman of Dusheti Assembly
- Gia Natsvlishvili – Dusheti Assembly;
- Tamaz Akhalkatsi – Kareli Municipality;
- Gocha Nebieridze – Kareli Municipality;
- Iago Valishvili – Kareli Municipality;
- Hamlet Davrishelidze – Kareli Municipality;
- Kakha Lobzhanidze – Gori Municipality;
- Giorgi Shengelia – Gori Municipality;

Representatives of Population

- Nodar Kurtsikidze – C. Dusheti, Mtvareliant Settlement;
- Badri Tsotskolauri – C. Dusheti, Mtvareliant Settlement;
- Natela Verdzeuli – C. Dusheti, Mtvareliant Settlement;
- Ushangi Bezhanishvili – C. Dusheti, Mtvareliant Settlement;
- Omar Gogishvili – C. Dusheti, St. Ioseliani;
- Zina Zignesiani – C. Dusheti, Mtvareliant Settlement;
- Juli KashiaSvili – C. Dusheti, St. Parnavazi;
- Giorgi Tselashvili – C. Dusheti, St. Parnavazi;
- Tamaz Bulauri – Dusheti Autotransport Enterprise;
- Shota Kherkeladze – Dusheti Region
- Aleksi Narimanidze – C. Dusheti, Pensioner

B. Speaker Information and Opinions

The Chairman of Dusheti Assembly Tsaro Sadzaglishvili welcomed the participants and offered them to choose Mr. Kakhi Jashi as a chairman of the Meeting.

Mr. Kakhi Jashi introduced attendees with the general purposes of the project, emphasized the importance of the USAID activity and the importance of projects, reviewed the existing condition of the municipal infrastructure rehabilitation projects that are located in the municipalities and thanked the attendants for participating in the meeting. He asked them to express their opinions and proposals and promised to consider their views in the scoping statement.

A speaker mentioned that the rehabilitation projects for the eight municipal infrastructure units were acceptable and, if the mitigation measures are considered during the project implementation, the public health and environment will not be in danger. In addition, the speaker emphasized the importance of improvement of social conditions. This will particularly reflected on the population of vil. Dvani and its nearby villages, on families settled nearby the **Dusheti Gorge** and on inhabitants of railway settlement.

Mr. Nugzar Mirimanov presented technical-economical data regarding road rehabilitation. Mr. Vazha Mirimanov mentioned two bridges built in violation of norms. The distance between the abutments is so small that stones, branches and solid materials cannot pass through the cut, resulting in flooding of nearby yards and houses.

Mr. Vazha Kirmizov reviewed the issues of rehabilitation water supply and waste water systems and arrangement of water meters. He emphasized the importance of rehabilitating the waste water system and drainage system in the railway settlement. Mr. Ilia Mtskhvetadze reviewed the existing ecological condition of the site, the information gained during the site investigations and the benefits both for population and for ecological condition.

After the presentation the participants expressed their remarks and views.

The opinion was expressed by:

Mr. Nodar Kurtsikidze mentioned that the rehabilitation of bridges arrangement of **bank revetment structures** is also necessary as the **flood** devastates the property of population and puts in danger their lives.

Mr. Tamaz Bulauri said, that there were not bridges before and the houses were not **flooded** as the population used inert materials taken by the water to construct buildings.

Mrs. Eter Totiauri mentioned that she does not know where to go **when it rains as the water flows directly into her house.**

Mr. Tamaz Akhalkatsi and Mr. Gocha Nebieridze mentioned the importance of rehabilitation of Sogolasheni-Dvani road as their population is separated from the rest of Georgia. He said that these villages may be left without population. The rehabilitation of the road is also necessary so that the population at the occupied territories will see how the rest of Georgia is being developed and express the willingness to live in Georgia.

Mr. Giorgi Shengelia mentioned that rehabilitation of waste water system in Railway Settlement and of road pavement in Gori will improve the social condition of population.

Mr. Kakha Lobzhanidze mentioned that the rehabilitation of water supply and waste water systems and arrangement of water meters will promote the rational use of water and water supply will improve for more inhabitants.

