

Environmental Monitoring Report

#3 Bi-Annual Report (July to December 2014)
Loan No. 2824-KAZ
January 2015

KAZ: Central Asia Regional Economic Cooperation Corridor 1 (Taraz Bypass) Project

Prepared by the Kocks Consult GmbH for the Committee for Roads, Ministry of Investment and Development, Republic of Kazakhstan and the Asian Development Bank.

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REPUBLIC of KAZAKHSTAN
MINISTRY OF TRANSPORT AND COMMUNICATIONS
COMMITTEE OF ROADS



CONSTRUCTION SUPERVISION OF THE TARAZ BYPASS SECTION IN
ZHAMBYL OBLAST, INVESTMENT PROGRAM PROJECT 5
(ADB Loan # L2824-KAZ, MFF CAREC Transport Corridor I)

BI-ANNUAL ENVIRONMENTAL MONITORING REPORT - January 2015



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Bi-annual Environmental Monitoring Report

Project Number: 41121-053
{October 2012}

KAZAKHSTAN: MFF CAREC Transport Corridor 1 (Zhambyl Oblast Section) [Western Europe- Western People's Republic of China International Transit Corridor] Investment Program - Project 5

(Financed by the Asian Development Bank and Government of
Republic of Kazakhstan)

Prepared by Kocks Consult GmbH for the Asian Development Bank (ADB)

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EXECUTIVE SUMMARY

The Project 5 (Taraz Bypass Road Construction) of the CAREC Transport Corridor I in Zhambyl Oblast entails the following:

- (i) Upgrading of a two-lane road to a four lane Category IB (km. 483.3 – km. 491);
- (ii) Construction of new Taraz Bypass along a new alignment (Pk 0+00 – Pk 560+70); and
- (iii) Rehabilitation of Existing Taraz City Bypass & Two Sections of Merke - Tashkent Road between New Bypass & Old Bypass (Km 491 – Km 536).

The project is within Zhambyl Oblast north of Taraz City and within the transition zone between the Tian-Shan Mountains to the south, the Central Asian Steppe to the north, the lowlands between the Kyrgyz Mountain Range to the east, the Talas Alatau Range to the south, the Karatau Range to the west and the Muynkum (also spelled Mojynkum) Desert to the north.

Construction supervision is being undertaken under FIDIC that includes environmental supervision and monitoring scopes. The Contractor is obligated to obtain regular parameter measurements of water quality, noise/vibration and air quality, the results of which are submitted regularly to the Engineer. Environmental monitoring of the Engineer is done primarily by the International Environmental Specialist with field coordination with a local environmental consultant.

This report is the **Third Bi-Annual Environmental Monitoring Report covering the July to December 2014 period**. Within this period, the important task performed related to the environment was the submission of the supplemental report for the resolution of the dumpsite issue at Pk 110. This separate report was prepared detailing the resolution process for the dumpsite issue which involved considerable consultations with major stakeholders. The solution applied consisted of removal of the garbage in the vicinity of the dumpsite and hauling to the adjacent currently operating dumpsite. This measure resulted in better environment of the project road and mitigation of the ill-effects of the dumpsite. The environmental assessment of the measured presented herein proves that positive impacts were done on the project road.

The usual environmentally related issues were also brought to the attention of the Contractor. Parametric measurements were continued to the Contractor and presented in monthly reports. In addition the items to be dealt with concern the updating of the project EMP as well as the provision of HIV/AIDS seminar to the workers.

PART I: INTRODUCTION

1. PRELIMINARY INFORMATION

1.1 Project Background and Objective of the Environmental Monitoring

The Taraz Bypass construction of the Almaty-Taraz highway within the Zhambyl oblast is part of the Republic of Kazakhstan's (RoK) Western Europe–Western PRC Corridor (the Corridor) investment program. The primary aim of the Project is to improve the road sections within the country, which is part of the of the Central Asia Regional Economic Cooperation (CAREC) Transport Corridor 1. The Project hopes to provide efficient transport network in Zhambyl Oblast in particular and to the country in general. The Project components are designated as “Starts”¹ and presented as follows:

Table 1: General Project Description

| START | Description | Category | from | To | Length |
|--------------|---|----------|----------|------------|-------------------|
| Start 1 | Construction of New Concrete Road | 1B | Km | Km 491 | 7.7 Km |
| Start 2 | Construction of New Asphalt Road | IIB | Pk 0.0 | Pk. 560+70 | 56.07 Km |
| | Rehabilitation of Merke - Tashkent Road | IIB | Km 491.0 | Km 504.0 | 13.0 Km |
| | Rehabilitation of Existing Bypass | IIB | Km 504.0 | Km 528.0 | 28.0 Km |
| | Rehabilitation of Merke - Tashkent Road | IIB | Km 528.0 | Km 536.0 | 8.0 Km |
| Total | | | | | 112.77 Kms |
| | Rehabilitation of Road maintenance Depot Building | | | | 1 Nos. |

Through standard competitive bidding, a Contractor, JSC “KCC Engineering & Construction Co. Ltd” was selected by the Employer and to be supervised by Kocks-KECC-Almaty Joba-Quality Plan Joint Venture, as the Engineer. Construction supervision includes environmental monitoring, the main purpose of which is ensure that the environmental mitigation measures during construction are implemented through supervision by the Engineer during the construction phase. Environmental issues also are anticipated to be identified in advanced for avoidance and ensure timely completion of the project. The construction contract with KCC was signed on 28 March 2013 between the Employer and the Contractor and official commencement date for construction was 07 August 2013. The Project road is shown in the ensuing page.

1.2 The Project Area

The Project is located 483 km southwest of Almaty within the southern portion of Zhambyl Oblast in southern Kazakhstan (Province). The new Bypass Road section will circumvent the City of Taraz, and in addition road improvements will be done on the old bypass. The new road project section will not be within the Taraz City boundary but traversing the surrounding Rayons of Baizak and Zhambyl.

¹ The designation of “Start” was introduced in the Engineer’s Quarterly Report - October 2013 to 31 December 2013. Previous reports refers to three Sections: Section 1 – Km 483.3 to Km 491; Section 2: Pk 0.0 to Pk 560.7 (New Road); Section 3 – Km 491 to Km 536 (Merke - Tashkent Road and Existing Bypass)

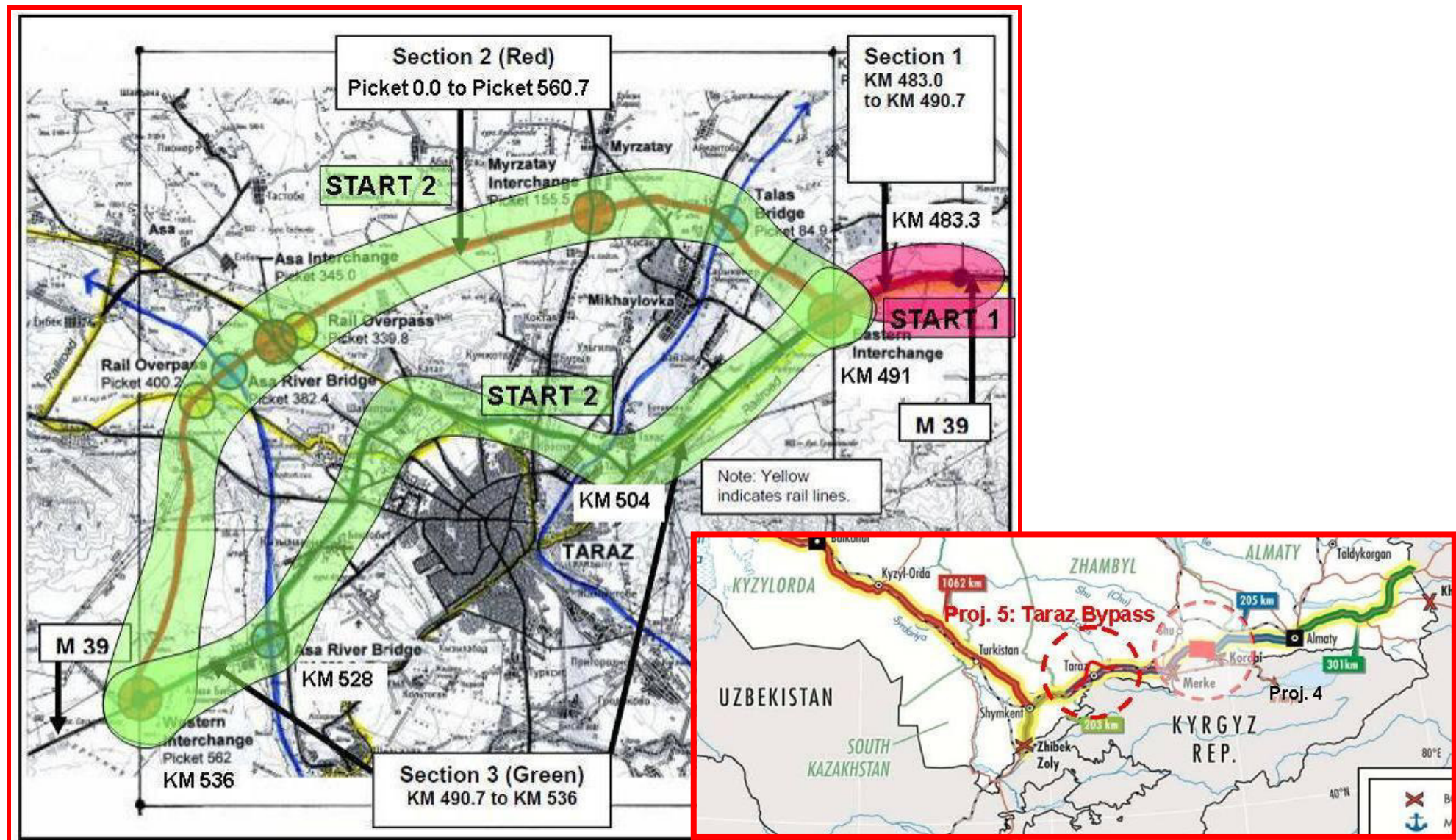


Figure 1: Map of the Project Road

2. PROJECT DESCRIPTION

The technical description of the Project and its components are as follows:

I. **START 1: Construction of New Concrete Road - km. 483.3 – km. 491 (7.7 km)**

The Merke – Tashkent road up to km. 483.3 is already newly built Concrete Road currently in operation. Included in the Taraz City Bypass Project, the next 7.7 km section up from Km 483 to Km 491 will be upgraded to same configuration replacing the existing asphalt pavement with concrete.

