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Program Final Report for Engineering Quality Assurance and Logistical Support (EQUALS)

May 1, 2011 to April 17, 2016

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ABBREVIATIONS

ACEP	Afghanistan Clean Energy Projects	DFAC	Dining facility
ACSR	Aluminum conductor steel reinforced	DFID	Department for International Development (U.K.)
AGCC	Afghan German Construction Company	DHPP	Darunta Hydroelectric Power Plant
AGS	Afghanistan Geological Survey	DIRs	Daily inspection reports
AIDC	Afghanistan Infrastructure Data Center	DM	Deputy minister
AISCS	Afghanistan Infrastructure and Security Cartography System	FAT	Factory acceptance testing
ANDS	Afghanistan National Development Strategy	FF	Fractured face
APPF	Afghan Public Protection Force	FOB	Forward operating base
AOR	Area of responsibility	FoHE	Faculty of Higher Education
AUWSSC	Afghanistan Urban Water Supply and Sewerage Corporation	FTP	File transfer protocol
B&V	Black & Veatch	GFE	Government furnished equipment
BOQ	Bill of quantities	GIRoA	Government of the Islamic Republic of Afghanistan
CAB	Crushed aggregate base	GIS	Geographic information system
CB	Capacity building	GPS	Global positioning system
CBR	California bearing ratio	HHCC	Hayatullah Hamidi Construction Company
CDU	Capacity development unit	HMA	Hot mix asphalt
CF	Coalition forces	HMIS	Health management information system
CHEF	Construction of Health and Educational Facilities Program	IDC	Infrastructure data center
CLTS	Community Led Total Sanitation	IOM	International Organization for Migration
CoP	Chief of party	IP	Implementing partner
COR	Contracting officer's representative	ISAF	International Security Assistance Force
COTR	Contracting officer's technical representative	ISD	Infrastructure Services Department
CTAP	Civilian Technical Assistance Program	ISP	Internet service provider
DABS	Da Afghanistan Breshna Sherkat (the national electric company)	IWRM	Integrated water resources management
DCMDP	Design and Construction Management of the Development Projects Unit	JICA	Japan International Cooperation Agency
		JO	Job order
		KAF	Kandahar Air Field

ABBREVIATIONS

KRBA	Kabul River Basin Agency	OHG	Omran Holding Group
KCIT	Karachi Container International Terminal	O&M	Operations and maintenance
KHPP	Kandahar Helmand Power Project	PBACC	Piroz Bame Afghan Construction Company
LoE	Level of effort	PCC	Plain cement concrete
LL	Liquid limit	PI	Plasticity index
MDD	Maximum dry density	PIU	Project Implementation Unit
MECC	Mashriq Engineering Construction Company	PL	Plastic limit
MIRR	Material inspection receiving reports	PLSO	Partner Liaison Security Office
MoEc	Ministry of Economy	PMSI	Perini Management Services, Inc.
MoEd	Ministry of Education	PM	Project manager
MoEW	Ministry of Energy and Water	PMP	Project management plan
MoFA	Ministry of Foreign Affairs	PRA	Participatory assessment survey
MoI	Ministry of Interior	PTTC	Provincial Teacher Training Center
MoM	Ministry of Mines	PVC	Poly vinyl chloride
MoPH	Ministry of Public Health	QA	Quality assurance
MoPW	Ministry of Public Works	QC	Quality control
MST	Mobile security team	RCC	Roller-compacted concrete
MTC	Midwife Training Center	RFP	Request for proposal
MTU	Materials Testing Unit	RMC	Risk Management Company
NDABS	Nangarhar Da Afghanistan Breshna Sherkat (National Electric Company)	RNCC	Rahman Noori Construction Company
NLCC	National Load Control Center	RSSP	Road Sector Sustainability Program
NMC	Natural moisture content	SBSCC	Sayed Bilal Sadat Construction Company
NTWP	National Transboundary Water Policy	SCI	Substantial completion inspection
OAA	Office of Acquisition and Assistance	SESA	Sustainable Energy Services Afghanistan
OAPA	Office of Afghanistan and Pakistan Affairs	SIGAR	Special Inspector General for Afghanistan Reconstruction
OEM	Original equipment manufacturer	SIPD	Shorandam Industrial Park Diesel Power Plant
OEG	Office of Economic Growth and Infrastructure	SLDs	Single line diagrams

ABBREVIATIONS

SRRM	Silk Route Risk Management
SWSS	Sustainable Water Supply and Sanitation
TCN	Third-country national
TS	Technical secretariat
TSSCoW	Technical Secretariat of the Supreme Council on Water
UNECE	United Nations Economic Commission for Europe
UNOPS	United Nations Office for Project Services
USACE	U.S. Army Corps of Engineers
USAID	United States Agency for International Development
USFOR-A	U.S. Forces Afghanistan
VICC	Venco Imtiaz Construction Company
VS	Vertical structures
WAPCOS	Water and Power Consultancy Services
WI	Warranty inspection
WIP	Work-in-place
WSUS	Windows Server Update Services
WSST	Water Supply and Sanitation Team

PROGRAM INFORMATION

Program Name	Engineering Quality Assurance and Logistic Support (EQUALS)
Program Purpose	Provide USAID's Afghanistan Office of Economic Growth and Infrastructure (OEGI) with an Afghanistan-based team to provide independent quality assurance for ongoing and planned construction, design and maintenance projects in the four infrastructure areas, namely: transportation, vertical structures, energy, and water and sanitation.
Implementing Partner (IP)	International Relief and Development, Inc. (IRD)
Period of Award	18 April 2011 – 17 April 2016
Contract Number	306-C-00-11-00512-00
Contracting Officer	Bruce MacFarland – April to August 2011 Javier Castano – August 2011 to July 2012 Cheryl Hodge-Snead – July 2012 to February 2013 Anthony Amerson – February 2013 to November 2013 Michael Capobianco – November 2013 to April 2014 Greg Wang – April 2014 to October 2015 Alexis McGinnis – October 2015 to April 2016
USAID Contracting Officer Representative (COR)	Joji Daway – April 2011 to June 2013 Charito Redoblado – June 2012 Diana Shannon – June 2013 to April 2014 Ashaki Guyton Blanton – April to November 2014 Jeff Kaufman – November 2014 to April 2015 Ashaki Guyton Blanton – April to August 2015 Abdullah Habib – August 2015 to March 2016 John Piggott – March to April 2016
Alternate COR	David Ratliff – August 2011 to April 2012 Tom Bauhan – April 2012 to April 2013 Tami Sant – April 2013 to August 2013 Brett Burkhart – August 2013 to April 2014 Justin Gordon – April to November 2014 Christine Katin – November 2014 to September 2015 John Piggott – September 2015 to March 2015
IRD Chief of Party	Gilbert Richard – April to September 2011 and January 2013 to August 2013 Anthony Haslam – September 2011 James Weeks – October 2011 to June 2012 Osvaldo Juvier – June 2012 to October 2012 Paul Wolstenholme – October 2012 to January 2013 and September 2013 to April 2016

INTRODUCTION

About EQUALS

Over the course of five years, the Engineering Quality Assurance and Logistical Support Program (EQUALS) has provided the U.S. Agency for International Development (USAID) with independent “eyes and ears” at important USAID-funded construction projects in Afghanistan, to monitor their progress and ensure quality execution. During the term of this contract, EQUALS has supported infrastructure-development projects worth more than \$1 billion, focusing on the energy, transportation, vertical structures, and water and sanitation sectors.

More specifically, EQUALS has provided a full range of long-term and quick-response architecture and engineering services, quality assurance (QA) services, and other logistical and technical support to ensure that these projects are sound and built according to established engineering standards. The program addresses Afghanistan’s critical infrastructure needs, helping to promote economic growth and political stability.

The categories of assistance available through the EQUALS contract are described in greater detail below:

Quality Assurance:

Monitored construction projects implemented by USAID’s implementing partners (IPs) and grantees. Carried out visual inspections, by expat/TCN (third-country national) and local qualified engineers, of work at the construction site itself, as well as of the IPs’ testing facilities, procedures, and results, to ensure compliance with approved designs, technical standards, and contract schedules. Collected samples of materials used by IP contractors, for testing in the EQUALS Materials Testing Laboratory.

Engineering Support:

Identified sites and reviewed tender documents, bills of quantities, and designs.

Technical Assistance:

Embedded technical experts within ministries to help establish and implement sound policies.

Capacity Building:

Strengthened the capacity of key ministries by training and working with government employees to transfer technology. Collaborated with local universities to implement an internship program designed to develop a cadre of trained workers.

Information Management:

Managed and maintained a geospatial infrastructure database that provided vital project information and tracked security incidents, to assist donors in effective planning and monitoring of infrastructure projects.

Logistical Support:

Provided security, transportation, conference and training assistance, as well as office facilities, as requested by USAID, to help meet infrastructure-development objectives.

Key Program Achievements

The EQUALS program's key achievements included the following:

- a. Completing more than 25,000 site inspections;
- b. Conducting nearly 20,000 tests at the Materials Testing Laboratory of materials purchased by USAID IPs, achieving a pass rate of 96.1%;
- c. Exceeded reporting requirements between 2014 and 2016 by 51%;
- d. Ensuring that technical specifications of contracts were being met, including the replacement of a damaged engine at the Kandahar Helmand power plant, and the construction of a battery room at the Durai Junction substation;
- e. Supporting the USAID Roads Project Manager to ensure the completion of the Gardez-Khost Road, according to the schedule;
- f. Building the capacity of staff working for the Ministry of Energy and Water; Da Afghan Breshna Sherkat (DABS), the Afghan power utility; and contractors, in functions such as project management, plant operations and maintenance (including health and safety), and quality assurance;
- g. Supporting the USAID Project Manager for the Construction of Health and Education Facilities (CHEF) program to complete and hand over to the Ministry of Public Health the program's final deliverables—the 100-bed Gardez hospital and the 20-bed Khair Kot hospital;
- h. Providing technical assistance and mentoring to small Afghan construction contractors to perform emergency road repairs, in support of Activity I of the Road Sector Sustainability Program (RSSP);
- i. Development and delivery of training and mentoring to operators of Darunta Hydro Plant, in plant operations and maintenance techniques, including health and safety aspects;
- j. Provision of technical assistance to the DABS Kajaki Project Management Unit (PMU) during Phase I, and training of four DABS engineers in quality assurance inspection procedures and techniques in support of the construction phase, including mentoring on site;
- k. Developing and delivering a training program for 25 university undergraduates, nine of them female.