The Chairman summed up the results of the meeting, thanked the attendants for participation in the meeting and promised to consider all their proposals.

C. Proposals and Recommendations

№	**Proposal Recommendation**	**Result**	**Remark**
1.	Re-arrangement of two bridges over **Dusheti Gorge** and arrangement of bank revetment structures	Is considered in the Captioned Project	Only the selected projects will be implemented.
2.	Rehabilitation of Sogolasheni-Dvani motor road	Is considered in the Captioned Project	It will be rehabilitated in case it turns up between the selected projects. Otherwise it will be rehabilitated in the future in the scope of another project
3.	Rehabilitation of waste water system in Gori and arrangement of road pavement at Gori streets.	Is considered in the Captioned Project	It will be rehabilitated in case it turns up between the selected projects. Otherwise it will be rehabilitated in the future in the scope of another project
4.	Rehabilitation of water supply and waste water system in Gori and arrangement of water meters	Is considered in the Captioned Project	It will be rehabilitated in case it turns up between the selected projects. Otherwise it will be rehabilitated in the future in the scope of another project

D. Photos

Meeting in Dusheti

Meeting in Dusheti

Meeting in Dusheti

Meeting in Dusheti

E. Agenda

Stakeholder Meeting Organized for Municipal Project Recipients (July 2011)

Registration: from 9.30 to 10.00

Time	Subject	Reporter
10.00	Greeting	Chairman
10.15	Technical issues	Kakhi Jashi
10.35	Social and environmental issues	Ilia Mtskhvetadze
10.55	Discussion	Attendants
11.45	The final part of the meeting	Chairman

F. List of Participants

მუნიციპალური ინფრასტრუქტურის პროექტის კომპონენტებთან დაკავშირებით
საზოგადოების წარმომადგენლებთან მოწყობილ შეხვედრაზე მონაწილეთა სია

ქ. დუშეთი 5 ივლისი 2011 წ.

NN	გვარი, სახელი	ორგანიზაცია	საკონტაქტო ინფორმაცია (ტელეფონი, ელექტრონული ფოსტა)
1	[illegible]	[illegible]	599-53-37-44
2	[illegible]	[illegible]	599333874
3	[illegible]	[illegible]	599-581486
4	[illegible]	[illegible]	599-58-61-46
5	[illegible]	[illegible]	577957222
6.	[illegible]	[illegible]	577957903
7.	[illegible]	Tetra tech	595364602
8.	[illegible]	Tetra tech Env. Specialist	595116071.
9.	[illegible]	Tetra Tech GEO	
10.	[illegible]	Tetra Tech	599788877.
11	[illegible]	[illegible]	595-21-41-12.
12	[illegible]	[illegible]	593191263
13	[illegible]	დუშეთის სკოლა	593630399
14	[illegible]	[illegible]	2-72-08
15	[illegible]	[illegible]	555-22-18-27
16	[illegible]	[illegible]	593-63-06-50
17	[illegible]	[illegible]	22-18-85
18	[illegible]	[illegible]	22-13-38
19	[illegible]	[illegible]	593-59-79
20	[illegible]	[illegible]	22-12-08
21	[illegible]	[illegible]	22-13-32
22.	[illegible]	[illegible]	22-13-36

NN	გვარი, სახელი	ორგანიზაცია	საკონტაქტო ინფორმაცია (ტელეფონი, ელექტრონული ფოსტა)
23.	[illegible]	[illegible]	592630425
24.	[illegible]	[illegible]	595531417

2. APPENDIX B Summary of Impacts Identified for Municipal Rehabilitation Activities

IMPACT (Description of effect) and occurrence (construction/operation)	Significance Determination Filter[1]				Are Consequences Significant? (Y) or (N) Positive impact (P)
	1 Subject of USAID or GoG Requirements[2]	2 Subject of Community Concern	3 Pollution Prevention Potential[3]	4 High Environmental Risk[4]	
Receptor: Soils, Geology and Landscape					
Rehabilitation phase:					
Disturbance or threat to important ecological habitats, including protected ecosystems (e.g. national parks) and/or other sensitive areas (e.g. wetland)					N
Visual disturbance due to construction/rehabilitation activities					N
Contamination of soils due to accidental spill of fuel/oil and/or other technical liquids					N
Contamination of soil due to uncontrolled disposal of construction waste					N