Geometric Details of new road is as follows:

- Width of Embankment top – 27.5m
- Carriageway width – 20m - (2 x 3.75)+5.0+(2*3.75)
- Number of Lanes – 4
- Shoulder Width – 3.75 on either side. (0.75m concrete & the rest in earth)
- Embankment Slope Ratio - 1:1.5 to 1:4 depending on the height of the Embankment
- Cross-fall – 2.0%
- Shoulder Cross-fall – 4%

Key Components:

| | |
|----------------------------------|------------|
| Length of Road | 7.7 km |
| Culverts | 8 nos. |
| Bridges | None |
| Embankment Filling | 161,000 m3 |
| Sub Base (t = 230 mm) | 90,800 m3 |
| Lean Concrete Base (t= 180 mm) | 34,200 m3 |
| Concrete Pavement (t= 250 mm) | 309,768 m3 |

II. **START 2: Construction of New Taraz City Bypass**

A. **Pk. 0+00 to Pk 560+70 (56.7 km)**

No heavy vehicle is permitted through the City of Taraz. Hence, currently all heavy vehicles are diverted to existing Bypass Road at Km 491 along the Merke – Tashkent Road and connect with main route at Km 528. The diversion of heavy traffic from the City of Taraz City roads helps to maintain the city free of traffic congestions and improve traffic safety.

The Existing Bypass Road is in operation for more than 50 years already. Routine Maintenance, Periodic Maintenance and improvement of isolated sections carried out time to time helped to maintain Bypass in motorable conditions. However, a considerable length of this old bypass shows heavy rutting and depressions owing to the increased intensity of heavy transport in recent times. Rapid expansion of city demands detour of heavy transport before the limits of existing bypass. Hence, this new bypass road is being constructed.

Geometric Details of New Bypass is as follows:

- Width of Embankment top – 15.0m
- Carriageway width – 7.5m (2 x 3.75) in each direction

- Number of Lanes – 2
- Shoulder Width – 3.75 on either side.
- Embankment Slope Ratio - 1:1.5 to 1:4 depending on the height of the Embankment
- Cross-fall – 2.0%
- Shoulder Cross-fall – 4%

Key Components

| | |
|--|----------------|
| Length of Road | 56.07 km |
| Culverts | 121 Nos. |
| Bridges over Rivers | 3 Nos. |
| Small Bridges | 3 Nos. |
| Overpasses over Railway | 2 Nos. |
| Overpasses in Interchanges | 4 Nos. |
| Interchanges | 4 Nos. |
| Embankment Filling | 2.9 Million m3 |
| Sub Base (t = 230mm & 375 mm) | 283,500 |
| Lean Concrete lower Base (t= 150 mm) | 107,200 m3 |
| Coated Aggregate Upper Base (t= 120mm) | 78,000 m3 |
| HMA- Binder Course (t= 90mm) | 60,500 m3 |
| SMA – Wearing Course (t= 60 mm) | 40,000 m3 |

B. Rehabilitation of Existing Taraz City Bypass & Two Sections of Merke - Tashkent Road between New Bypass & Old Bypass (Km 491 – Km 536)

Existing Taraz bypass has undergone routine and periodic maintenance from time to time. However, due to heavily loaded traffic for considerably long period, the existing bypass requires pavement rehabilitation. This has been included in the Contract.

Two Sections of Merke-Tashkent Road between Old Bypass and New Bypass also to be rehabilitated under the Contract.

Key Components:

| | |
|---|-----------|
| Length of Existing Bypass | 28 km |
| Length of Merke –Tashkent from Km 491 to Km 504 | 13 km |
| Length of Merke –Tashkent from Km 528 to Km 536 | 8 km |
| Patching of Potholes | 14,500 m2 |
| Correction of Ruts & Depressions using HMA | 1,800 m3 |
| HMA Wearing Course | 25,500 m3 |
| SMA Wearing Course in selected locations | 276 m3 |

3. PREVIOUS CONSTRUCTION ACTIVITIES AND PROJECT PROGRESS

The construction activities for the Taraz Bypass project road officially commenced in summer of 2013. The construction works consisted mainly of excavation, cut-filling, compaction, fill of surface granular materials (SGM), and laying of lean concrete pavement and some upper layers pavement for the New Bypass Road. In addition, major construction works were done on the bridges, interchanges, and box and pipe culverts. In this period, a number of borrow pits and quarry were operated located in the vicinity of the project road. In addition, several small borrow pits were also used as material sources but are now closed due to limited materials in those areas.

The Contractor's camp and Engineer's office was initially located within the Start 1 (or Section 1) but by September 2013 both moved to a building located at Promzona (industrial zone) in the suburbs of Taraz City. The Contractor operates 1 concrete batching plant and two asphalt mixing plants near Pk 400 of the New Bypass Road.

Within the period from July to December 2014 the main works consisted of the following:

- Removal of Unsuitable Soil
- Earthworks and Sub Base
- Construction of Culverts
- Lean Concrete Layer
- Black Rubble Layer
- Porous Asphalt Layer
- SMA (Stone Mastic Asphalt) Works
- Concrete pavement Works (Expansions)
- Structural Concrete Works (Bridge 345+50, IC 3)
- Fixing of Expansion Joints of Bridges and Replacement of defective Expansion Joints
- Asphalt Surfacing of Bridge Deck
- Repair of Road Maintenance Depot

PART II: ENVIRONMENTAL MONITORING

4. ENVIRONMENTAL MONITORING FRAMEWORK

4.1 Methodology for Environmental Monitoring in Construction Supervision

As stipulated in the Contract for the project, the Contractor will adhere to the requirements of the environmental aspects of the contract document particularly in the General Conditions of Contract (FIDIC) as follows:

- 4.8 – Safety Procedure**
- 4.18 – Protection of Environment**
- 4.15 – Access Route**
- 4.24 – Fossils**
- 6.7 – Health & Safety**

In addition, detailed requirements are found in the Technical Specifications particularly the following:

Section 106 – Protection of Environment

- A. General
- B. Fuel & Chemical Storage,
- C. Water Quality
- D. Air Quality.
- E. Noise, Earthwork,
- F. Preservation of Antiquities,
- G. Preservation of Antiquities
- H. Environmental Enhancement

Section 113 – Diversion and Traffic Control Measures – mainly the B. Traffic Management Plan

The initial obligation of the Contractor is to formulate a project Environmental Management Plan (EMP) based on the findings contained in the 2008 Environmental Impact Assessment (EIA) Report. The Contractor submitted such document but was found to be too generic for the project. Hence, the Contractor was asked to submit a detailed site/project specific Environmental Management Plan based on the EIA that was provided, and conforming to the Contract documents. As the work progresses, the Consultant shall monitor the Contractor's compliance with the Environmental Management Plan and report upon impacts encountered and mitigation measures employed and make further recommendations as deemed necessary.

In general, as stipulated in the ToR for the Construction Supervision on the environmental aspect the Consultant shall "Carry out the following duties related to environmental mitigation measures during construction (a) to ensure that all the environmental mitigation measures required to be implemented are incorporated in the contract documents; (b) supervise and monitor the implementation of environmental (management)/mitigation plan (EMP); and (c) in case of unexpected environmental impacts, coordinate with the Project Director and PMC to recommend necessary measures to the Committee of Roads and ADB for Implementation". Based on this the Environmental specialist shall establish coordinative work with relevant staff of the Consultant and the Contractor to ensure that environmental issues are recognized prior to or discovered during work implementation. The EMP for the project/s or component projects shall be the basis of the monitoring and accordingly, the Contractor should complete and submit their project EMP to the Engineer for approval as soon as possible. Coordinative communication channels shall be established according to the following work coordination chart:

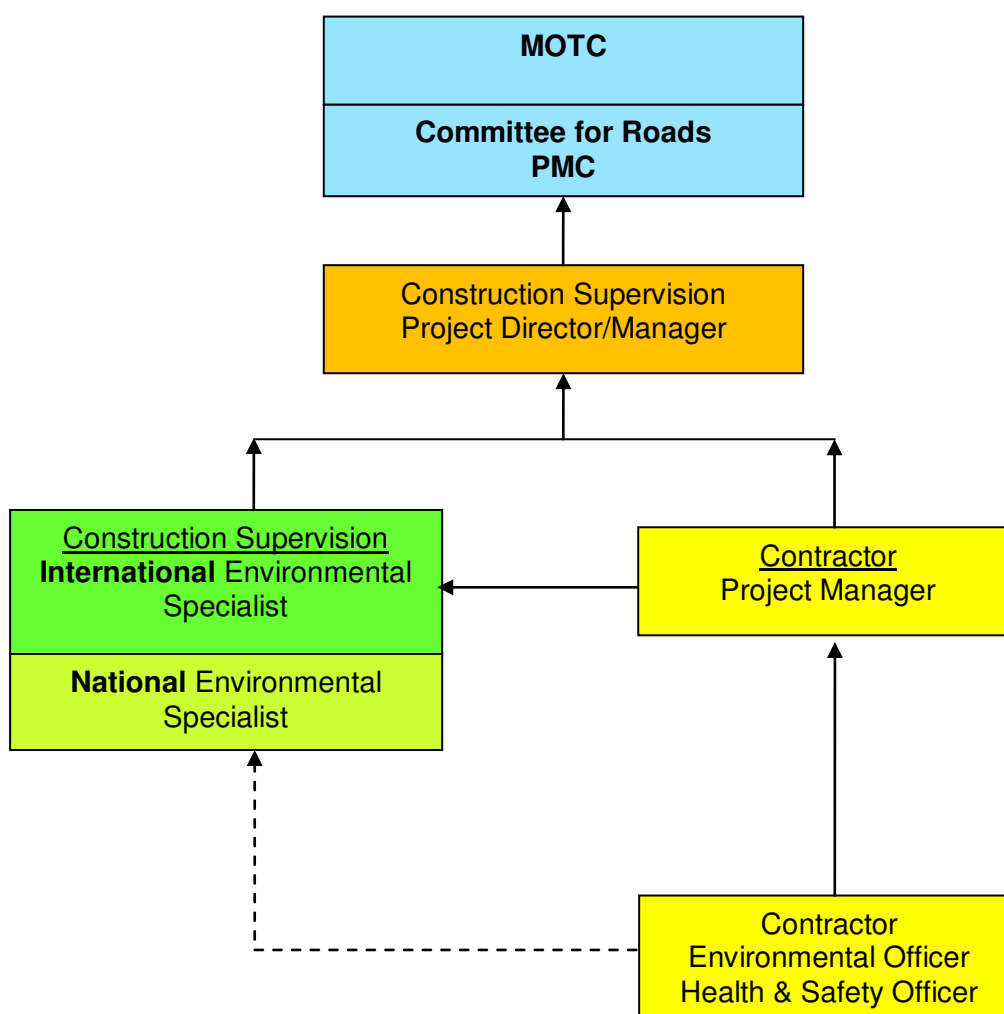


Figure 2: Work Coordination Arrangement

Specific tasks shall be undertaken by the Environmental Specialist as follows (E. Detailed Scope Item 22):

- “Manage and coordinate the update, implementation and monitoring of an initial Environmental Examination or Environmental Impact Assessment (IEE/EIA) as required by the Financing Framework Agreement (FFA) and loan agreement”. The Environmental Specialist will ensure that the EMP, as a dynamic document, is updated corresponding to every phase of the project implementation and that the Contractor shall be directed to produce additional details as deemed necessary.
- “Set-up internal monitoring system on the project’s environmental issues and requirement”. Monitoring protocols shall be established and will be explained to the Engineer’s and Contractor’s staff to be incorporated in the day-to-day monitoring activities. Periodic environmental reporting shall be required on the part of the Contractor as well.
- “Coordinate relevant parties, including civil society organizations, on environmental requirements of the Project”. Information dissemination shall be accomplished through reporting to the Client as well as formation of summary reports for inspection of interested project stakeholders and groups within the impact areas.
- “Closely monitor project sites against unexpected environmental impacts”. Planning is essential and such unexpected impacts can be anticipated with the inspection of the Contractor’s Method Statements. Every Method Statement should indicate potential impacts and their corresponding measures to eliminate and mitigate them.
- “Monitor Contractor’s compliance to EMP”. Since this is a commitment of the Client, the regular monitoring shall be done by the Local Environmental Specialist in compliance with the EMP and the directives of the International Environmental Specialist.
- “Advice the Project Director and PMC on environmental problems and /or requirements and recommend mitigation measures”. The International and Local Environmental Specialist shall project future issues that may arise and advise the Project Director and PMC on the necessary steps to be undertaken. Field coordination shall be under the oversight work of the Local Environmental Specialist while project management level coordination work shall be performed by International Environmental Specialist.
- “Prepare report on EMP implementation and contractors compliance”. Periodic reporting as required by the Client/s shall be prepared in accordance with reporting schedule of the Engineer / Consultant. This shall be a collaborative work between the local and international environmental specialist.
- “Take part in project performance monitoring and evaluation activities, develop key indicators, and perform surveys”. The environmental specialists shall assess and survey the project site/s and compile necessary information which can form part of the key indicators as part of the project performance monitoring.
- “Assess and prepare capacity building program on environmental issues”. Necessary training materials shall be prepared and training/s can be provided by both Local and International Environmental Specialist as part of the Capacity Building Component.

The next salient steps will be to operationalize these objectives and tasks to enable an efficient and effective environmental monitoring. Corresponding to delineation of roles and responsibilities, reporting procedure shall be set-up. Coordinative meetings shall be done to be abreast with the fulfillment of requirements of Client government and ADB.

4.2 Environmental Monitoring Procedures of the Contractor

The Contractor started monitoring the physical environment at the vicinity of the project road in July 2013. The parameters being monitored are (i) noise and vibration, (ii) water quality, (iii) air quality and (iv) flora and fauna monitoring. These indicators form the **Baseline monitoring**

parameters for the project road which can be referred to in the course of the construction of the project as well as during its operation. The basic procedures are described below:

- **Noise and vibration** – Measurement for noise and vibration is performed monthly along the project road construction in around 9 selected stations where active construction and impacts are expected to be felt. The Norms on protection of the environment from noise and vibration are in accordance with the established standards. Monthly readings taken on noise and vibration were not exceeding the norms.
- **Water quality** – There are two rivers that cross the road construction site – Talas and Asa Rivers. Accordingly, bridges are being constructed as required by the project. Since July 2013, water quality readings were done in these rivers. Generally, the readings indicated that the changes in water quality were non-threatening and any increase in concentrations can be due to seasonal usage of water from the downstream regions.
- **Air quality** – Air quality is controlled along the whole road construction sections by obtaining readings in around 11 selected stations. In addition air quality was obtained at operational quarries for the particular month. Readings on atmospheric air quality is compliant with standards and do not exceed maximum permissible concentration.
- **Monitoring of fauna and flora** – Monitoring of fauna and flora is carried out by direct observation. The habitats of rare animals and birds are not disturbed, as the construction progresses along the project section. Flora along the vicinity of the road is largely affected by dust and traffic emissions.

In addition, a number of pertinent sites are also monitored by the Contractor for any impacts of the construction activities. Such impacts will be recorded and mitigated in accordance to the EMP. Such sites are as follows:

- **Quarries and Borrow areas** – The environmental monitoring on the quarry areas will be done for any potential local contamination to the ground and/or surface water, such as oil spills, solid and liquid waste discharges and related worker's safety impacts. This will be the focus of succeeding monitoring.
- **Bridge and Interchange sites** – Subcontractors who implement works on bridges across the rivers Talas and Asa should be reminded of potential water contaminations, while those constructing interchange bridges should be aware of ground contamination, and safety for workers, pedestrians and motorist.
- **Contractor Camp / Subcontractors temporary camps** – The conditions of these camps were inspected. Non-conformance of the camp conditions should be mitigated as soon as possible.
- **Concrete plant, crusher plant, asphalt plant** – These are critical facilities which need frequent monitoring in terms of air, noise, petroleum and chemical spills, solid waste and workers' safety.

Maps showing these monitoring points are shown in the next pages.