Format of the Report

This final report includes the following components:

- a. The last quarterly report, covering the period of January 1 to March 31, 2016;
- b. Historical information regarding closed job orders (JOs), arranged by sector, covering the period of April 2011 to December 31, 2015; and
- c. Challenges, lessons learned, and salient issues and concerns encountered over the course of the project.

More detailed information is available in respective job order close-out reports, which have been submitted to and accepted by USAID.

I. EXECUTIVE SUMMARY

Key program outputs

During the delivery of the EQUALS program, some of the key outputs that assisted the United States Administration of International Development (USAID) Mission to Afghanistan, Office of Economic Growth and Infrastructure (OEGI) included:

- Conducting over 25,000 site visits to observe and report on construction activities;
- Undertaking nearly 20,000 tests of materials used by implementing partners for construction;
- Ensuring that technical specifications of contract are met, specifically the fire rated doors for the Sadar Kabuli Girls' School, Faculty of Higher Education program;
- Assisting USAID with the review of warranty claims and inspections, specifically the replacement of the diesel engine for power generator #5, at Breshna Kot, Kandahar under Kandahar Helmand Power Project;
- Assisting USAID to complete the construction of the 103 km of the Gardez-Khost road on time and to handover the completed road to the Government of the Islamic Republic of Afghanistan, Ministry of Public Works;
- Provided capacity building to local construction contractors, specifically small contractors in support of Activity I of the Road Sector Sustainability Program (RSSP).
- Produced over 200,000 maps for USAID and/or US Government authorities at the request of USAID.

I.1 VERTICAL STRUCTURES QUALITY ASSURANCE

Throughout EQUALS period of performance, the Vertical Structures Team provided quality assurance oversight on the Construction of Health and Education Facilities program (CHEF) as well as the Faculty of Higher Education program (FOHE). Both of these programs were already in progress prior to the commencement of EQUALS.

During EQUALS, the CHEF program was completed by relevant implementing partners including:

- Three Midwife Training Centers (MTC) in Bamyan, Badkhsan and Khost provinces
- Four Provincial Teacher Training Centers (PTTC) in Nangahar, Wardak, Faryab and Parwan provinces
- 100 Bed Hospital, Gardez, Paktia
- 20 Bed Hospital, Khair Kot, Paktika

Under the FOHE program, the following construction works were completed by relevant Implementing Partners, with QA oversight provided by EQUALS:

- Renovation of men's dormitory, design and construction of a new dining facility and laundry at Kabul University.
- Four Provincial faculty facilities in Balkh, Jawzjan, Faryab and Herat provinces.

Completion of the two hospitals suffered numerous delays due to termination and replacement of sub-contractors by the implementing partner. Work on the Sadar Kabuli Girls' school under the FOHE Program was complete with the exception of installation of the fire rated doors. The specifications for the fire doors required to be submitted three times before being approved as meeting the technical specifications, with installation anticipated to be complete in July 2016.

I.2 NATIONAL MONITORING TEAM QUALITY ASSURANCE

The National Monitoring Team (NMT) field engineers conducted inspections of 1,597 Sustainable Water Supply and Sanitation (SWSS)/Community Led Total Sanitation (CLTS) projects, and 88 Afghanistan Clean Energy Program (ACEP) projects in various provinces of Afghanistan. In addition, NMT field engineers verified project data for 362 health-care facilities belonging to the Ministry of Public Health and supplied the data to the Afghanistan Infrastructure Data Center (AIDC).

The NMT field engineers inspected 62 SWSS and CLTS projects in Logar Province in 2013. These projects were not completed earlier due to delays caused by security and weather. ACEP was completed in 2011 and 2012, with a two-year warranty period. A total of 88 ACEP projects in 20 provinces were inspected by 10 NMT field engineers during January 2013, prior to the expiration of the warranty.

I.3 ROADS QUALITY ASSURANCE

EQUALS was tasked to provide QA under approved JOs 2, 3, 4, 5 and 10 on various USAID-funded projects/activities in the roads sector: Gardez to Khost Road (G-K Road); Salang Repairs & Maintenance (R&M) project; Kabul to Kandahar Bridge Rehabilitation; Operation and Maintenance of GK-Road; and Emergency Roads Operation and Maintenance in different parts of Afghanistan. An additional activity was the provision of capacity development, in support of the Ministry of Transportation and Civil Aviation (MoTCA). During implementation of these activities, the EQUALS QA team produced and delivered 3,778 QA inspection reports to USAID. In addition, the EQUALS materials-testing team performed 4,258 tests to verify that the material quality provided by the contractor met the technical specifications of the contract.

From March 2012 to January 2016, EQUALS was initially required to provide QA services for the construction of the G-K Road, with construction management provided by Louis Berger Group (LBG) under contract to USAID. This situation continued until the completion of Sections 01 and 03, with the final WI conducted on November 7, 2013. To complete the final 38 km of Section 2, a different management methodology was adopted, wherein USAID dispensed with the international construction management consultant (previously LBG) and took on the responsibility for contract oversight, while EQUALS provided both on-site QA and construction-supervision services. The construction contract was awarded to Mashriq Engineering Construction Company (MECC), an Afghan contractor, for Sections 2A and 2B, under Phase 3. This change in roles and responsibilities required all parties to review the previous coordination protocols, making Phase 3 a learning period for all parties.

In Phase 4, during which the construction activities were more complex and the roles remained the same, a more effective coordination mechanism was formulated among USAID, EQUALS and MECC. Although the contractor was the same, the senior management had changed, resulting in a necessary period of adjustment. Unfortunately, in September 2014, the COP of MECC was killed in a car accident, resulting in a delay in the commencement of construction before the onset of winter, including the postponement of construction of Bridge #9 to spring of 2015. During this period when MECC had to recruit a new COP, EQUALS provided project-management technical assistance to MECC in the form of training MECC staff on project management and quality-control activities. This included integrated schedule training on Primavera and MS Project by the EQUALS Expatriate Scheduler. Despite this significant setback, thanks to increased coordination between EQUALS and USAID, as well as on-site management support provided to MECC by EQUALS, the road construction met the completion deadline of December 31, 2015.

In addition to the technical assistance described above, EQUALS roads staff also provided capacity development and outreach initiatives to MECC on site, to improve coordination, to enhance the value of the field inspections and subsequent deficiency identification and resolution. These initiatives included regular meetings between EQUALS management and MECC's field management and supervisory staff to address issues hindering road-construction progress and the quality of works. Through daily reports and during meetings with the USAID COR, EQUALS drew attention to the IP's performance and management problems that affected quality and progress of contracted works. EQUALS also recommended solutions to overcome these issues.

Due to the current limited capacity of commercial laboratories in Kabul, and in Afghanistan as a whole, the EQUALS laboratory was a vital asset for the successful evaluation of materials/samples and for testing equipment for all roads and vertical structures requirements. Also, with the drawdown of coalition forces and large infrastructure projects, many high-quality, independent materials-testing laboratories ceased operations. The EQUALS material-testing laboratory has provided an invaluable and independent facility in support of QA services, whose tests results can be considered untainted.

Although EQUALS has implemented some small-scale training programs for Ministry engineers, the skills and knowledge of technical staff at the ministries is very basic regarding materials testing. The engagement of Ministry of Public Works engineers and senior management to recognize the importance of QA inspections and independent materials testing is highly desirable.

An objective of activity I of the RSSP was for USAID to identify and engage small contractors to perform minor works in support of emergency situations, when roads were blocked due to natural disasters such as floods or landslides, in order to develop a cadre of small contractors for MoPW to utilise on an on-call basis. To achieve this objective, training of contractors was necessary and was incorporated in the role of EQUALS QA engineers on site. Training of contractor on-site supervisors included:

- Site assessment/survey and identification of solutions;
- Site measurements and preparation of site maps/diagrams;
- Preparation of bill of quantities (BoQ) and matching solution to scope components;
- Construction repair techniques to ensure quality requirements were met; and
- Inspection methodology and preparation of final report.

Based on the experience of the G-K Road Phase IV construction project, it is recommended that for any forthcoming USAID-funded infrastructure rehabilitation road projects of similar scale and importance:

- a. USAID should identify and select national contractors that have a proven history of successful delivery of large projects implemented in high-security-risk areas involving complex community environments.
- b. In order to facilitate the effective implementation of high-profile infrastructure projects, it is advised that USAID continue to engage international consulting firms for the provision of third-party QA and/or design and construction supervision services. At this stage in the development of Afghanistan's engineering expertise, due to the lack of skilled manpower, engaging an Afghan consulting firm would be very risky. It is hoped that with time this will change.
- c. Apart from ensuring specified quality of works and proper use of USAID funds, the international consultants should be tasked to develop the capacity of national counterparts and contractors through the provision of continuous on-the-job training and mentoring of national staff, introduction of advanced QC practices, and promotion of innovative project management methods and know-how.
- d. Ensure that QA monitoring starts at the beginning of such projects. Implementation risks increase rapidly for USAID the longer this monitoring is not provided.

I.4 MATERIALS TESTING LABORATORY QUALITY ASSURANCE

During the course of JO-04, the EQUALS Materials Testing Team received 353 samples of various construction materials (e.g., crushed aggregate, sand, borrowed material, crushed aggregate base (CAB) course, sub-base, sub-grade, hot mix asphalt (HMA), bitumen, prime coat, tack coat and steel bars, etc.) and performed more than 1,600 tests to assess their quality. Once tested, the materials were assigned an “unsatisfactory” or “passing” mark. Out of the 344 samples tested, 36 were found to be “unsatisfactory,” meaning that one or more tests had failed, resulting in an 89.5% pass rate.

The laboratory manager visited Camp Liz during 10 trips over the course of JO-04 to oversee sample collection and provide training to 20 EQUALS engineers.

In addition to regular materials testing activities, the team developed and delivered a training program for 16 male and nine female students from Kabul University and Kabul Polytechnic University.

Under JO-10, a total of 9,886 tests were conducted on contractor provided material used for construction of the G-K road, with a pass rate of 96.5%.