[1] Place an "X" in the appropriate column 1, 2, 3, or 4. A single "X" (the first one determined) is all that is required for a determination of significance.
[2] Subject to USAID requirements or specifically relevant legislation, regulation, and/or permit requirements. This will likely include effects associated with activities if (1) environmental regulations specify controls and conditions, (2) information must be provided to authorities, and/or (3) there may be periodic inspections or enforcement actions taken by authorities.
[3] Based on technical and business conditions, such as cost-effectiveness, has a high-potential for pollution prevention or resource-use reduction
[4] Associated with potential impact to the environment from high environmental loading due to one or more of the following: scale, magnitude, probability, duration.

Land clearance activities (e.g. trench excavation) could generate some amount of the topsoil to be stored properly, handled and reused.					N
Operation/Maintenance Phase:					
Impact on soil is excluded					N/A
Receptor: water resources (surface and ground)					
Rehabilitation phase:					
Contamination of water due to accidental spill of fuel/oil and/or other technical liquids					N
Lack of on-site sanitary facilities for construction workers causing pollution to surface and groundwater					N
Pollution of surface water resources by constructed materials (removed soil cover and old concrete plates, concrete					N
Operation/Maintenance Phase:					
Impact on water is excluded					N/A
Receptor: air quality					
Rehabilitation phase:					
Emissions from construction machinery, may increase the level of emission in the air	X				Y
Removal of groundcover, borrow pits, and construction sites, creating conditions for airborne dust and particulates may increase the		X			Y

level of emission in the air and dust, especially under windy conditions.					
Operation/Maintenance Phase:					
After rehabilitation emission in the air will be decreased					P
Receptor: Biodiversity					
Construction/rehabilitation phase:					
Rehabilitation process may cause removal of vegetation cover, changes in land use pattern.					N
Operation/Maintenance Phase:					
No significant impact on vegetation cover during operation/maintenance					N
Socio-Economic- Community , public health, cultural and historical assets					
Community					
Construction/rehabilitation phase:					
Disturbance of local community due to construction machinery, traffic and/or possible removal activities		X			Y
Temporary employment opportunities in the construction activities (beneficial impact)					N
Operation/Maintenance Phase:					
Improvement of livelihoods, increase of quality agricultural lands. Development of					P

agriculture and income.					
Public Health					
rehabilitation phase:					
Inadequate management of temporary sanitation facilities for workers could cause negative impact on public health during	X		X		Y
Operation/Maintenance Phase:					
Improvement of living environment of local population					P
Archaeology and historical monuments					
Rehabilitation Phase:					
Impact on archeological and historical heritage					N
Operation/Maintenance Phase:					
During operation impact on archeological and historical monument not possible					N

Definitions Used in Determining Environmental Risk

Parameter	Rating Categories				
	1	**2**	**3**	**4**	**5**
Scale	Insignificant volume/quantity	Low volume/quantity	Medium volume/quantity	Medium volume/quantity	High volume/quantity
Severity	Minimal impact	Moderate impact but localized and readily containable	Moderate impact over multiple locations	Significant impact and/or regional	Extreme impact and/or potential for global impact
Probability	Very unlikely under any operating condition	Occurs during abnormal/emergency conditions. Probability anticipated and managed	Occurs during routine maintenance activities	Occurs during major maintenance activities	Occurring during normal operating conditions
Duration	Spike situation extremely short-term duration within one day	Less than one month	One to six months	Less than one year	Long-term duration greater than one year or continuous

3. APPENDIX C: Site Visit Engineering Reports

Part 1: Inspection Report for Dusheti Flood Protection (August 26, 2011)
Part 2: Environmental Site Visit Report for Gori Riverbank Protection (March 9, 2012)

PART 1

Inspection Report
for
Dusheti Flood Protection

August 26, 2011

Tetra Tech Georgia
INSPECTION REPORT for Dusheti Flood Protection

Date: Friday, 26 August, 2011
Purpose: Site Visit (Take photos and GPS)
Place: Dusheti Gorge
Participants: MDF - Fridon Edzbelia; Tetra Tech – Mamuka Shaorshadze, Temuraz Levanishvili, Guram Soselia, Otar Magalashvili, Mamuka G.; Head of Construction Supervision – Aleko Gulishvili.