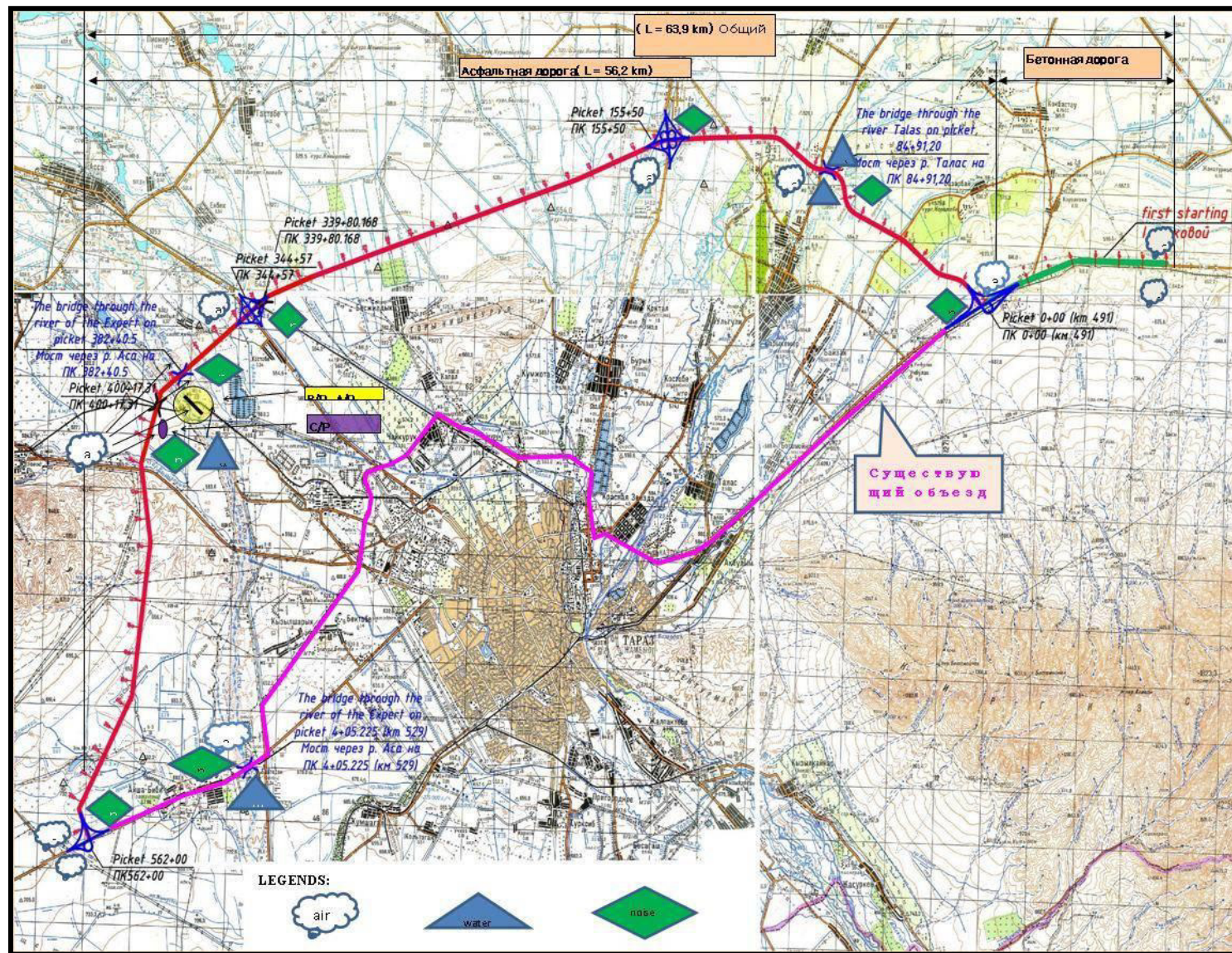


Figure 3: Environmental Parameter Sampling Locations along the Project Road

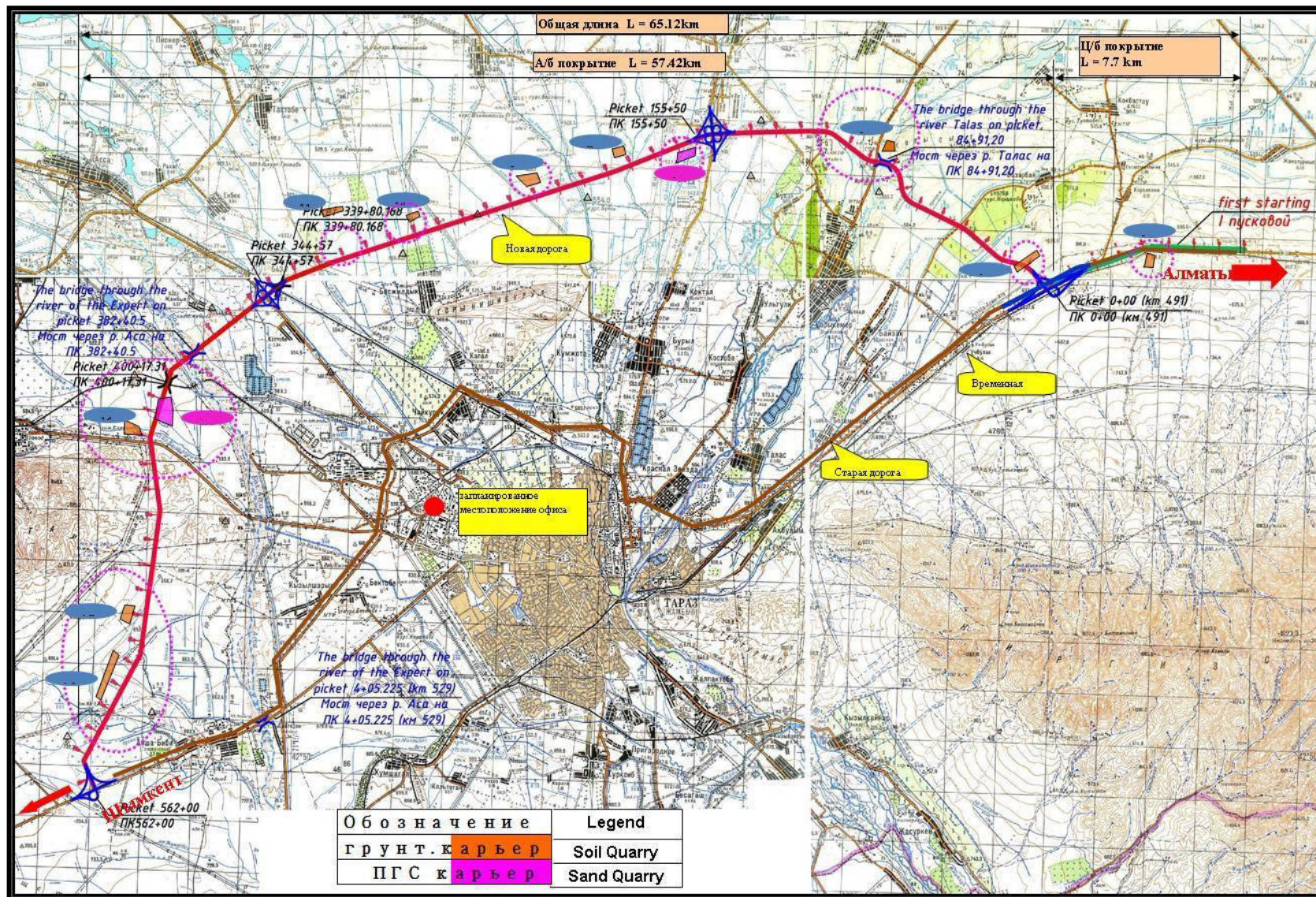


Figure 4: Environmental Parameter Sampling Locations at Quarry Sites

4.3 Contractor's Health and Safety Management

In the aspect of health and safety the main Contractor requires all subcontractors to assign personnel to be:

1. "responsible person for performance of construction and assembly works "
2. "responsible person for fire protection"
3. "responsible person for safety work performance of an erecting crane"
4. "responsible person for gas supply"
5. "responsible person for electricity supply"
6. "responsible person for provision special cloths and other facilities for individual protection of workers"

In case of accident, the Contractor is to submit brief summary about the accidents as part of the monitoring activities for the previous month the monitoring of observance of traffic rules should become more stringent consisting of the following:

1. Mitigation of dust especially at bypass road
2. Installation of road signs on speed limit.
3. Regular checking of journals of mechanics and medics of subcontractors on the control of alcohol and drugs by drivers before going to the site.

In addition the following safety issues need to be monitored:

- **Use of PPE (including replacement, according to climatic conditions)** - summer and winter personal protective equipment (PPE) has been provided. Chiefs must control and strictly watch the worker's security with certified special clothes and PPE, which includes the usage, and wear-out date of clothes. Violations on PPE non-usage, alcohol and drug intoxication would result to immediate dismissal of worker. ***Certain violations were observed during the inspection period.***
- **Dust and noise exposure** - The additional water-carriers were engaged to reduce the dust in summer months. Prolonged exposure to harmful conditions should be minimized consisting of poor air quality, mechanical vibrations (noise, vibration, ultra-sound and others) and emissions (ionizing, electromagnetic, laser, ultra-violate and others) on work places. ***The Contractor was not fully compliant with the minimization of dust during the period.***
- **Operations of Equipment and trucks** - All equipment of the site should have necessary copies of documents and testing certificates. Working dump trucks should have their vehicle registration certificate and drivers should have driving license. Every day drivers are to be checked on alcohol drinking and blood pressure levels. The Contractor checks technical status of vehicles that transport people and carries out systematic trainings to drivers for Road traffic regulations and safety road.
- **Construction Hazards (heights, electric shocks, etc.)** - The subcontractor's chief should be given instructions or orders on safety compliance. Protection to workers should be provided such as for electrical protection, electric tool, gas protection, harnesses and safety belts.

- **Emergency procedures / Coordination with outside Medical Facilities** – During emergency an action plan for first aid and delivery of injured person to Taraz City Hospital is to be operationalized. In case of fire the evacuation action plan is to be carried out. Telephone numbers of the Emergency department and ambulance service should be readily available.

A listing of the previous project site related accident on the reported by the Contractor is shown below:

Table 2: List of Previous Job-related Accidents

| Occurrence Date/Time | Description |
|---|--|
| July 19-20, 2014 / 14:40 PM Bridge STA 155+50, Taraz Bypass | Presumably an unknown red dump truck had not lower down the dumping bed completely while being driven under the bridge and rammed against the beam of the bottom part of the bridge and escaped. |
| August 14, 2014 / 15:20 PM Almaty – Tashkent, km 535 | Mr. Oteshev Orazbay, driver of GAZ 3302 was going toward Almaty when his break had unexpectedly failed. He lost control causing the car to turtle turn and got ignited. |
| August 24, 2014 / 17:15 PM STA 339+80 | Dump truck, loaded with gravel sand mixture did not give right of way to locomotive while crossing over railway crossing; thus causing collision with the locomotive. |
| October 27, 2014 / 10:40 PM Almaty - Tashkent | Mr. Gasanov Shahrom, driver of MAN 987 LH was going toward Almaty when the driver of Volkswagen Passat was going toward Taraz. The Volkswagen Passat was out of control and came into the opposite lane and resulted into a collision. |
| October 27, 2014 / 19:10 PM Overpass at km 529 | Driver of BMW was going toward Shymkent with a high speed. During overtaking maneuver it went out of control and crossed over to the opposite late and colliding with a Volkswagen. As the result of the traffic accident the driver and three passengers of BMW had been injured and brought to the central regional hospital of Zhualy region. |
| November 26, 2014/ 14:30 PM STA 501+500 Almaty - Tashkent | Driver of Mercedes car, Mr. Junisov Bahtiyar was going to Taraz, while the driver of Toyota Camry, Mr. Askanov Erzhan was going to Almaty. Suddenly the driver of Toyota Camry was out of control and jolted to the opposite lane and resulting into a collision. |

It is noted that these road accidents indicate the need for heightened road safety measures which should be promoted vis-à-vis the provision of infrastructure.