I.5 MINISTRY OF ENERGY AND WATER QUALITY ASSURANCE

The Water Supply and Sanitation Team (WSST) embedded in the MoEW covered three key support and service areas from July 1, 2012 to April 17, 2014:

1. MoEW Design and Construction On-the-Job Training Capacity Building Program;
2. Technical, advisory, and logistical support to the Technical Secretariat of the Supreme Council on Water; and
3. Technical and advisory support to the MoEW.

Other activities performed included participation in and support to the international water sector donor community coordination meetings; working closely with the USAID Office of Economic Growth and Infrastructure (OEGI) in providing briefing information; and liaising with the Afghan Water Sector.

Support was also provided for the Dahla Dam and Kajaki Dam rehabilitation, as well as other projects funded by U.S. Forces Afghanistan (USFOR-A) and the U.S. Army Corps of Engineers (USACE).

The WSST provided a diverse array of technical, policy and logistical support to the MoEW, focusing on five major dam projects currently being implemented under a design-build project delivery model:

- The Shah-wa-Aroos Irrigation and Hydropower Dam Project in Kabul Province in the Kabul River Basin;
- The Kamal Khan Irrigation and Flood Protection Project in Nimroz Province in the Helmand River Basin;
- The Almar Dam Irrigation Project in Faryab Province in the Northern Basin;
- The Machalghoo Irrigation Project in Paktya Province in the Helmand River Basin; and
- The Pashdan Irrigation Dam Project in Herat Province in the Harirud River Basin.

On a routine basis, the WSST supported the MoEW with various technical design and construction-related issues associated with these five major dam projects. Proactive involvement of the WSST in the review of design documents for the spillway and diversion channel of the Pashdan Dam resulted in a cost savings of more than \$96 million for the MoEW (the design contractor re-submitted a design that cost \$13.13 million, versus an estimated cost of \$110 million for the initial design).

Through the support of USAID, a concrete specialist was contracted and brought to Kabul for an inspection of concrete cracks that had developed on both the upstream and downstream faces of the Shah-wa-Arus Dam. The specialist traveled to the project site to inspect the cracks and drafted a report with valuable recommendations. A copy of his report was submitted to the MoEW as well as to USAID.

The WSST commenced 2013 with the successful hosting of the 3rd National Conference on Water Resources Development and Management, during which all line ministries and agencies in the water sector convened to discuss their achievements, challenges, and future plans. President Hamid Karzai opened the conference and Dr. Ken Yamashita, USAID Mission Director in Afghanistan, represented the U.S. Embassy as a keynote speaker. Through the coordination efforts of the WSST, a declaration was drafted and announced at the end of the conference.

The WSST facilitated two observational study tours:

- In November of 2013, five MoEW Project Managers (PMs) attended an international conference on water in Kunming, China. At the conference, the Afghan delegates presented a research paper entitled “Building the Future — The Revival of Afghanistan’s Era of Dam Building.” The research paper was well received and the abstract was published in the Conference’s Compendium of Papers. The conference was significant because it re-introduced Afghanistan’s dam-construction industry to the international community.
- In March 2014, six members of the five river basins authority at the MoEW visited Turkey Water Authority. Individual reports on details of each of the tours were drafted and submitted to USAID.

WSST provided formal training to MoEW technical, engineering, procurement, and HR personnel as well as to staff at other relevant ministries on trans-boundary water issues throughout the reporting period. Training topics included Primavera Project Scheduling, public administration, capacity building management, dam design/construction, operation and maintenance, project control, hydro-diplomacy and international law, negotiation on trans-boundary waters, and governance.

WSST installed three P-6 (Primavera Project Scheduling) licenses for MoEW project-management engineers and trained the engineers on the program’s utilization. MoEW project management engineers are utilizing the software in their daily work.

As a result of the contract specialist’s efforts, the WSST’s mentoring and on-the-job training contributed to MoEW engineers’ increased work output and quality, and confidence in negotiating and working with contractors on project control and project management of the five dam projects under construction. The WSST conducted training classes on procurement and construction contracts issues for MoEW employees. The WSST’s mentoring has also increased the ability of MoEW engineers to plan technical and contractual structures for future dam construction projects.

About 2,000 documents on water management have been digitized, and all of them have been uploaded to a digital library designed by the WSST, in consultation with the MoEW. The library will serve as a significant resource for technical studies, plans, and policies of Afghanistan’s work in water management.

A water website has been designed and relevant information on water-related programs, conferences, and projects have been up loaded. Pending approval by the MoEW, a link to the digital library will be provided for access to all the digitized information on water-related programs, projects and seminars.

I.6 AFGHANISTAN INFRASTRUCTURE DATA CENTER (AIDC) QUALITY ASSURANCE

In the summer of 2009, the USAID HRLS Afghanistan Infrastructure Data Center (AIDC) was established, with funding from the USAID/Afghanistan OEGI. The AIDC was an outgrowth of the construction QA projects implemented by IRD under the HRLS program. IRD began implementing the follow-on program (EQUALS) in April 2011.

AIDC's work includes infrastructure project/asset and security incident data capture, verification, cataloging, mapping and reporting, and addresses the needs of three primary user groups:

- Donor agency managers and contracting officer's representative (COR) program staff;
- Implementing partner project managers; and
- Host country ministry infrastructure information managers.

With a central office based in Kabul, AIDC has distributed more than 1,000 packets of infrastructure and security-related information—in the form of maps, data catalogs, reports and web services—on a regular basis to the USAID Afghanistan mission and Washington, DC headquarters, the U.S. Embassy in Kabul, the International Security Assistance Force (ISAF), Government of the Islamic Republic of Afghanistan (GIROA) ministries, and other international donors, approved by USAID.

AIDC has trained/mentored more than 30 civil servants at five ministries in basic asset management, basic computer use, geographic information systems (GIS), global positioning systems (GPS), use of GIS smart phones and database management.

AIDC built relationships with five line ministries supported by the USAID OEGI. While conducting training in GIS technical skills and office management best practices, the AIDC team established Infrastructure Data Centers (IDCs) in the ministries of Public Works, Education, Public Health, Mines, and Economy. The goal of the IDCs was to enable the government of Afghanistan to effectively collect, catalog, and report vital infrastructure information to key decision makers. By doing so, these IDCs help ensure that this information will be used in a sustained manner after off-budget infrastructure activities have ended. These IDCs have leveraged 21st-century technology to provide the Afghan government with the skills necessary to continue the development of infrastructure record keeping.

AIDC was also tasked with USAID building site inspections, to include confirmation and cataloging of all 1,370 USAID-constructed buildings contained within the USAID-funded and EQUALS-maintained Afghanistan Infrastructure and Security Cartography System (AISCS). With two expatriate team leads, one senior Afghan GIS manager and five Afghan GIS specialists, two senior Afghan engineering coordinators, and more than 12 Afghan field engineers, the AIDC team collected the requested information and produced daily inspection reports. The expatriate team leads provided overall oversight, mentoring, and training to the local staff coordinators. Throughout the course of this job order, the AIDC provided these vital services to USAID and the Afghan ministries, developing processes that will allow for the long-term development of these activities with minimal inputs from outside donors for the foreseeable future.

I.7 POWER QUALITY ASSURANCE

The main power and capacity-building projects in which EQUALS was involved, as third-party independent QA consultant, were the KHPP (Kandahar Helmand Power Project); the installation of Unit 2 of the Kajaki HPP; the Darunta Hydroelectric Power Plant (DHPP) O&M Capacity Building Training near Jalalabad; GIS support to DABS; Tarakhil 105 MW Diesel Power Plant; and the final stages of the National Load Control Centre (NLCC).

KHPP is the largest power project in southern Afghanistan. The project comprised multiple activities, such as building a new substation in Durai Junction; replacing a substation in Breshna Kot, Kandahar; installing new diesel generators in Breshna Kot, Kandahar; relocating diesel generators in Shurandam Industrial Park (SIPD); and refurbishing the 20kV distribution network in Kandahar City.

The EQUALS Power QA Team monitored developments on the components of the KHPP project by supporting Da Afghanistan Breshna Sherkat (DABS), the national electric company, in the operation of the Kandahar Breshna Kot (KDBK) and Durai Junction (DJCN) substations, the Shurandam Industrial Park Diesel Power (SIPD) plant, and the Kandahar Breshna Kot Generation (KDEG) diesel power plant. EQUALS also observed the delivery of power generated from the Kajaki Hydro Plant as well the delivery of fuel supplied by DoD to DABS.

EQUALS has monitored the KHPP project from its start in June 2011 to the final acceptance inspection in October 2013, followed by the final WI in October 2014. From the beginning of the project until September 2012, the QA monitoring was very sporadic, due mainly to security issues. Since September 2012, EQUALS QA monitoring was organized better by assigning local engineers, well trained by EQUALS, in all of the remote project sites, such as the Durai Junction SIPD, Breshna Kot. With better cooperation of the IPs, the frequent movements of EQUALS expats, combined with the permanent presence of local engineers on site, contributed to better feedback reporting of the project's daily activities to USAID.

In order to maintain the continuity of the training, which was important considering the capacity of DABS personnel and the constraint on the installation contractor to serve as construction contractor, The EQUALS Power QA Team, at the request of USAID, provided continuation training to DABS Kandahar personnel on the operation and troubleshooting of the substation operation and diesel generation. The training was repeated for Kajaki, Helmand, Zabul and Ghazni DABS personnel. A total of 45 DABS personnel were trained.

At the Darunta HPP site, EQUALS monitored, on a weekly basis, the activities of the maintenance carried out by DABS personnel, after the IP for the refurbishment of the three turbine units was terminated. From October 2012 to January 2014, the EQUALS Power Team developed and delivered customized training packages for the O&M crews of the Darunta Hydropower Plant. Altogether, 24 trainees nominated by Nangarhar Da Afghanistan Breshna Sherkat (NDABS), and Darunta management (in two groups of 12) received more than 90 days of training in theoretical and practical plant operation techniques. The training was organized into basic, operation, and maintenance sessions, and resulted in an observed knowledge/skills increase and the establishment of routine maintenance practices and procedures. This training had a positive direct impact on operation and maintenance of the plant, resulting in an increased operability of the power plant over the year. Notably, the O&M crews understood how to troubleshoot plant faults; as a result, unit outages have been significantly reduced.