ISSUES/ ACTIVITY

1. Meeting with Head of Construction Supervision of Dusheti Municipality, Mr. Aleko Gulishvili, who showed us all the places damaged by flood.
2. We have preliminary arranged the places to inspect and selected the priority. We took GPS coordinates and photos of all the critical points and lately we will include all these materials with comments in report.

NEXT STEPS

1. Detailed description of the settlement and submitting report with GPS coordinates, photos and comments in near future.

Municipal Infrastructure and IDP Housing Rehabilitation Project
Irrigation and Municipal Infrastructure Project
Dusheti (Gorge)

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
1	001	E473862_N4659522	841 m	Inspection of Dusheti gorge. The river-bed is restricted because of town settlement and pier setup, especially middle one. Torrent flow losses the speed in hollow and floods the nearby area when it flows in restricted riverbed. Potentially flooded areas are visible on the photo.

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
2	002	E473933_N4659472	820 m	Temporary riverbank protecting works with concrete in restricted riverbed

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
3	003	E474020_N4659380	838 m	Temporary riverbank protecting works with concrete on restricted riverbed; the road usually floods.

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
4	004	E474061_N4659363	839 m	Rinsing out the banks of the gorge during the flood.

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
5	005	E474107_N4659348	852 m	Temporary bank protecting works with concrete blocks. The road usually floods.

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
6	006	E474166_N4659267	850 m	Rinsing out the banks of the gorge in restricted bed. The road usually floods.

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
7	007	E474251_N4659137	841 m	Rinsing out the banks of the gorge in restricted bed. The road usually floods.

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
8	008	E474358_N4658920	791 m	Rinsing out banks of the gorge in restricted bed. The road usually floods. Wood piers stand as artificial barrier.

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
9	009	E474556_N4658598	784 m	The river-bed is restricted because of town settlement and pier setup, especially middle one. The most critical point. Restriction of bed causes the sand drifting if the bed, raising of the river and flooding the yards of the settlers. The bridge should be dismantled before flooding.

N	Place	GPS (UTM-WGS 84)	Elevation (Meter)	Comments
10	010	E474500_N4658715	834 m	Rinsing out the banks of the gorge during the flood.

PART 2

Environmental Site Visit Report
for
Gori Riverbank Protection

March 09, 2012

To: Jeff Fredericks, Tetra Tech, GMIP COP

CC: Ilia Eloshvili, Tetra Tech, Deputy COP; Jim Gallup, Environment Team Leader

From: Mamuka Gvilava, Environmental Specialist

Date: March 9, 2012

I. Objectives

One day environmental site visit to proposed Gorijvari road section and Gori bank protection to:

(1) Visually assess site environmental conditions.

(3) Elaborate on GoG regulations with regard to EIA requirements.

(3) Based on points (1-2) provide recommendations on needed efforts and required studies.

II. Site Visit and Consultation Report

At the request of GIMP COP the site environmental inspection was performed by Mamuka Gvilava assisted by Mamuka Shaorshadze and with participation of Givi Varduashvili of TetraTech. The duration of the trip was 4 hours including approx 2x1 hours for driving, 2 hours inspections at the sites, including discussion with Jimsher Sadzaglishvili (595 426343) of GEO Ltd., engineer in charge of feasibility study, who kindly accompanied us at both sites.

First we report some issues discussion with GEO representative, and then follow up with field observations as comments to photo illustration provided. Please access all photos of the site visit at http://www.dropbox.com/gallery/37246529/1/Gorijvari_road?h=1c6bea (Gorijvari road) and http://www.dropbox.com/gallery/37246529/1/Gori_riverbank?h=d7cf94 (Gori riverbank) (pictures will be available online one week).