5. PERFORMED ENVIRONMENTAL MONITORING ACTIVITIES

In early September 2014, the International Environmental Specialist of the CSC was mobilized to the site/s in Taraz Bypass Project. The purpose of the mobilization is to provide guidance on anticipated environmental issues for the succeeding bi-annual reporting. One of the important tasks in the visit of the International Environmental Specialist is to undertake a final inspection of the dumpsite area closure and rehabilitation works at Pk 110. A specials site inspection was performed as well as determination of other relevant environmental issues. For the overall environmental monitoring and management scopes, the national environmental staff of the Engineer was constantly engaged as part of the construction supervision scope. Construction sites, material sites, and plants were inspected in the period.

5.1 Monitoring Activities of the Contractor

The Contractor, JSC “KCC Engineering & Construction Co. Ltd”, had been performing active monitoring in the form obtaining parameter readings on air quality, noise and vibration, water quality and observations on flora and fauna as per their contractual requirements. These measurements were done primarily where active construction activities were on-going for the monitoring period of July-December 2015. Monthly parameter readings and observation with summary report were compiled and shown below. The results of the previous monitoring activities are shown below:

Air Quality: Measurements were done monthly and at 11 pre-designated sampling stations along the project road and at operational quarry sites for a particular month. The results show that air quality contaminants were below the limit (MPC - Maximum Permissible Concentration) as observed in the Table below, indicating that the project is not impacting the air quality of the immediate vicinity. Only once in July (summer months) when the reading exceeded the limit for dust. However, several times in the other months when the readings came close to the dust limit. Dust nonetheless affects the workers since they are exposed to such hazards especially during summer months. The Contractor seemed to be not fully compliant with suppressing dust due to the visually dusty conditions at the worksites.

Table 3: Air Quality Measurements (July-Dec. 2014)

| Month | Parameter: | NO2 | SO2 | CO | Dust (mg/m3) |
|--------|-------------|---------|---------|---------|--------------|
| | MPC Values: | 0.085 | 0.5 | 5 | 0.5 |
| | Location | | | | |
| July | 0+00 | 0.018 | 0.066 | 0.035 | 0.312 |
| | 84+91.2 | No Work | No Work | No Work | No Work |
| | 155+50 | 0.0015 | 0.006 | 0.024 | 0.538 |
| | 344+57 | 0.025 | 0.050 | 0.035 | 0.307 |
| | 400+60 | 0.030 | 0.015 | 0.028 | 0.496 |
| | 400+17 | 0.010 | 0.253 | 0.010 | 0.239 |
| | 382+40 | 0.025 | 0.052 | 0.013 | 0.228 |
| | 483 km | No Work | No Work | No Work | No Work |
| | 529 km | No Work | No Work | No Work | No Work |
| | 536 km | No Work | No Work | No Work | No Work |
| August | 561 km | 0.007 | 0.004 | 0.01 | 0.17 |
| | 0+00 | 0.025 | 0.106 | 0.210 | 0.253 |
| | 84+91.2 | No Work | No Work | No Work | No Work |
| | 155+50 | 0.007 | 0.01 | 0.018 | 0.347 |
| | 344+57 | 0.017 | 0.03 | 0.028 | 0.034 |
| | 400+60 | 0.015 | 0.032 | 0.131 | 0.479 |
| | 400+17 | 0.016 | 0.105 | 0.059 | 0.303 |
| | 382+40 | 0.010 | 0.092 | 0.03 | 0.152 |
| | 483 km | No Work | No Work | No Work | No Work |
| | 529 km | No Work | No Work | No Work | No Work |
| | 536 km | No Work | No Work | No Work | No Work |
| | 561 km | 0.002 | 0.003 | 0.000 | 0.034 |

| Month | Parameter: | NO2 | SO2 | CO | Dust (mg/m3) |
|-----------|-------------------|---------|---------|---------|--------------|
| | MPC Values: | 0.085 | 0.5 | 5 | 0.5 |
| | Location | | | | |
| September | 0+00 | 0.007 | 0.018 | 0.064 | 0.044 |
| | 84+91.2 | No Work | No Work | No Work | No Work |
| | 155+50 | 0.033 | 0.015 | 0.048 | 0.089 |
| | 344+57 | 0.017 | 0.027 | 0.004 | 0.04 |
| | 400+60 | 0.016 | 0.029 | 0.041 | 0.481 |
| | 400+17 | 0.014 | 0.105 | 0.06 | 0.296 |
| | 382+40 | 0.013 | 0.016 | 0.04 | 0.07 |
| | 483 km | No Work | No Work | No Work | No Work |
| | 529 km | No Work | No Work | No Work | No Work |
| | 536 km | No Work | No Work | No Work | No Work |
| | 561 km | 0.002 | 0.002 | 0.000 | 0.033 |
| October | 0+00 | 0.017 | 0.106 | 0.005 | 0.253 |
| | 84+91.2 | No Work | No Work | No Work | No Work |
| | 155+50 | 0.027 | 0.071 | 0.007 | 0.340 |
| | 344+57 | 0.011 | 0.009 | 0.003 | 0.144 |
| | 400+60 | 0.009 | 0.012 | 0.004 | 0.127 |
| | 400+17 | 0.006 | 0.079 | 0.004 | 0.077 |
| | 382+40 | 0.009 | 0.092 | 0.003 | 0.147 |
| | 483 km | No Work | No Work | No Work | No Work |
| | 529 km | No Work | No Work | No Work | No Work |
| | 536 km | No Work | No Work | No Work | No Work |
| | 561 km | 0.007 | 0.013 | 0.070 | 0.087 |
| November | 0+00 | 0.008 | 0.088 | 0.110 | 0.117 |
| | 84+91.2 | No Work | No Work | No Work | No Work |
| | 155+50 | 0.032 | 0.077 | 0.114 | 0.396 |
| | 344+57 | 0.012 | 0.009 | 0.075 | 0.167 |
| | 400+60 | 0.009 | 0.012 | 0.006 | 0.16 |
| | 400+17 | 0.006 | 0.078 | 0.006 | 0.069 |
| | 382+40 | 0.0019 | 0.012 | 0.111 | 0.144 |
| | 483 km | No Work | No Work | No Work | No Work |
| | 529 km | No Work | No Work | No Work | No Work |
| | 536 km | No Work | No Work | No Work | No Work |
| | 561 km | 0.006 | 0.013 | 0.025 | 0.090 |
| | Ground quarry №16 | No Work | No Work | No Work | No Work |
| | Ground quarry №15 | No Work | No Work | No Work | No Work |
| | Ground quarry №14 | No Work | No Work | No Work | No Work |
| | Ground quarry №11 | No Work | No Work | No Work | No Work |
| | Ground quarry №10 | No Work | No Work | No Work | No Work |
| | Ground quarry №8 | No Work | No Work | No Work | No Work |

| Month | Parameter: | NO2 | SO2 | CO | Dust (mg/m3) |
|----------|--------------------------------|---------|---------|---------|--------------|
| | MPC Values: | 0.085 | 0.5 | 5 | 0.5 |
| | Location | | | | |
| | Ground quarry №7 | No Work | No Work | No Work | No Work |
| | Ground quarry №6 | No Work | No Work | No Work | No Work |
| | Ground quarry №4 | No Work | No Work | No Work | No Work |
| | Ground quarry №2 | No Work | No Work | No Work | No Work |
| | Sand gravel mixture quarry №2p | No Work | No Work | No Work | No Work |
| December | 0+00 | 0.005 | 0.086 | 0.065 | 0.112 |
| | 84+91.2 | No Work | No Work | No Work | No Work |
| | 155+50 | 0.027 | 0.057 | 0.112 | 0.375 |
| | 344+57 | 0.008 | 0.005 | 0.111 | 0.153 |
| | 400+60 | 0.006 | 0.011 | 0.072 | 0.142 |
| | 400+17 | 0.007 | 0.067 | 0.006 | 0.074 |
| | 382+40 | 0.013 | 0.212 | 0.106 | 0.129 |
| | 483 km | No Work | No Work | No Work | No Work |
| | 529 km | No Work | No Work | No Work | No Work |
| | 536 km | No Work | No Work | No Work | No Work |
| | 561 km | 0.006 | 0.014 | 0.025 | 0.083 |

Noise: Noise measurement obtained at the worksites was **below** the limit which indicated that noise had been effectively controlled by the Contractor and posed no risk to the workers.

Table 4: Noise Measurements

| Sampling Point (km) | Max. Allowable value (dBa) | Jul | Aug | Sep | Oct | Nov | Dec |
|--------------------------------------|----------------------------|------|------|------|------|------|------|
| Pk 0+00 (Starting Point Interchange) | 75 | 60.8 | 50 | 47.7 | 41.2 | 41.6 | 45.6 |
| Pk 84+91.2 (Talas bridge) | 75 | - | - | - | - | - | - |
| Pk 155+50 (Myrzatay interchange) | 75 | 45.5 | 49.5 | 48.7 | 42.6 | 43.7 | 44.1 |
| Pk 344+57 (Asa Interchange) | 75 | 43.9 | 53.5 | 52.4 | 41.7 | 42.3 | 44.8 |
| Pk 400+60 (Quarry) | 75 | 50.2 | 59.3 | 56.7 | 55.9 | 43.4 | 46.6 |
| Pk 400+17 Concrete Plant | 75 | 48.6 | 50.8 | 48 | 49.5 | 44.7 | 48.3 |
| Pk 382+40 (Asa Bridge) | 75 | 50.8 | 53.5 | 52.5 | 45.4 | 42.8 | 49.6 |
| 483 km (Starting point) | 75 | - | - | - | - | - | - |
| 529 km (Asa Bridge. Aysha –Bibi) | 75 | - | - | - | - | - | - |
| Aisha-Bibi village | 75 | 51.6 | 48.6 | 49.9 | 40.5 | 41.5 | 53.4 |

| Sampling Point (km) | Max. Allowable value (dBa) | Jul | Aug | Sep | Oct | Nov | Dec |
|---------------------|----------------------------------|------|------|------|------|------|------|
| Myrzytai village | 75 | 47.3 | 46.4 | 47.1 | 41.2 | 42.4 | 53.6 |

Water Quality: Measurements results for water quality were generally acceptable with the 22 parameters for each sample from the water sampling stations. For the monitoring period from July to December 2014, there were 9 water quality stations that were monitored. In a number of areas, no work was on-going; hence no readings were obtained. The results in the following Tables show the parameter values were **below** the MPC (Maximum Permissible Concentration) values indicating that the project was not impacting the water quality of the immediate vicinity.