In January 2013, the installation of the Kajaki Unit 2 was de-scoped from KHPP project and was determined by USAID to be financed as an "on budget" project to be managed by GfR&A and more specifically by the Electricity Utility DABS. For this reason, in December 2013, DABS engaged a construction management (CM) consultant, and in December 2014 a construction company that mobilized in January 2015 for a project lasting 16 months. In January 2015, EQUALS, at the request of USAID, assigned two local QA engineers in Kajaki and followed this up with frequent visits by its expat engineers representing all three main disciplines—civil, mechanical and electrical. Due to this continuous monitoring, some technical ambiguities in the construction contract were identified in good time and did not lead to any serious problems in the installation of Kajaki Unit 2. Due to the remote site of the project, combined with the insurgence activities in the area, it was difficult to transport material to the site, combined with management weaknesses of the installation contractor, has led to significant delays to the project,

Finally, between September 2015 and March 24, 2016, after a determination by the CO, EQUALS prepared, facilitated and supported the handover of the construction management components of the installation of Kajaki Unit 2, from GfA to Tetra Tech. Tetra Tech has a direct contract with USAID and remains as the CM consultant to the DABS contract with 77 Construction Company USA. At the same time, EQUALS coordinated the timely handover of third-party QA services from EQUALS to Tetra Tech, which ended successfully on March 24, 2016.

During the duration of the EQUALS program, the Power QA Team performed the following site visits and submitted the corresponding reports:

CLIN 1.1	Rebuilt Breshna Kot substation	917
CLIN 1.2	Refurbished 20kV distribution network	294
CLIN 1.5	Installed 7 diesel generator in Breshna Kot	795
CLIN 2.1	Built Durai Junction substation	340
CLIN 2.2	Procured spare parts	1
CLIN 4	Refurbished diesel generator in LSIP	510
CLIN 5	Refurbished 20 kV network in Kajaki	4
CLIN 6.1	Inspected the GFE in Kajaki	3
CLIN 6.2	Refurbished the GFE in Kajaki	1
CLIN 6.3	Installed Unit 2 in Kajaki	3
QA monitoring of Kajaki Unit 2 installation:		275
QA monitoring and training in Darunda HPP		55
QA monitoring and final acceptance inspections		20
Ad hoc reports/reviews to USAID		120
Total reports		3338

In addition to the daily QA monitoring, EQUALS supported USAID in:

- Monitoring the delivery and consumption of the DoD diesel fuel delivered to DABS at the Breshna Kot MTU power plant;
- Determining that the engine failure of MTU #5 in December 2013 was not due to DABS operators' mis-handling, leading the IP to replace the diesel engine in 2015, within the warranty period;
- Determining that the burned closing coils of the 20kV switchgear in Breshna Kot substation were not due to DABS operators' wrong handling, leading the IP to change the design and replace all the burned coils in the switchgear, within the warranty period;
- Determining that the burned closing command channel of the protection relay of the 110kV switchgear in Durai Junction substation was not due to DABS operators' wrong handling, leading the IP to replace the affected components of the protection relay, within the warranty period;
- Determining that a separate battery room was missing in the design of Durai Junction substation, which led the IP to change the design and install a new battery container next to the control house;
- Determining the correct type of batteries needed in the installation of Unit 2 in Kajaki, leading the IP to replace the batteries delivered on site;
- Determining the extra tests needed to be performed by the IP on the GFE in Kajaki, to assure their suitability for installation; and
- Determining the refurbishment the IP should do on the turbine runner that was damaged on site.

QUARTERLY REPORT

1.10 VERTICAL STRUCTURES QUALITY ASSURANCE

1.10.1 Construction of Health and Education Facilities (CHEF) Program

Construction activities continued during this period on rectification of punch-list items for 20- and 100-bed hospitals. The status of individual projects is as follows:

1.10.2 100-Bed Hospital in Gardez, Paktia

The substantial completion inspection (SCI) for the 100-bed hospital in Gardez was carried out on December 27-28, 2015, and the report was submitted to USAID on December 30, 2015. Rectification of the punch-list items progressed during this quarter, but in accordance with the EQUALS-approved demobilization plan, the QA engineers left the project site on March 10, 2016. The final report was submitted to USAID on March 16, 2016 and included 18 outstanding items. It is anticipated that the IP's rectification of the outstanding punch-list items will take approximately two months.

1.10.3 20-Bed Hospital in Khair Kot, Paktika

The SCI for the 20-bed hospital in Khair Kot was carried out on December 20, 2015, and the report was submitted to USAID on December 24, 2015. Rectification of punch-list items progressed at the project site during this quarter, but in accordance with the EQUALS-approved demobilization plan, the QA engineers departed the site on March 10, 2016. The final report was submitted to USAID on March 16, 2016 and included 11 outstanding items. It is anticipated that rectification of the outstanding punch list-items by the IP will take a further 2 months.

1.10.4 Faculty of Higher Education (FOHE) Program Accomplishments and Status Report

Per USAID instructions dated December 29, 2015, EQUALS and the contractor's representatives jointly conducted the final warranty inspection (WI) for Phase-1 and Phase-2 works of all three FoHE projects in Balkh, Jawzjan and Faryab provinces. This was carried out from January 2 to 7, 2016, and the final warranty inspection report was submitted to USAID on January 10, 2016. The project has been completed and closed out.

1.10.5 Sardar Kabuli Girls High School (SKGHS) Program Accomplishments and Status

Installation of fire-rated doors at SKGHS was stopped on March 31, 2014. USAID awarded the contract for the reinstallation of fire-rated doors to Perez/Technologists Inc. on March 2, 2015. Per the contractor-revised construction schedule, the installation will start in April 2016 and be completed by July 2016.

2.0 ROADS ACTIVITIES IN FIRST QUARTER OF 2016

Throughout the first Quarter of 2016 the EQUALS Roads Team was working on the JO-10 Road Sector closeout while continuing to monitor the other ongoing road projects as follows:

2.0.1 Gardez to Khost (GK) Road

EQUALS Roads team continued monitoring of the IP's activities on rectification of the Punch List Items until January 9, 2016. The Final Inspection Report for the G-K Road was prepared and submitted to USAID on January 12, 2016. The Camp Liz closeout activities continued throughout the month of January 2016, with all assets Camp Liz assets and facilities handed-over to the Government of Paktiya Province on January 30, 2016. On February 24, 2016 EQUALS Roads team attended a wrap up meeting with the USAID COR/ACORs to review the Warranty Period Punch List for the G-K Road Section 2 Phase IV, and to discuss the status and or/any outstanding activities with regard to the EQUALS JO-10 Roads related reporting tasks. The Final G-K Road Section 2 Phase IV Report was prepared and submitted to the USAID COR on March 03, 2016. The report was reviewed and accepted by the USAID Roads COR on March 07, 2016.

2.0.2 Salang Corridor R&M Phase II

EQUALS Road team continued monitoring of the IP's activities until March 30, 2016, with works including undertaking patch repairs to the road pavement, repairs to structures and side ditches along the 83 Km of the road; inspect/repair/replace the ventilation fans and control system in the 3 Km tunnel; and repair the concrete gantries that provide protection to the road surface from falling debris and snowfall. EQUALS submitted the Salang Corridor R&M Phase II Monthly Report for March 2016 on April 03, 2016. All works included in the IP contract were complete, with no outstanding defects to be resolved.

2.0.3 Kabul-Ghazni Road O&M Project

The works on Kabul-Ghazni road O&M was discontinued as the IP could not mobilize to site. Subsequently on advice from USAID the EQUALS Road Engineer and IP engineer performed a joint inspection on March 22, 2016 of Kabul-Ghazni Road O&M project and shared the findings with USAID. The contract with the IP was terminated on March 13, 2016, due to the ensuing security situation in the area, preventing the contractor to perform the works.

3.0 POWER

3.0.1 Installation of Turbine #2 at Kajaki Hydropower Plant

Quality Inspections continued through two national engineers present on site until 11 February 2016, when USAID authorized full re-mobilization to site. Thereafter, 77CC returned to double shift working and the EQUALS QA staff returned to 6 national engineers, until 24 March 2016, when all staff de-mobilized from site in accordance with the EQUALS De-mobilization Plan.

In accordance with CO instruction, EQUALS transferred the role of QA to Tetrattech (under AESP program) during March 2016, after the departure of GFA Consulting from site and the transfer of responsibility of Owner's Engineer from GFA to Tetrattech.

During the reporting period, EQUALS continued to observe construction work performed by 77CC and submitted Daily QA Reports to USAID; attended weekly Kajaki QA meetings with USAID; and attended the Weekly Coordination Meeting held at Tetrattech Offices, including USAID, DABS, GFA/Tetraech and EQUALS.

Key issues that were identified during this period include:

- Welding of the spiral case and subsequent connection to the MIV and PRV,
- Measurement of the Shafts for serviceability,
- Mobilization of the subcontractor to perform testing on key electrical assemblies of GFE, such as the Poles and Transformers, for serviceability,
- Updating of the revised schedule to take into account the delays in welding and the construction delays resulting from the security evacuation on 15 September 2015, the partial re-mobilization on 27 November 2015 and full re-mobilization on 11 February 2016,
- Reduced oversight by TCN by GFA/Tetrattech due to security concerns, resulting in a greater reliance on remote management and coordination from Kabul,
- Selection and recruiting of new DABS employees to manage and operate Unit 2, who will need to be trained in digital control systems that are to be installed by 77CC.
- Approval of the Transformer Lifting Plan, which is defined as a Critical Lift in the contract, so that all parties have confidence in the plan, to include all safety and work preparation aspects associated with this task.

- Quality Control and management oversight being implemented by 77CC continues to be weak, which will become under pressure as the work output needs to increase to reduce any further delays. This is an area for additional management oversight by Tetrattech in their capacity as Owner's Engineer.

3.0.2 Diesel Generation in Kandahar

EQUALS provide observation and reporting of power delivered to Kandahar Bresha Kot substation as well as power produced at Breshna Kot and Little Shorandam Industrial Park (LSIP), Kandahar through diesel generators. Daily reports were submitted to USAID.