Here are some of the facts / issues reported by GEO representative:

- Festivities are taking place as pilgrimage to Gorijvari monastery starting on May the 6th (St. George Day) and ending November the 23rd (St. George Day). Families are visiting monastery with exactly 1 week interval starting on 6th of May, depending on personal choice and availability, anytime between two St. George Days. Spikes of visitation come on these dates.
- Sometimes at one moment there can be up to 5000 persons gathered with their vehicles. Three car parkings are therefore proposed, respectively for 50 (at the endpoint, near monastery), 50 (near cemetery, see pictures) and 40 cars (near 'apartments', see pictures).
- There are three steep slopes – one bypassing village, another on top of the village, next to the cemetery (slope will be reduced to 18 degrees and 100 m) and third one most steep one (latter we could not visit). 5m raised earth mound embankment is proposed to mitigate the second slope, reducing the third slope down to 16 degrees and intercepting the slope at half of its length.
- During the religious festivities people from Gorijvari will not let vehicles go through village; therefore vehicles are forced to go through steep bypass.

- Materials for raised embankment would be mostly taken from cutting and widening of the roads running along the dangerous cliff (current width is 5 m, should be widened to 8m +1m in turning points, see pictures).
- GEO representative claims that embankment volumes are exactly equal to material generated during cuttings. Additional gravel material will be needed only for road surfaces. There are two operating sources for gravel, both within 15 km distance, one from Mtkvari and another from Liakhvi riverbed, therefore no new source needs to be opened.
- In case of extra spoil, there is abandoned limestone mining site just below Gorijvari mount.
- When asked the following wildlife was mentioned: fox, wolf, some birds including smaller birds of pray, small mammals like rabbits. No knowledge of tree species, but probably only shrubs along the proposed road, although mountains in the background are quite good forests, which locals (mostly Gorijvari people) access for fuel wood, but terrain is difficult.
- Mr. Jimsher did not recall any cultural assets, except final destination Monastery itself, as well as cemetery along the road. Some old structures could be in the Gorijvari village itself. Food path with concrete pavement was arranged at the end of the walking section towards the Monastery.
- Road furniture should preferably include cultural heritage signage as well (currently not specified), including interpretive boards at the car parkings and entry point to the Monastery.
- This road has never been paved with asphalt except only from main road to village. Some periodic gravelling is performed (say, 1000 GEL annually, allocated by local budget). Dirt road always existed, reaching the proposed end point.
- In specific locations (like cliff and steep slope down the 'apartments' area or two other slopes mentioned above) arrangement of road will include significant shaping of the topography through cutting and material deployment. This essentially means construction of new paved road section.
- There was a debate on whether a road is reconstruction or rehabilitation. Local authorities specified this road as rehabilitation when requesting design, while GEO representative would have preferred to call it reconstruction.

Following are the pictures of the Gorijvari site inspection with our comments and observations (see above provided internet links for further images to get the better sense of the site).

It should be mentioned that weather conditions were not supportive. Snow cover did not allow satisfactory visual inspection of the site conditions. Besides, vehicle safety prevented from inspecting the entire section of the proposed road.

Gorijvari Monastery is overlooking Gori and this picture provides the sense of elevation.

View towards Gorijvari mountain from the center of Gori (from the park around stadium).