Table 5: Water Quality Measurements (Jul - Sep 2014)

| No | Parameter | MPC Values | July | | | | | | | | August | | | | | | | | September | | | | | | | | | | | |
|----|---------------------|------------|----------------------------|-----------------------------------|--|--|--|---|---|--|--|----------------------------|-----------------------------------|--|--|--|---|---|--|--|----------------------------|-----------------------------------|--|--|--|---|---|--|--|--|
| | | | Crusher (STA 400+60) | Batching Plant (STA 400+17) | bridge and Talas river STA 84+91.2 | bridge in Aisha Bibi village km 529 | Site camp of "Mostospetss troy-Astana" | Site camp of "Safi Road Construction" | Site camp of "MTS Company" in Sarykemer village | Site camp of branch "KCC Engineering & Construction Co., Ltd" in Taraz | bridge Aisha Bibi village, km 384+40 | Crusher (STA 400+60) | Batching Plant (STA 400+17) | bridge and Talas river STA 84+91.2 | bridge in Aisha Bibi village km 529 | Site camp of "Mostospetss troy-Astana" | Site camp of "Safi Road Construction" | Site camp of "MTS Company" in Sarykemer village | Site camp of branch "KCC Engineering & Construction Co., Ltd" in Taraz | bridge Aisha Bibi village, km 384+40 | Crusher (STA 400+60) | Batching Plant (STA 400+17) | bridge and Talas river STA 84+91.2 | bridge in Aisha Bibi village km 529 | Site camp of "Mostospetss troy-Astana" | Site camp of "Safi Road Construction" | Site camp of "MTS Company" in Sarykemer village | Site camp of branch "KCC Engineering & Construction Co., Ltd" in Taraz | bridge Aish Bibi village km 384+40 | |
| 1 | pH | 6.5-8.5 | 6.8 | 7.5 | 8.3 | 6.74 | | | | 6.9 | | 6.6 | 6.8 | 8.3 | 6.74 | | | | 6.74 | | 6.3 | 6.6 | 8.3 | | | | | | 6.72 | |
| 2 | Na+K | 200 | 28.6 | 32.4 | 24.03 | 24.7 | | | | 26.7 | | 21.25 | 28.3 | 24.03 | 24.7 | | | | 23.4 | | 20.45 | 26.2 | 24.03 | | | | | | 22.2 | |
| 3 | K | | 2.8 | 1.3 | 2.41 | 0.8 | | | | 1.9 | | 2.06 | 2.1 | 2.41 | 0.8 | | | | 1.6 | | 2.03 | 2.1 | 2.41 | | | | | | 1.5 | |
| 4 | Ca | 180 | 66.1 | 50.8 | 48 | 44.55 | | | | 45.2 | | 57.55 | 66.2 | 48 | 44.55 | | | | 50.01 | | 56.51 | 66.1 | 48 | | | | | | 49.01 | |
| 5 | Mg | 50 | 32.6 | 31.4 | 18.11 | 25.3 | | | | 31 | | 22 | 42.1 | 18.11 | 25.3 | | | | 33.2 | | 21 | 40.1 | 18.11 | | | | | | 32.2 | |
| 6 | Cu | 1 | 0.0005 | 0.0005 | 0.007 | 0.06 | | | | 0.0005 | | 0.0007 | 0.0007 | 0.007 | 0.06 | | | | 0.0006 | | 0.0006 | 0.0006 | 0.007 | | | | | | 0.0005 | |
| 7 | Zn | 5 | 0.008 | 0.005 | 0.119 | 0.142 | | | | 0.006 | | 0.006 | 0.008 | 0.119 | 0.142 | | | | 0.008 | | 0.007 | 0.007 | 0.119 | | | | | | 0.007 | |
| 8 | Pb | 0.03 | None | None | None | None | | | | None | | None | None | None | None | | | | None | | None | None | None | | | | | | None | |
| 9 | Mn | 0.5 | None | None | 0.077 | 0.18 | | | | None | | None | None | 0.077 | 0.18 | | | | None | | None | None | 0.077 | | | | | | None | |
| 10 | As | 0.05 | None | None | None | None | | | | None | | None | None | None | None | | | | None | | None | None | None | | | | | | None | |
| 11 | P | 5 | 4.6 | 4.9 | 3.08 | 4.67 | | | | 2.9 | | 4 | 4.3 | 3.08 | 4.67 | | | | 3.1 | | 4.11 | 4.2 | 3.08 | | | | | | 3.1 | |
| 12 | Cr | 0.05 | None | None | None | None | | | | None | | None | None | None | None | | | | None | | None | None | None | | | | | | None | |
| 13 | Fe | 0.3 | 0.07 | 0.07 | 0.299 | 0.22 | | | | 0.08 | | 0.086 | 0.09 | 0.299 | 0.22 | | | | 0.093 | | 0.084 | 0.08 | 0.299 | | | | | | 0.091 | |
| 14 | Cl | 350.5 | 4.4 | 3.1 | 12.3 | 9.79 | | | | 5.7 | | 5 | 4.08 | 12.3 | 9.79 | | | | 4.8 | | 5.1 | 4.07 | 12.3 | | | | | | 4.7 | |
| 15 | S | 500 | 57.6 | 51.2 | 86.06 | 80.5 | | | | 36.5 | | 77.5 | 57.5 | 86.06 | 80.5 | | | | 37.01 | | 76.4 | 55.7 | 86.06 | | | | | | 36.01 | |
| 16 | Ammonia nitrogen | 2 | None | None | None | 0.34 | | | | None | | None | None | None | 0.34 | | | | None | | None | None | None | | | | | | None | |
| 17 | Nitrates | 45 | 1.5 | 1.02 | 13.7 | 7.08 | | | | 3.1 | | 2 | 1.6 | 13.7 | 7.08 | | | | 3.5 | | 2 | 1.5 | 13.7 | | | | | | 3.4 | |
| 18 | F | 1.2 | 0.87 | 0.66 | 0.55 | 0.7 | | | | 0.26 | | 0.63 | 0.72 | 0.55 | 0.7 | | | | 0.18 | | 0.62 | 0.7 | 0.55 | | | | | | 0.16 | |
| 19 | Oil | 0.1 | None | None | 0.11 | 0.15 | | | | None | | None | None | 0.11 | 0.15 | | | | None | | None | None | 0.11 | | | | | | None | |
| 20 | Suspended solids | 0.25 | None | None | 0.22 | 0.45 | | | | None | | None | None | 0.22 | 0.45 | | | | None | | None | None | 0.22 | | | | | | None | |
| 21 | COD | 30 | 5 | 5.1 | 9.77 | 11.88 | | | | 5 | | 5.3 | 5.3 | 9.77 | 11.88 | | | | 5.2 | | 5.1 | 5.3 | 9.77 | | | | | | 5.1 | |
| 22 | BOD | 6 | 2.1 | 2 | 4.5 | 5.8 | | | | 1.8 | | 2.2 | 2.5 | 4.5 | 5.8 | | | | 1.3 | | 2.1 | 2.4 | 4.5 | | | | | | 1.4 | |

Table 6: Water Quality Measurements (Oct - Dec 2014)