In addition, EQUALS engineers continued to provide mentoring and assistance to the DABS operators in the operation of the digital control systems as well as in operation of the MTU diesel generator sets installed at Breshna Kot, Kandahar under KHPP.

Due to a lack of maintenance funds for spare parts, three of the ten the generators at LSIP are not in function as the batteries have been removed as well as units #2 and #3 suffered catastrophic mechanical failures resulting the requirement for replacement of the large end connecting rod bearings and inspection of the crankshaft. For unit #10, although the fuel injector pushrod has been replaced, the operators are still unable to diagnose the problem and the unit remains unavailable to deliver power.

There is no fuel metering at LSIP, and so no fuel efficiency analysis can be conducted.

4.0 MANAGEMENT SUPPORT

The key activities during this reporting period related to the Close Out of EQUALS and de-mobilization of all staff and disposition of property.

4.0.1 De-mobilization of EQUALS

The De-mobilization plan was submitted to the CO on 18 January 2016, with comments returned at the end of February 2016, resulting in a change to the initial plan and dates for de-mobilization of Expat/TCN to be not after 16 April 2016. The revised plan was submitted on 6 March 2016. All staff were de-mobilized on or before 16 April 2016, with the exception of 6 national staff who were authorised to perform close out support activities up to and including 15 May 2016.

Disposition Instructions were received and actioned, with reconciliation and finalization of property disposition to be conducted at HQ as part of Close Out activities.

The final weekly USAID/EQUALAS meeting was held on Sunday 10 April 2016, with no significant contractual aspects outstanding, other than NICRA adjustments to be completed at a later date when official notification is received from USAID for 2016 actual NICRA.

4.0.2 Closure of Camp Liz

Camp Liz was closed on 30 January 2016, with all property being handed over to the Office of the Provincial Governor of Paktia. The APPF guardforce was de-mobilized and all weapons returned to APPF Gardez Office under the supervision of Col Taj of APPF. Other remaining property was transferred in accordance with USAID Disposition Instructions to Paktia University, MoE Paktia, and armored vehicles returned to UAID in Kabul for destruction or re-allocation. The equipment from the material testing laboratory was initially allocated to the Kabul University, however the two containers containing the equipment were detained under the instruction of the Governor of Paktia Province, resulting in the transfer being revised to be to Paktia University. The consequences of this action by the Governor of Paktia, was that no training could be provided by EQUALS on how to install, calibrate and operate the equipment within the timeframe established by the CO.

2. HISTORICAL DATA

2 VERTICAL STRUCTURE SECTOR QUALITY ASSURANCE

Throughout the EQUALS period, under the approved USAID JOs 2, 4, and 9, the EQUALS Vertical Structure Team was tasked to provide QA services to USAID on various USAID-funded projects/activities in the vertical structure sector, as detailed below:

2.1 Under JO-02 from August 01, 2011 to June 30, 2012:

No.	Project/Activity	Province	EQUALS Services (Deliverables/Reporting Requirements)
CONSTRUCTION OF HEALTH AND EDUCATION FACILITIES (CHEF) PROJECT			
1	100 Bed Hospital in Gardez	Paktia	Daily inspections with construction quality monitoring, and materials testing completed by EQUALS vertical structure QA engineers
2	20 Bed Hospital Khair Kot	Paktika	
3	Provincial Teacher Training Center Nangarhar	Nangarhar	
4	Provincial Teacher Training Center Wardak	Wardak	
5	Provincial Teacher Training Center Parwan	Parwan	
6	Provincial Teacher Training Center Faryab	Faryab	
7	Midwife Training Center Khost	Khost	
8	Midwife Training Center Bamyan	Bamyan	
9	Midwife Training Center Faizabad	Badakhshan	
FACULTY OF HIGHER EDUCATION (FOHE) PROJECT			
1	Faculty of Higher Education Balkh	Balkh	Daily inspections with construction quality monitoring, and materials testing completed by EQUALS vertical structure QA engineers
2	Faculty of Higher Education Jawzjan	Jawzjan	
3	Faculty of Higher Education Faryab	Faryab	
4	Faculty of Higher Education Herat	Herat	
NATIONAL MONITORING TEAM			
1	Sustainable Water Supply and Sanitation (SWSS) Project	Various Provinces	Inspection of project in various provinces of Afghanistan
RENOVATION OF MEN'S DORMITORY, DESIGN AND CONSTRUCTION OF NEW DINING FACILITY AND LAUNDRY AT KABUL UNIVERSITY			
1	Renovation of Dormitory Building Wing A, C, Central core area & Construction of DFAC Building	Kabul	Daily inspections containing construction quality monitoring, and material testing completed by EQUALS vertical structure QA engineers

2.2 Under JO-04 from July 1, 2012 to June 15, 2013:

No.	Project/Activity	Province	EQUALS Services (Deliverables/Reporting Requirements)
CONSTRUCTION OF HEALTH AND EDUCATION FACILITIES (CHEF) PROJECT			
1	100 Bed Hospital in Gardez	Paktia	Daily inspections with construction quality monitoring, and materials testing completed by EQUALS vertical structure QA engineers
2	20 Bed Hospital Khair Kot	Paktika	
3	Provincial Teacher Training Center Nangarhar	Nangarhar	
4	Provincial Teacher Training Center Wardak	Wardak	
5	Provincial Teacher Training Center Parwan	Parwan	
6	Provincial Teacher Training Center Faryab	Faryab	
7	Midwife Training Center Khost	Khost	
8	Midwife Training Center Bamyan	Bamyan	
9	Midwife Training Center Faizabad	Badakhshan	
FACULTY OF HIGHER EDUCATION (FOHE) PROJECT			
1	Faculty of Higher Education Balkh	Balkh	Daily inspections with construction quality monitoring, and materials testing completed by EQUALS vertical structure QA engineers
2	Faculty of Higher Education Jawzjan	Jawzjan	
3	Faculty of Higher Education Faryab	Faryab	
4	Faculty of Higher Education Herat	Herat	
RENOVATION OF MEN'S DORMITORY, DESIGN AND CONSTRUCTION OF NEW DINING FACILITY AND LAUNDRY AT KABUL UNIVERSITY			
1	Renovation of Dormitory Building Wing A, C, Central core area & Construction of DFAC Building	Kabul	Daily inspections containing construction quality monitoring, and material testing completed by EQUALS vertical structure QA engineers

2.3 Under JO-09 from July 01, 2014 to April 17, 2016:

No.	Project/Activity	Province	EQUALS Services (Deliverables/Reporting Requirements)
CONSTRUCTION OF HEALTH AND EDUCATION FACILITIES (CHEF) PROJECT			
1	100 Bed Hospital in Gardez	Paktia	Daily inspections with construction quality monitoring, and materials testing completed by EQUALS vertical structure QA engineers
2	20 Bed Hospital Khair Kot	Paktika	
3	Provincial Teacher Training Center Wardak	Wardak	
4	Provincial Teacher Training Center Faryab	Faryab	
FACULTY OF HIGHER EDUCATION (FOHE) PROJECT			
1	Faculty of Higher Education Balkh	Balkh	Daily inspections with construction quality monitoring, and materials testing completed by EQUALS vertical structure QA engineers
2	Faculty of Higher Education Jawzjan	Jawzjan	
3	Faculty of Higher Education Faryab	Faryab	
INSTALLATION OF FIRE RATED DOOR AT SARDAR KABULI GIRLS HIGH SCHOOL			
1	Installation of Fire Rated Door at Sardar Kabuli Girls High School.	Kabul	Daily inspections containing construction quality monitoring by EQUALS vertical structure QA engineers

2.4 UNDER JO-02 FROM AUGUST 01, 2011 TO JUNE 30, 2012

2.4.1 Construction of Health and Education Facilities (CHEF) Project

Construction of Health and Educational Facilities program work activities continued from the Human Resources and Logistical Support II program (HRLS II) on eight of the nine projects comprising two hospitals, three midwife training centers, and four provincial teacher-training centers (PTTC). The midwife training center in Khost was substantially completed on March 22, 2011; however, the submission of as-built drawings by the contractor was outstanding and was submitted during JO-04. Major activities on the other eight projects included water tower construction, steel reinforcement and formwork, leach field backfilling and compaction, electrical and painting works, concreting, plastering, fabrication and welding of roof trusses, and installation of sanitary fixtures. QA engineers conducted 2,622 site inspections for the CHEF project during JO-02.

2.4.2 Faculty of Higher Education (FOHE) Project

Construction continued from the Human Resources and Logistical Support II program (HRLS II) on four Faculty of Higher Education buildings in Balkh, Jawzjan, Faryab and Herat provinces. Major activities on these projects included grading and leveling around the buildings and electrical and plumbing works. QA engineers conducted 704 site inspections for the FOHE project during the JO-02.

2.4.3 Renovation of Men's Dormitory, Design and Construction of New Dining Facility and Laundry at Kabul University

Under the Kabul University Buildings Program, work on the dormitory building core section, underground water storage tank, and mechanical room was in progress during JO-02. Wings A and C of the men's dormitory, the dining facility and administration buildings were almost complete. The project achieved an overall progress completion of over 90% by the end of the JO-02 reporting period. QA engineers conducted 421 site inspections for the FOHE project during the JO-02.

2.4.4 National Monitoring Team

The National Monitoring Team (NMT) field engineers conducted inspections of 711 Sustainable Water Supply and Sanitation (SWSS)/Community Led Total Sanitation (CLTS) projects, and 18 Afghanistan Clean Energy Program (ACEP) projects in various provinces of Afghanistan. The NMT field engineers also verified project data on 103 health care facilities of the Ministry of Public Health and supplied the collected data to the EQUALS GIS team managing the Afghanistan Infrastructure Data Center (AIDC). In addition, field engineers performed quality assurance inspections and submitted reports for 191 hygiene training workshops conducted under the SWSS/CLTS subcomponent of this program in various provinces.

2.5 UNDER JO-04 FROM JULY 01, 2012 TO JUNE 15, 2014

2.5.1 Construction of Health and Education Facilities (CHEF) Project

During JO-04, work activities continued on the 100-bed and 20-bed hospitals in Gardez and Paktika. The rectification of punch list items of four substantially complete Provincial Teacher Training Center (PTTCs) and two Midwife Training Centers (MTCs) continued.