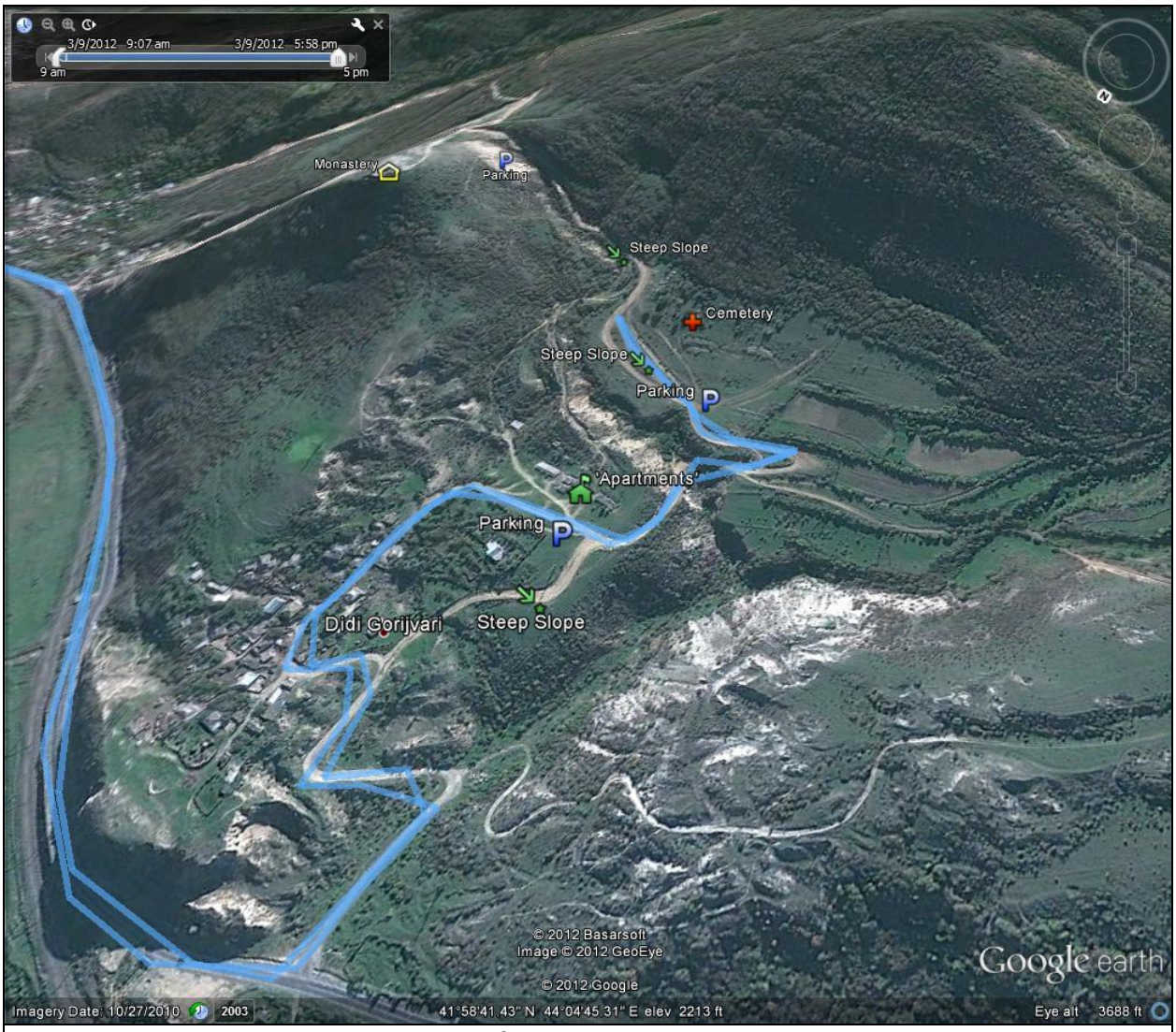
Road leading to Didi Gorijvari settlement has some signs of pavement, but essentially this is dirt road.

Actual width is 4-5 m. Required size per current design: 8-9 m. Cuttings are proposed to be used as fill for raised steep slope sections.

Extreme off-road skills were required to overcome this steep slope (no. 2 as referred to in the text). There has never been pavement

Cemetery and forest are clearly constraints along this eroding steep slope section and alternative path should only be considered as

here and three parallel short cutting dirt road sections (see on the map) exhibit strong signs of erosion even through snow cover. Pavement can improve environment, if sized properly.		part of the EA analysis. Another alternative would be to consider stone pavements for steep slope sections.
		
Parking space near ‘Apartments’		‘Apartments’ arranged by locals to house overnight visitors in May to November period.
		
Road through the village can only quite remotely be referred to as paved.		Village bypass used by visitors had never had shape and pavement and project will result in its construction, rather than rehabilitation.



Google Earth layout of the road to Gorijvari and Monastery

Gori bank protection site visit:

Distorted panoramic image shows how exposed this section of the Gori riverbank is to combined action of Mejuda (right) and Didi Liakhvi (center) Rivers. This section of the riverbank is protected with large temp. rip-raps, but it is clear that rivers will eventually breach the defense.