| No | Parameter | MPC Values | October | | | | | | | | November | | | | | | | | December | | | | | | | |
|----|------------------|------------|----------------------|-----------------------------|------------------------------------|-------------------------------------|--|---------------------------------------|---|--|----------------------|-----------------------------|------------------------------------|-------------------------------------|--|---------------------------------------|---|--|----------------------|-----------------------------|------------------------------------|-------------------------------------|--|---------------------------------------|---|--|
| | | | Crusher (STA 400+60) | Batching Plant (STA 400+17) | bridge and Talas river STA 84+91.2 | bridge in Aisha Bibi village km 529 | Site camp of "Mostospetss troy-Astana" | Site camp of "Safi Road Construction" | Site camp of "MTS Company" in Sarykemer village | Site camp of branch "KCC Engineering & Construction Co., Ltd" in Taraz | Crusher (STA 400+60) | Batching Plant (STA 400+17) | bridge and Talas river STA 84+91.2 | bridge in Aisha Bibi village km 529 | Site camp of "Mostospetss troy-Astana" | Site camp of "Safi Road Construction" | Site camp of "MTS Company" in Sarykemer village | Site camp of branch "KCC Engineering & Construction Co., Ltd" in Taraz | Crusher (STA 400+60) | Batching Plant (STA 400+17) | bridge and Talas river STA 84+91.2 | bridge in Aisha Bibi village km 529 | Site camp of "Mostospetss troy-Astana" | Site camp of "Safi Road Construction" | Site camp of "MTS Company" in Sarykemer village | Site camp of branch "KCC Engineering & Construction Co., Ltd" in Taraz |
| 1 | pH | 6.5-8.5 | 7.6 | 7.9 | | | | | 7.5 | | 8 | 8.1 | | | | | | 7.9 | | 7.8 | 7.9 | | | | | 7.6 |
| 2 | Na+K | 200 | 27.2 | 30.5 | | | | | 38.4 | | 30.5 | 32.1 | | | | | | 33.6 | | 33.4 | 30.08 | | | | | 29.8 |
| 3 | K | | 2.3 | 2 | | | | | 2.2 | | 1.9 | 2.5 | | | | | | 1.8 | | 21.1 | 2 | | | | | 2.2 |
| 4 | Ca | 180 | 58.4 | 63.1 | | | | | 59.1 | | 65.1 | 56.7 | | | | | | 50.8 | | 72 | 50.06 | | | | | 44.6 |
| 5 | Mg | 50 | 20 | 33.5 | | | | | 28.7 | | 30.2 | 30.9 | | | | | | 32.1 | | 35.6 | 26.7 | | | | | 30.9 |
| 6 | Cu | 1 | 0.0005 | 0.0006 | | | | | 0.0007 | | 0.0006 | 0.0008 | | | | | | 0.0008 | | 0.0008 | 0.0006 | | | | | 0.0009 |
| 7 | Zn | 5 | 0.006 | 0.005 | | | | | 0.008 | | 0.007 | 0.009 | | | | | | 0.007 | | 0.009 | 0.008 | | | | | 0.006 |
| 8 | Pb | 0.03 | None | None | | | | | None | | None | None | | | | | | None | | None | None | | | | | None |
| 9 | Mn | 0.5 | None | None | | | | | None | | 0.08 | 0.022 | | | | | | 0.077 | | 0.06 | 0.05 | | | | | 0.035 |
| 10 | As | 0.05 | None | None | | | | | None | | None | None | | | | | | None | | None | None | | | | | None |
| 11 | P | 5 | 3.88 | 4.8 | | | | | 4 | | 4.08 | 4.9 | | | | | | 4.6 | | 4.55 | 4.3 | | | | | 4 |
| 12 | Cr | 0.05 | None | None | | | | | None | | None | None | | | | | | None | | None | None | | | | | None |
| 13 | Fe | 0.3 | 0.102 | 0.06 | | | | | 0.07 | | 0.132 | 0.105 | | | | | | 0.08 | | 0.127 | 0.077 | | | | | 0.101 |
| 14 | Cl | 350.5 | 4.76 | 3.05 | | | | | 5.4 | | 3.98 | 3.5 | | | | | | 6 | | 4.03 | 3.8 | | | | | 3.6 |
| 15 | S | 500 | 89.1 | 36.3 | | | | | 57 | | 90.5 | 45.2 | | | | | | 60.4 | | 88.4 | 50.9 | | | | | 68.1 |
| 16 | Ammonia nitrogen | 2 | None | None | | | | | None | | None | None | | | | | | None | | None | None | | | | | None |
| 17 | Nitrates | 45 | 3.1 | 1.8 | | | | | 5.1 | | 3-May | 2.3 | | | | | | 4.3 | | 2.4 | 2.8 | | | | | 3.6 |
| 18 | F | 1.2 | 0.84 | 0.82 | | | | | 0.22 | | 0.7 | 0.69 | | | | | | 0.35 | | 0.62 | 0.74 | | | | | 0.56 |
| 19 | Oil | 0.1 | None | None | | | | | None | | None | None | | | | | | None | | None | None | | | | | None |
| 20 | Suspended solids | 0.25 | None | None | | | | | None | | None | None | | | | | | None | | None | None | | | | | None |
| 21 | COD | 30 | 5.5 | 5.2 | | | | | 5 | | 6 | 5.8 | | | | | | 5.3 | | 5.6 | 5.3 | | | | | 6.5 |
| 22 | BOD | 6 | 3 | 2 | | | | | 2 | | 2.8 | 2.6 | | | | | | 2.5 | | 2.5 | 2.5 | | | | | 3 |

5.2 Environmental Audit of the Engineer

The International Environmental Specialist of the Engineer conducted audit on the required documents from the Contractor. The submitted project EMP was found to be too generic and lacking pertinent focused on the requirements of the project. The specialist advised the environmental staff of the Contractor to improve the EMP for subsequent submission. The Engineer constantly reminded the Contractor on this situation. The project EMP should be based on the project EIA and should respond to the requirements of the Contract and the Technical Specifications. Accordingly, the specialist provided guidance for the revision of the EMP. A well written EMP ensures clear understanding on the part of the Contractor and consequently better management of the environment. As of this moment, the EMP still needs improvement for it to be acceptable.

Periodic environmental audits will be undertaken by the Engineer's environmental specialist and necessary guidance shall be provided. Bi-annual Environmental Reports shall be compiled by the Engineer to be submitted within one month after each six-month period. Violations to the EMP and shall be considered non-conformance situation necessitating writing Non-conformance letter by the Engineer to the Contractor. Frequent violations can lead to serious repercussions and sanctions by the Engineer to the Contractor.

In addition, method statements should also contain elaboration of needed mitigation measures for impacts perceived by either the Contractor and/or the Engineer. This shall be checked by the Engineer under advisement of the Environmental Specialist prior to execution of sensitive or critical portions of the project.

The Environmental Specialist has inspected the construction sites including other sites such as Contractor's camp, borrow pits and river quarry. Environmental issues were noted and discussed with the Contractor's environmental staff. Restoration plan should be provided by the Contractor as soon as possible in order for restorative work be done prior to closure of the project.

The Contractor has also not provided proof of HIV/AIDS seminar. This is one of the contractual obligations of the Contractor. Such safeguards measures should be done preferably in March or April 2015 when the Contractor will be engaging more labor in the site.

PART III: ENVIRONMENTAL MANAGEMENT

6. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The primary objective of the Environmental Management Plan (EMP) is to avoid, reduce, or at least minimize the adverse environmental impacts that could result from the activities during the implementation and operation of the project. Accordingly, the EMP considered all phases of the Project cycle, namely, the detailed design, construction and operational phases of the Project. It consists of various mitigation measures needed to be undertaken in the course of the Project cycle

During the construction phase, certain situations would have come up which may not have been anticipated by the Contractor. It is for this reason that the project EMP of the Contractor is considered as a dynamic document which need to be revised by the Contractor as the need arises.

7. OBSERVED ENVIRONMENTAL IMPACTS

During the visit of the International Environmental Specialist in July 2014, to close-out relevant environmental issues for the bi-annual environmental monitoring, joint inspections with the Contractor's staff were conducted at various sites. The areas inspected were the construction sites along the project road, garbage dumpsite at Pk 110, borrow pits, bridges and interchanges. The observed environmental issues were noted and discussed with the Contractor's environmental staff for clarification within the framework of the EIA-EMP. Contractual provisions and Technical Specifications. Photos were taken on a number of locations and shown in Annex B. The environmental issues relevant to the construction activities and dumpsite are discussed separately in the sections below.

7.1 Environmental Issues Relevant to Construction

The issues gathered within the period along with the corresponding measures are summarized in the Table below:

Table 7: Observed Issues During the Environmental Inspections

| No. | Description of EHS Issue | Description of Proposed Measures |
|-----|---|---|
| | <u>Reinstatement Plan needed for borrow pits</u> – The project uses a number of borrow pits for road embankment. Excavation without plan would lead to difficulty in reinstating the sites. (Photo No. 1) | The Contractor should formulate and submit to the Engineer a Reinstatement Plan for all borrow pits. Implementation of the plan shall be prior to demobilization. |
| | <u>Reinstatement Plan needed for quarry</u> – The quarry site at Pk 400+60 should have reinstatement plan. (Photo No. 2) | The Contractor should formulate and submit to the Engineer a Reinstatement Plan for the quarry being operated. Implementation of the plan shall be prior to demobilization. |
| | <u>Re-vegetation for borrow pits</u> - Reinstatement for some borrow pits should allow re-vegetation (Photo No. 3) | One important consideration in the restoration is to allow natural re-vegetation. |
| | <u>Contamination on the river was eliminated (Good Practice)</u> - The completed construction of the bridge | Such practice should be promoted and replicated. |

| No. | Description of EHS Issue | Description of Proposed Measures |
|-----|--|--|
| | and clearing of any contamination had resulted threat of water contamination (Photo No. 4) | |
| | <u>Equipment operator not wearing proper Personnel Protective Equipment (PPE)</u> – All operators should wear reflectorized vest and ear protection. (Photo No. 5) | The Contractor should instruct his subcontractors that PPE should be worn at all times at the work place by equipment operators for safety purposes. |
| | <u>Workers without proper Personnel Protective Equipment (PPE)</u> – Workers were not wearing helmets and work boots. (Photo No. 6) | The Contractor should instruct his subcontractors that PPE should be worn at all times at the work place to minimize accident and health hazards. |
| | <u>Dumpsite area was rehabilitated (Good Practice)</u> – Previous pollution threat of the dumpsite was eliminated. (Photo No. 7) | Surveillance by the local authorities against illegal expansion of the dumping area should be done. |
| | <u>Removal of garbage (Good Practice)</u> – All garbage materials in the vicinity of the road was removed. (Photo No. 8) | Illegal dumping should be curtailed and stopped by the local government |

7.2 Resolution Process for Dumpsite at Pk110

The issue of the dumpsite was put to closure in the previous Bi-Annual Report with the inclusion of a supplemental Report - Supplemental Environmental Assessment Report (July 2014). The report includes the background issues of the dumpsite, the process of resolving it in consultation with the people concerned as well as the technical solutions that were implemented. An environmental assessment of the solution was also presented to ensure that further issues are considered in the implementation.

With the final resolution of the dumpsite issue, it is forthcoming that the local government should ensure that encroachment or expansion of the dumpsite will be stopped and that illegal dumping of garbage will finally end.