Between December 2012 and January 2013, the six training centers under the CHEF program, that is, four PTTCs in Faryab, Wardak, Parwan and Nangarhar and two Midwifery Training Centers (MTCs) in Bamyán and Badakhshan, achieved substantial completion. In addition, rectification of punch list items was completed for PTTCs at Nangarhar and Faryab, and MTCs at Bamyán and Badakhshan provinces. Punch list rectification for PTTCs at Wardak and Parwan provinces continued during JO-09 and were completed in December 2014.

2.5.2 Faculty of Higher Education (FOHE) Project

Due to disputes over costs and remunerations, the common contractor for all three Faculty of Higher Education (FoHE) projects in Balkh, Jawzjan, and Faryab stopped work on these projects in August 2012. Outstanding works comprised the rectification of faulty electrical works, repairs to fix leakages in roofs, repairs to false ceiling damaged in places due to water leaks, and repainting of wall and ceiling surfaces damaged by water leaks.

The contracts for the outstanding works at the three Faculty of Higher Education (FoHE) projects were awarded to new contractor Perez in April 2014. Delays resulted in corresponding changes in the level of effort of EQUALS QA services to be rendered on these projects, which has been communicated to USAID in successive EQUALS Vertical Structures (VS) Work Plans. The rectification of remaining works continued during JO-09 and was completed and handed over in December 2014.

2.5.3 The External Utilities (Electrical, Water Supply, Sewage Disposal Plant, Overhead Water Tank, etc.) at Sardar Kabuli Girls High School

The substantial completion of external utilities took place on June 30, 2013, and the work was completed and formally handed over on September 15, 2013 to the Ministry of Education by USAID and the contractor Perini Management Services, Inc. (PMSI). However, some of the punch list items, including fire rated doors, was not completed during JO-04 and was included in the SOW for JO-09.

2.5.4 Renovation of Men's Dormitory, Design and Construction of New Dining Facility and Laundry at Kabul University

The men's dormitory and new dining facility were handed over to the Kabul University Administration at various stages and dates in 2012. The only work remaining was testing of the Kabul University dining facility building sprinkling system, which was completed in October 2013. A report in this regard was submitted to USAID on October 8, 2013.

In addition to QA activities, an internship training program was developed and conducted by EQUALS for students of the civil engineering departments of Kabul University and Kabul Polytechnic University on QA inspection methodology and construction management. The training was held at the EQUALS Kabul office and at selected USAID project sites between January and February 2013. Altogether, 16 male and 9 female students from both universities received the internship training. After the conclusion of the training program, a graduation ceremony was held at EQUALS Kabul offices.

Under USAID direction, EQUALS conducted assessments of all of the completed and handed-over projects under the CHEF program during March 2014. These projects included four Provincial Teacher Training Colleges in Balkh, Faryab, Wardak and Parwan and three Midwife Training Centers in Bamyan, Badakhshan and Khost provinces. The purpose of the assessments was to learn directly from the end users how the buildings were performing after they were handed over, how satisfied building users were with the facilities, and to identify any critical gaps between the design of the facilities and what was actually built. The collected information was documented in a consolidated report which was then submitted to USAID on March 29, 2014.

2.5.5 National Monitoring Team

The National Monitoring Team (NMT) field engineers conducted inspections of 1,597 SWSS/CLTS projects, and 88 ACEP projects in various provinces of Afghanistan. In addition, NMT field engineers verified project data on 362 health care facilities belonging to the Ministry of Public Health and submitted the collected data to the Afghanistan Infrastructure Data Center (AIDC).

The NMT field engineers conducted inspections of 62 SWSS and CLTS projects in Logar Province in 2013. These projects were not completed earlier due to delays caused by security and weather. ACEP project was completed in 2011 and 2012 with a two-year warranty period, with a total of 88 ACEP projects in 20 provinces inspected by 10 NMT field engineers in January 2013, prior to expiry of this warranty period. NMT completed fieldwork in April 2013 in support of the ACEP warranty re-inspections and AIDC data confirmation, and the team was subsequently disbanded.

2.6 UNDER JO-09 FROM JULY 01, 2014 TO APRIL 17, 2016

2.6.1 Construction of Health and Education Facilities (CHEF)

During JO-09, EQUALS continued monitoring construction activities for the 20-bed and 100-bed hospitals in Paktika and Paktia provinces and conducted SCI for them on December 20 and 28, 2015 respectively. The report was submitted to USAID on December 30, 2015. During JO-09, EQUALS QA team produced and delivered 1,069 QA inspection reports for the CHEF project.

In accordance with the EQUALS-approved demobilization plan, the last field inspection by a EQUALS QA engineer for the 100-bed hospital site was on March 11, 2016. The remaining punch list items are still outstanding as detailed in the final report submitted to USAID on March 17, 2016. It is anticipated that rectification of the outstanding punch list items by the implementing partner would take approximately two months.

2.6.2 Faculty of Higher Education (FoHE)

In April 2014 USAID awarded a contract to Perez/Technologists Inc. (TI) for the completion of the remaining works in three FoHE buildings in Balkh, Jawzjan and Faryab provinces. The Phase-I construction activities for all three FOHE projects were completed at the end of September 2014, and handed over to the Ministry of Higher Education on September 27-29, 2014. The Phase-II work construction activities for all three FOHE projects were completed in mid December 2015 and handed over to the Ministry of Higher Education on December 15-18, 2015. Final warranty inspection for all three FOHE projects were conducted on January 5-7, 2016 and the report was submitted to USAID on January 10, 2016. During JO-09, the EQUALS QA team produced and issued 388 QA inspection reports relating to the FoHE program.

2.6.3 Installation of fire-rated doors at Sardar Kabuli Girls High School (SKGHS)

On March 02, 2015 USAID awarded the contract for the reinstallation of fire-rated doors to Perez/Technologists Inc. At the time of writing this report, installation work had not yet started. EQUALS had reviewed 13 submitted documents and shared comments with USAID, with the final review comments submitted to USAID on January 02, 2016. In accordance with the approved revised schedule of Perez/Technologists Inc, the project will start in April and complete in July 2016.

2.6.4 Student Internship Program

An internship training was conducted by IRD EQUALS for students of the civil engineering departments of Kabul University and Kabul Polytechnic Universities on QA inspection methodology and construction management. The program was intended to provide students pursuing an engineering degree with training and hands-on experience by working with EQUALS engineers involved in providing QA services on USAID-funded projects in Afghanistan.

The training was held at the EQUALS Kabul office and at selected USAID project sites between January and February 2013. Altogether, 16 male and nine female students from both universities received the internship training. Some of the topics covered in the training included materials testing methods, procedures for performing QA monitoring, design and engineering standards, interpretation of technical drawings and visits to project sites to practically observe construction practices.

After conclusion of the training program, a graduation ceremony was held at EQUALS Kabul during which certificates were awarded to the participants.

2.6.5 Post Occupancy Evaluation of CHEF Projects

Per USAID direction, during the months of February and March 2014, EQUALS conducted assessments of all of the completed and handed-over projects under the CHEF program. These projects included four Provincial Teacher Training Colleges in Balkh, Faryab, Wardak and Parwan and three Midwife Training Centers in Bamyán, Badakhshan and Khost provinces. The purpose of the assessments was to determine: a) whether the training centers completed under the CHEF program were being used for their intended purposes; b) to learn directly from the end users if and how well the completed buildings have met their expectations; c) to identify any critical gaps between the design and what was actually built; and d) what needs to be considered to close the gaps to make the facilities more useful and efficient.

The assessment was conducted by using questionnaires, interviews with end users, site visits, and observations. The collected information was documented in a consolidated report which was then submitted to USAID on March 29, 2014.

In general, the physical condition of most of the buildings was found to be satisfactory by the occupants and the concerned local authorities at all the training centers that were visited. They did however indicate that certain matters are hindering the proper usage and operation of the facilities, such as:

1. Shortage of funds for the maintenance and operation of the facilities; and
2. Lack of funds to cover fuel costs for the operation of generators. (Most of the training centers are not connected to the local power grid. Where the facility is connected to the local grid, the system is not reliable and needs upgrading.)

2.7 ROADS QUALITY ASSURANCE OVERVIEW

Throughout the EQUALS contract period, USAID issued JO 2, 3, 4, 5 and 10, requiring the EQUALS Transportation Team to provide QA and construction supervision services to USAID, as well as capacity development to GIRoA in support of USAID-funded projects/activities in the transportation sector as detailed below:

2.7.1 Under JO-02 from August 01, 2011 to June 30, 2012

No.	Project/Activity	Province	EQUALS Services (Deliverables/Reporting Requirements)
ROADS – NEW CONSTRUCTION AND REHABILITATION			
1	Gardez to Khost Road, Section 02	Paktia and Khost	Daily inspections containing construction quality monitoring, material testing, and material quantity verification completed by EQUALS road QA engineers
2	Gardez to Khost Road, Section 01, KM23 slippage	Paktika	
3	Doshi to Bamiyan Road	Bamiyan	
4	Salang Pass Tunnels and Galleries	Parwan	
ROADS – OPERATION AND MAINTENANCE			
1	Kandahar-Herat Road; Section 02 through Section 05	Kandahar to Herat	One site inspection of each road segment per month to include monitoring of routine maintenance and emergency repairs with a monthly O&M monitoring (Map) report submitted by EQUALS road QA engineers
2	Farah to Ring Road	Farah	
3	Lashkargah to Ring Road	Helmand	
4	Kabul-Kandahar Road; Section B through F	Kabul to Kandahar	
5	Southern Strategy Road	Kandahar	
6	Kandahar to Trinkot Road	Kandahar	
7	Ghazni to Sarana Road	Ghazni to Paktika	
8	Pul-e-Alam Ring Road	Logar to Wardak	
9	Kabul to Gardez Road	Kabul, Logar, Paktia	
10	Jalalabad to Asmar Road	Nangahar, Kunar	
11	Charekar to Baharak Road	Parwan, Panjsher	
12	Sheberghan to Sarepul Road	Sarepul	
13	Kishem to Faizabad Road	Badakhshan	
14	Parwan Provincial Roads	Parwan	
15	Paktya Provincial Roads	Paktia	
16	Kandahar to Bikah Road	Kandahar	

2.7.1 Under JO-02 from August 01, 2011 to June 30, 2012 (continued)

No.	Project/Activity	Province	EQUALS Services (Deliverables/Reporting Requirements)
BRIDGES – REHABILITATION			
I	3 Bridges in Ghazni and 6 Bridges in Zabul along the Kabul to Kandahar Road	Ghazni, Zabul	Eight monitoring inspections per bridge per month to include construction quality verification, material testing, review of material quantities with reports completed by EQUALS road QA engineers
AIRPORTS – QC CAPACITY DEVELOPMENT			
I	MoTCA QC Capacity Development at Maymana and Faizabad Airports	Faryab and Badakhshan	Completion of QC training plan; daily capacity development of MoTCA field engineers; submission of weekly progress reports.