		
End of riprap section. It is also evident, that unless strict buffer zoning is applied, failing bank protection will result in major loss of property due to encroaching development.		Again, before investing into bank protection, Gori municipality Gamgeoba and Sakrebulo should demonstrate that development will not be allowed within the riparian zone. In addition, project design should be cleared with the Ministry of Regional Development and Infrastructure and its riverbank protection unit.

III. National EIA Requirements

Georgian Law on Environmental Impact (December 2007) provides in Article 4 (1) that "International and internal state roads, railroads with bridges and tunnels, as well as their engineering protection facilities" require state ecological expertise and preparation of environmental impact assessment. In addition, Article 4(2) stipulates, state ecological expertise and EIA are required not only for new construction, but also for changed technology of exploitation (operation) of the projects, as determined under Article 4(1).

According to Georgian Law on Roads (1994) "international and internal state roads" status has to be established every five year by the Presidential Decree. Such a list was most recently approved by the Decree of President of Georgia No. 287 dated 27 May 2011 (see https://matsne.gov.ge/index.php?option=com_ldmssearch&view=docView&id=1340103). Currently Gorijvari road (either to the settlement or to the Monastery) is not included in the list, but there are many examples or internal state roads leading to monasteries, and with length 1.5 km or less. It is therefore reasonable to expect, that after the construction Gorijvari road section might be classified as ‘internal state road’. In this case construction should have been subjected to ecological expertise and EIA per requirements of the national legislation.

In addition to above argument, even if the Gorijvari dirt road is considered as ‘existing’ road, its pavement will result in substantial change in its exploitation (operating) condition, therefore ecological expertise and EIA per Georgian legislation again would apply.

At the same time, the Law on Roads also defines ‘local’ roads as well, which are roads connecting settlements. With this definition Gorijvari road is more likely to be classified as ‘local’ road and hence may not fall under the merit of Law on Environmental Impact Articles

4(1), and consequently its Article 4(2). Most likely reading for the Georgian legislation is that EIA and ecological expertise is not required. Nevertheless, it is strongly recommended for MDF to communicate with Ministry of Environment to establish firmly whether EIA and State Ecological Expertise are required or not.

Notwithstanding the above, it is clearly expected that construction of the decent paved road would lead to improved environmental conditions along much of the proposed road, by providing much improved road cover and mitigation of severe impacts taking place currently (erosion and gulling). Georgian EIA requirements (if applicable) would not mean 'no development decision', rather application of additional requirements, such as disclosure in Georgian language, public meeting (within 50-60 days upon disclosure) and 20 days of ecological expertise upon submission of finalized EIA. It is estimated to require at least 3-4 months process (after EIA document is available in Georgian) before contractors can be allowed to mobilize to the site. But to reiterate, it is unlikely that Georgian legislation screens the activity as subjected to ecological expertise & EIA.

IV. Recommendations

- Georgian environmental impact permit and state ecological expertise legislation most likely is not invoked with the proposed road. Nevertheless, MDF should communicate in writing with the Ministry of Environment to clear any remaining doubts. Draft of the letter to MoE should be cleared with USAID/Tt to exclude potential for miscommunication.
- Road rehabilitation will definitely lead to certain environmental impacts, but will also mitigate some adverse environmental conditions apparent at this site, as well as contribute into social cohesion of the local communities of Gori area by providing more convenient access to Monastery.
- Baseline studies for Gorijvari will require flora (3 days including site visit and reporting), fauna (same input), as well as cultural heritage specialist (same input; latter could be used to define interpretive signage and messages as well).
- Rivers Liakhvi and Mejuda bank protection work should be carefully designed in an integrated way to take account for sustainability of the USAID road repair (26^{th} may street is included in the list of roads to repair) as well as wider sustainability of land use and developments along the waterfront. Land use control decisions are needed at least at the level of Gori Municipality Gamgeoba and Sakrebulo, so that property developments are controlled in the long term perspective within the zone of influence of Liakhvi and Mejuda rivers.
- Bank protection works design should be cleared with the bank protection unit of the MoRDI.