8. ENVIRONMENTAL NOTICES AND LETTERS

During the previous period, the CS Consultant (The Engineer) had been actively monitoring the Contractor's performance in the environmental and social aspects. Issues were identified and communicated formally to the Contractor and PMC in the form of official letters. A number of letters pertained to the elaboration of the issues at the dumpsites as well as resolving it. A listing of such letters on the environmental aspects and their status is shown below:

Table 8: Letters from the Engineer on Environmental and Social Issues

| Letter No. | Dated | Reference |
|-------------------|----------------|---|
| 140725-RE-KCC-309 | July 25, 2014 | Accident and Damage to Bridge at PK 155+50 |
| 140802-RE-KCC-314 | August 2, 2014 | Accident and Damage to Bridge at PK 155+51 - Reminder 1 |
| 140806-RE-KCC-318 | August 6, 2014 | Withdrawal of Engineer's Facilities |

| Letter No. | Dated | Reference |
|-------------------|------------------|--|
| 140814-RE-KCC-323 | August 14, 2014 | Request of Information and Notice under sub clause 6.2.2 |
| 140814-RE-KCC-324 | August 14, 2014 | Working and Living conditions at CP, AP and BP |
| 141011-RE-KCC-366 | October 11, 2014 | Sanitary and Preventive Measures on Health and Labor Safety of the Workers Engaged to Construction |
| 141015-RE-KCC-369 | October 15, 2014 | Geological Investigation of Proposed Bypass at NDFZ road |
| 141924-RE-KCC-379 | October 24, 2014 | Withdrawal of Engineer's Facilities - Letter No.2 |
| 141107-RE-KCC-341 | November 7, 2014 | Cleaning of waterways after construction works |
| 141202-RE-KCC-421 | December 2, 2014 | Instruction to forward accident reports - 25 & 26 November 2014 |
| 141208-RE-KCC-429 | December 8, 2014 | Request for Supporting documents - Dump yard |

The Contractor's letters to the Engineer is listed below.

Table 9: Letters from Contractor on Environmental and Social Issues

| Letter No. | Dated | Reference |
|------------|--------------------|---|
| 2014-548 | July 25, 2014 | Submission of the Environmental Monitoring Report for July 2014 |
| 2014-561 | August 04, 2014 | Response on the accident on the bridge STA 155+50 |
| 2014-562 | August 04, 2014 | Maintenance of the Engineer's houses, offices and equipment |
| 2014-575 | August 11, 2014 | Changing the location of the culvert on STA 372+00 |
| 2014-582 | August 18, 2014 | A traffic accident report |
| 2014-584 | August 20, 2014 | Submission of the Environmental Monitoring Report for August 2014 |
| 2014-585 | August 22, 2014 | Response to the letter regarding the working and living conditions on the plants |
| 2014-592 | August 28, 2014 | A traffic accident report |
| 2014-1139 | September 27, 2014 | Response to the letter regarding the "Myrzaly" farm Head's claim |
| 2014-1144 | September 30, 2014 | Response to the complaint regarding the camp "Karlygash" and off-ramp to Mausoleum in Baizak region |
| 2014-1151 | October 03, 2014 | Response to the letter regarding the application for implementing placement of pavement in Beszhyldyk village |
| 2014-630 | October 09, 2014 | Submission of the Environmental Monitoring Report for September 2014 |

| Letter No. | Dated | Reference |
|------------|-------------------|---|
| 2014-641 | October 20, 2014 | Submission of the Environmental Monitoring Report for October 2014 |
| 2014-649 | October 24, 2014 | Response regarding the suspension of the Engineer's works |
| 2014-655 | October 28, 2014 | A traffic accident report |
| 2014-660 | October 31, 2014 | A traffic accident report |
| 2014-674 | December 02, 2014 | A traffic accident report |
| 2014-679 | December 10, 2014 | Reply to the letter concerning provision of Traffic Accident Report |
| 2014-686 | December 22, 2014 | Submission of the Environmental Monitoring Report for November 2014 |

9. CORRECTIVE ACTION PLANS

In this Bi-annual Report, the critical tasks consisted of documenting the solution for the dumpsite at Pk 110 and environmental safeguard issues related to construction. The report was accepted as supplemental report to the previous Second Bi-annual Environmental Monitoring report (July 2014).

Construction related environmental issues were similar to what have occurred in the past – dust, non-usage of PPE, need for reinstatement plan for borrow pits and quarry. These issues were identified in Table 7: Observed Issues during the Environmental Inspections. As discussed, these issues should be constantly be dealt with by the Contractor during the entire construction phase of the project.

One more issue that needs to be dealt with by the contractor is with regards to the project EMP; which need to be more site specific rather than be too generic. This was brought up in the past and still need to be dealt with by the Contractor. Guidance was already provided by the International Environmental Specialist and the Contractor's Environmental staff has initiated the revision but still not acceptable level. Also, the Contractor's monthly environmental reports are wanting in terms of technical discussions on the result of the parametric measurements. In addition, the Borrow Pit Reinstatement Plan should be started soon by the Contractor for appropriate checking. The HIV/AIDS seminar should also be scheduled by the Contractor within the next few months.

ANNEX : Photos of Environmental, Health and Safety Issues



Photo No. 1: Borrow Pits should have Reinstatement Plan



Photo No. 2: Quarry Sites should be reinstated (Pk 400+60)



Photo No. 3: Borrow Pits should be reinstated to allow natural re-vegetation

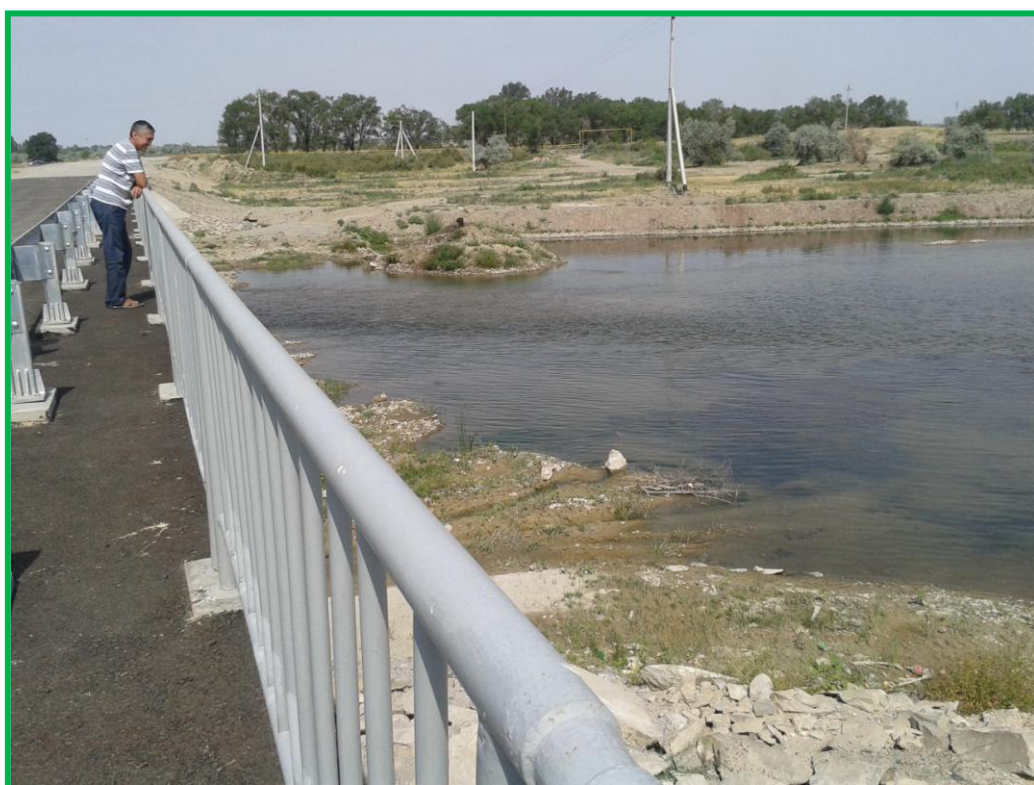


Photo No. 4: Waterways already free of contamination



Photo No. 5: Equipment operator without proper Personnel Protective Equipment (PPE)



Photo No. 6: Workers not using proper PPE



Photo No. 7: Rehabilitated Dumpsite at PK110



Photo No. 8: Garbage materials removed from the roadside (PK110)

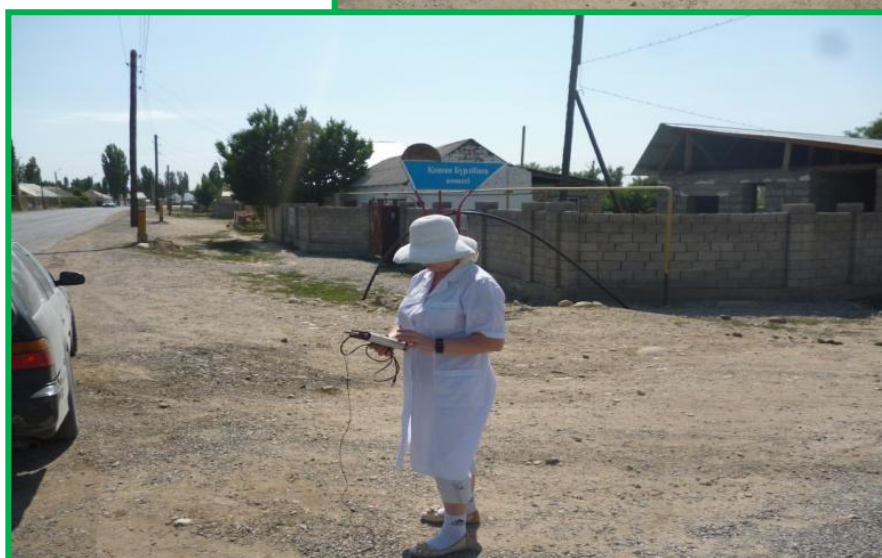


Photo No. 9: Air Quality Monitoring Photos from Jul – Dec 2014



Photo No. 10: Water Quality Monitoring Photos from Jul – Dec 2014



Photo No. 11: Noise Monitoring Photos from Jul – Dec 2014