2.7.2 Under JO-03 from March 07, 2012 to August 04, 2012

No.	Project/Activity	Province	EQUALS Services (Deliverables/Reporting Requirements)
ROADS – MAINTENANCE			
I	Gardez-Khost Road Maintenance, snow removal and rock crushing activities on the Gardez-Khost Road Maintenance, Snow removal and rock crushing activities on the 38 Km section of G-K Road from Km 27+000 to Km 65+000	Paktia	Operation and maintenance of Camp Liz facilities; provision of security to secure Camp Liz, Camp Casper and mobile inspection teams; daily activity reports regarding quality and quantity of road maintenance, snow removal and rock-crushing activities by the IP; monthly activity reports regarding the progress of IP's accomplishments on G-K road maintenance and Camp Liz operations and maintenance activities; security plan for protecting personnel, equipment and assets at Camp Liz, Camp Casper and mobile inspection teams, including EQUALS personnel in the field.

2.7.3 Under JO-04 from July 01, 2012 to June 15, 2013

No.	Project/Activity	Province	EQUALS Services (Deliverables/Reporting Requirements)
ROADS – NEW CONSTRUCTION AND REHABILITATION			
I	Gardez to Khost Road, Section 02	Paktia and Khost	Operation and maintenance of Camp Liz facilities; provision of security to secure Camp Liz, Camp Casper and mobile inspection teams; daily activity plan and report; monthly activity report; QA inspections covering construction quality, environmental compliance, and material quantity verification. Material testing as directed; security plan for protecting personnel, equipment and assets at Camp Liz, Camp Casper and mobile inspection teams, including EQUALS personnel in the field.
ROADS – OPERATION AND MAINTENANCE			
I	Salang Pass O&M Oversight	Parwan and Baghlan	QA inspections and reports covering construction quality, environmental compliance monitoring, material testing and material quantity verification.
2	Gardez-Khost Road Maintenance Oversight, Section 02	Paktia and Khost	Activities to monitor include road maintenance, snow removal and rock crushing.

2.7.4 Under JO-05 from September 01, 2012 to June 30, 2014

No.	Project/Activity	Province	EQUALS Services (Deliverables/Reporting Requirements)
ROADS – NEW CONSTRUCTION AND REHABILITATION			
I	Gardez to Khost Road, Section 02, Phase III	Paktia and Khost	Operation and maintenance of Camp Liz facilities; provision of security to secure Camp Liz, Camp Casper and mobile inspection teams; daily activity plan and report; monthly activity report; QA inspections covering construction quality, environmental compliance, and material quantity verification. Material testing as directed; security plan for protecting personnel, equipment and assets at Camp Liz, Camp Casper and mobile inspection teams, including EQUALS personnel in the field.

2.7.4 Under JO-05 from September 01, 2012 to June 30, 2014 (continued)

ROADS – OPERATION AND MAINTENANCE			
I	Gardez-Khost Road Maintenance Oversight, Section 02	Paktia and Khost	QA inspections and reports covering construction quality, environmental compliance monitoring, material testing and material quantity verification. Activities to monitor include road maintenance, snow removal and rock crushing.

2.7.5 Under JO-10 from July 01, 2014 to March 30, 2016

No.	Project/Activity	Province	EQUALS Services (Deliverables/Reporting Requirements)
ROADS – NEW CONSTRUCTION AND REHABILITATION			
I	Gardez to Khost Road, Section 02, Phase IV	Paktia and Khost	Operation and maintenance of Camp Liz facilities; provision of security to secure Camp Liz and mobile inspection teams; daily activity plan and report; monthly activity report; QA inspections covering construction quality, environmental compliance, and material quantity verification. Material testing as directed; security plan for protecting personnel, equipment and assets at Camp Liz and mobile inspection teams, including EQUALS personnel in the field.
ROADS – MAINTENANCE			
I	Gardez-Khost Road, Section 02 Phase III warranty	Paktia and Khost	QA inspections and reports covering road maintenance issues
2	Gardez-Khost Road Maintenance Oversight, Section 02	Paktia and Khost	QA inspections and reports covering construction quality, environmental compliance monitoring, material testing and material quantity verification. Activities to monitor include road maintenance, snow removal and rock crushing.
3	Emergency Roads Operation and Maintenance (O&M)	Badakhshan, Kunduz, Baghlan, Ghazni, Wardak	Daily activity report; final inspection report; Post warranty inspection report.
4	Salang corridor current O&M and future R&M monitoring services	Parwan and Baghlan	Approved QA plan, daily QA inspections, covering environmental compliance, QA of routine maintenance and emergency repairs to be documented by a monthly deviation map report.

2.8. UNDER JO-02 FROM AUGUST 01, 2011 TO JUNE 30, 2012

2.8.1 Roads - New Construction and Rehabilitation Projects

2.8.1.1. GARDEZ TO KHOST ROAD SECTION 02:

Under JO-02, EQUALS QA engineers conducted 983 site inspections of Section 02 of the Gardez-Khost Road construction project. EQUALS also monitored MECC-constructed emergency roadway maintenance and crushed aggregate production. Other activities included performing warranty inspection of Section 01, which was constructed by Louis Berger Group (LBG). On June 19, 2012, EQUALS QA engineers inspected excavations for 10.2 km of culverts, drainage ditches, shoulders and embankments under Section 01. During the second and third quarters of 2011, EQUALS QA engineers performed 36 site inspections on the Gardez-Khost Road Section 01.

2.8.1.2 SALANG PASS TUNNEL AND GALLERIES:

From the second to the fourth quarters of 2011, EQUALS QA engineers conducted 202 site inspections on the Salang Pass Tunnel and Galleries project and submitted to USAID the associated inspection reports.

2.8.2 Roads - Operation and Maintenance (O&M) Projects, O&M Emergency Road projects

During the second and third quarters of 2011, EQUALS QA Engineers conducted 85 site visits to monitor operations and maintenance activities on 17 road projects implemented by LBG USAID IP. However, the Pul-e-Alam Ring Road and Kandahar-Trinkot Roads were not monitored due to security. The associated inspection reports were submitted to LBG.

2.8.2.1 BRIDGES - REHABILITATION PROJECTS

During the second, third and fourth quarters of 2011, EQUALS bridge QA engineers monitored and submitted reports on the reconstruction of nine bridges along the Kabul-Kandahar Highway.

2.8.3 Airports - QC Capacity Development Projects

EQUALS was tasked to provide QC capacity development services to the Ministry of Transport and Civil Aviation (MoTCA) staff. EQUALS engineers provided on-the-job training and mentoring to the MoTCA staff to develop their knowledge and skills with regard to the airport facilities construction supervision and quality control procedures and practices of ongoing airport rehabilitation projects undertaken in Maymana, Faryab province and Faizabad, Badakhshan province. In the fourth quarter of 2011, EQUALS engineers reviewed daily construction activities on the Faizabad Airport in Badakhshan province with the MoTCA engineers. During the period, field and classroom capacity building training was performed for the MoTCA engineers.

The trained MoTCA engineers helped other province MoTCA engineering staff as well on upgrading knowledge and skills with regard to airport facilities construction and quality control procedures and practices.

2.9 UNDER JO-03 FROM MARCH 07, 2012 TO AUGUST 04, 2012

2.9.1 Roads - Maintenance

2.9.1.1 GARDEZ TO KHOST ROAD, SECTION 02:

In March 2012, the international construction management consultant was terminated, resulting in USAID approving JO-03 for EQUALS to take over the management of Camp Liz and Camp Casper, previously managed by LBG. In addition, the construction oversight activities previously undertaken by LBG were included in the JO-03 scope of work. Additional responsibility involved taking over the Materials Testing Laboratory from LBG in order to provide USAID with an independent facility to test construction materials, such as concrete and mortar; crushed aggregates; hot mix asphalt; and re-inforcing steel to verify compliance

with technical specifications of the contract. Camp Liz was a secure and self-contained camp to provide accommodation and office facilities for EQUALS staff, while Camp Casper was a materials laydown yard where pre-cast concrete structures and other material procured under the LBG contract was stored.

Under JO-03, EQUALS QA engineers from Camp Liz monitored the maintenance, snow removal, and rock-crushing activities implemented by MECC, the USAID IP on the 38 Km section of Gardez-Khost Road from Km 27+000 to Km 65+000. During the period, EQUALS conducted daily inspections of the G-K road maintenance works and submitted 184 daily and six monthly reports. In addition, EQUALS submitted to USAID the security plan, reviewed and certified the MECC invoices for completed G-K Road maintenance works and implemented other tasks as specified under JO-03.

2.10 UNDER JO-04 AND JO-05 FROM JULY 01, 2012 TO JUNE 30, 2014

2.10.1 Roads - New Construction and Rehabilitation

2.10.1.1 GARDEZ TO KHOST ROAD, SECTION 02:

With the departure of the construction management consultant, the roles of the key stakeholders—namely USAID, EQUALS, Tetrattech (under the Architect and Engineering Support Program (AESP)) and MECC—had to be revised under JO-05. While the role of Tetrattech remained the same, the construction management functions were divided between USAID and EQUALS as follows:

USAID	EQUALS
Contract administration	Schedule analysis
Approval of submittals	Invoice review
Approval of design	Oversight of construction operations
	Health, safety and environmental compliance
	Works measurement and progress reporting
	Analysis of management and procurement
	Management of works inspections
	Analysis of changes and claims
	Material testing and oversight of MECC Lab

An additional component of the JO-05 SOW was mentoring and communications. Due to the inability of USAID personnel to visit the field (even Afghan staff), EQUALS was required to communicate USAID-approved messages to local stakeholders and partners to pave the way, and to gain local support for, the completion of the G-K Road. This involved engaging local community elders and government officials at provincial and district levels to reinforce the benefits that the road would bring and to ensure their support. Mentoring activities to the on-site management and supervisory staff included work sequence planning, construction oversight and inspection techniques, quality control techniques, procurement planning and material control techniques, all with a view to improve quality and enable the contractor to meet the schedule.

Significant capacity building was also provided over a three-month period in asphalt-laying techniques, which included batch plant operations; loading of hot-mix asphalt to reduce mix separation from the batch plant to site; operation of the asphalt paver, roles and responsibilities of each person; and asphalt laying and smoothing. This training allowed the contractor to lay up to one Km of asphalt per day, while meeting quality requirements.

EQUALS QA engineers conducted 1,238 site inspections and provided associated daily reports on Section 2, Phase III of the Gardez-Khost Road construction project from July 01, 2012 to April 17, 2014.

The main activities included QA monitoring and construction materials testing of Gardez-Khost Road Phase III construction contract that was awarded to the USAID IP contractor Mashriq Engineering Construction Company (MECC) in July 2012. MECC completed the Phase III construction work during October 2013. The final inspection of 13 Km of roadway from Km 30-Km 36 (Section 2A) and Km 50-Km 57 (Section 2B) was performed on November 7, 2013, and a ribbon-cutting ceremony was attended by local officials and Ministry of Public Works (MoPW) representatives.

Other activities during the reporting period included monitoring and oversight of the MECC Emergency Operations and Maintenance contract of the Gardez-Khost Road Section 2 Phase IV segments. This work was performed during the winter months of 2013/2014.

2.11 MATERIALS TESTING LABORATORY

2.11.1 Accomplishments and Status

While approximately 90% of the Material Testing Lab work was for JO-05 (Gardez-Khost Road), the team provided materials testing services for KHPP and Vertical Structures (JO-04) construction as well. The Material Testing Lab Team conducted the following activities during JO-04:

2.11.2 Gardez-Khost Road, KHPP and Vertical Structures Samples

Received Samples

1. Received 344 (IEL 009 to 353) samples of soil, aggregate, sand, HMA binder and wearing course, cores, concrete cylinders, mortar cubes, bitumen, prime coat, tack coat, and steel bar materials from the Gardez-Khost Road, KHPP, and Vertical Structures teams during JO-04. Comprehensive sample details are available in the EQUALS monthly and quarterly reports. A table of samples collected and pass/fail rates is included in Appendix D.
2. 10 aggregate samples received during December 2013 are pending testing as the Materials Testing Laboratory was put into storage during the fall of 2013 due to decreased testing requirements.

Tests Completed

Completed tests for the following 344 (IEL 009 – 353) samples:

2.11.3 Soil Sample Tests (base course, sub grade, embankment and barrow material)

The following tests were completed for 61 soil samples:

1. Natural Moisture Content (NMC) test by oven dry methods - AASHTO T 255
2. Sieve Analysis - AASHTO T 11/T 27
3. Maximum Dry Density (MDD) - AASHTO T 180
4. California Bearing Ratio (CBR) - AASHTO T 193
5. Liquid Limit (LL) - AASHTO T 98 and T 90
6. Plastic Limit (PL) - AASHTO T 98 and T 90
7. Plasticity Index (PI) - AASHTO T 98 and T 90
8. Fractured Face (FF) - ASTM D 5821
9. Los Angeles (LA) - AASHTO T 96

10. Classification of Soil - AASTO M 145

11. Analysis - AASHTO T 11 and T 27

Unsatisfactory tests results were obtained for seven base course samples.¹¹

2.11.4 Fine and Course Aggregate Test

The following tests were completed on aggregates for 57 samples:

1. Sieve Analysis - AASHTO T 11 and T 27
2. Clay Content - AASHTO T 11 and T 27
3. Fracture Faces - ASTM D 5821
4. Los Angeles (LA) - AASHTO T 96
5. Soundness Test AASHTO T 104

Satisfactory tests results were obtained for all aggregates (57 samples).

2.11.5 Sand Test

The following tests were completed for 28 sand samples:

1. Sieve Analysis - AASHTO T 11/T 27
2. Clay Content by washed method - AASHTO T 11/T 27

Unsatisfactory test results were obtained for gradation of five sand samples.

2.11.6 Concrete and Stone Masonry Work Test

The following tests were completed on concrete cylinders and mortar cubes for 85 samples for 7 and 28-day compressive strength:

1. Concrete cylinder compressive strength test - AASHTO T 22 & AASHTO T 106
2. Mortar cube compressive strength test - AASHTO T 22 & AASHTO T 106
3. Unit weight for mortar cube and concrete cylinder - AASHTO T 22 & AASHTO T 106

Continuous curing under water at a temperature of 20 - 22°C ASTM C 192 was performed for mortar cube and concrete cylinder samples for 7-day and 28-day compressive strength testing, for 86 samples.

Unsatisfactory tests results were obtained for 16 samples of concrete cylinders and mortar cubes for 7- and 28-day compressive strength.

¹¹ Determination of “satisfactory” or “unsatisfactory” is calculated on the basis of samples tested and not on the basis of tests carried out. The number of tests for each sample varies from 1 to 7; if the sample fails even one test, that sample is considered unsatisfactory.

2.1.1.7 HMA Binder & Wearing Course Samples Test

The following tests were performed on 71 HMA binder and wearing course samples:

1. Marshall Stability - AASHTO T 245
2. Marshall Flow - AASHTO T 245
3. Voids in Mineral Aggregates (VMA) - AASHTO T 245
4. Voids Filled with Asphalt (VFA) - AASHTO T 245
5. Air Voids (Av)- AASHTO T 245
6. Asphalt Content - AASHTO T 164
7. Maximum Theoretical Specific Gravity (Gmm) - AASHTO T 209
8. Bitumen Contents - AASHTO T 308
9. Sieve Analysis - AASHTO T 11 and T 27

Unsatisfactory test results were obtained for 8 HMA binder and wearing course samples.

2.1.1.8 Confirmation Check on In-Place Density of HMA Binder and Wearing Course by Core Method

The following tests were completed on 24 core samples:

1. Density g/cc - AASHTO T 230 Method B
2. Compaction % - AASHTO T 230 Method B

Satisfactory test results were obtained for all 24 cores samples.

2.1.1.9 Bitumen Samples Test

The following tests were completed on 10 bitumen samples:

1. Penetration AASHTO T 49
2. Flash & Fire Point AASHTO T 48
3. Softening Point AASHTO T 53
4. •Ductility AASHTO T 51

Satisfactory test results were obtained for all bitumen samples.

2.1.1.10 Prime Coat Sample Test

The following tests were completed on three prime coat samples:

1. Specific Gravity Test - ASTM D 2027

Satisfactory test results were obtained for all three prime coat samples.

2.1.1.11 Tack Coat Sample Test

The following tests were completed on 02 tack coat samples:

1. Specific Gravity Test - ASTM D 2027

Satisfactory tests results were obtained for all tack coat samples.

2.11.12 Steel bar Samples Test

The following tests were completed for three steel bar samples:

1. Unit Weight AASHTO M 31
2. Yield Point AASHTO M 31
3. Elongation Percentage AASHTO M 31

Satisfactory tests results were obtained for all steel bar samples.

2.11.13 Training at the EQUALS Materials Testing Laboratory:

External Training

1. Conducted practical and theoretical laboratory training for the following three groups:
 - a. Kabul University students from January 06 - 10, 2013 (3 females, 7 males).
 - b. Polytechnic University students from February 06 - 10, 2013 (3 females, 6 males).
 - c. Ministry of Energy and Water (MoEW) employees from August 17 - September 04, 2013 (3 females, 6 males).
2. Explained the quality checks on various materials and construction methodology related to roads including embankment, sub-grade, sub-base, base course, binder course, wearing course, prime coat, tack coat and other structures.
3. Explained in detail the requirements and testing of green concrete/stone masonry work in the field.
4. Handouts were distributed to trainees for further reference.

Internal Training

1. Conducted practical and theoretical laboratory training for the following five groups:
 - a. IRD EQUALS field engineers for the Gardez-Khost Road:
 - i. February 16 - 23, 2013 (6 participants)
 - ii. February 09 - 14, 2013 (4 participants)
 - iii. April 07 - 13, 2013 (5 participants)
 - iv. May 12 - 14, 2013 (5 participants)
 - v. August 13 - 15, 2013 (4 participants)
2. Explained the quality checks on various materials and construction methodology related to roads including embankment, sub-grade, sub-base, base course, binder course, wearing course, prime coat, tack coat and other structures.
3. Explained in detail the requirements and testing of green concrete/stone masonry work in the field.
4. Handouts were distributed to trainees for further reference.

2.12 AFGHANISTAN INFRASTRUCTURE DATA CENTER

2.12.1 Accomplishments

AIDC's accomplishment over the course of JO-04 was to continue to use the AIDC for collection, storage and dissemination of all pertinent project data with the capability to provide these reports and necessary information to USAID and/or other U.S. Government (USG) agencies as directed by USAID. The AIDC's SoW covers infrastructure project and security incident data capture, verification, cataloging, mapping and reporting and addresses the needs of the primary user groups: USAID Afghanistan mission and Washington, DC headquarters; the U.S. Embassy in Kabul; ISAF; GIRoA ministries; and other international donors.

These are some highlights of AIDC's accomplishments during JO-04 (July 01, 2012 to April 17, 2014) in its mission support:

2.12.2 EQUALS AISCS Web Mapping GIS Team

Prepared, customized, and updated the following web-based maps:

- Afghanistan Transitional Energy Investment Plan web map
- Partner Liaison Security Office (PLSO) web map
- Gardez to Khost (GK) Road Editor/Tracker web map
- Kandahar City KHPP USAID Team Tracker web map
- Power Transmission Expansion and Connectivity (PTEC) Project
- Prepared and published to the web demo map showing 25km Zone of Influence (villages/mosques) along the Kabul - Kandahar transmission line (PTEC)
- Prepared and published to the web demo map showing cell phone coverage along the Kabul - Kandahar transmission line (PTEC)

2.12.3 EQUALS Vertical Structures GIS Team

- Updated the Afghanistan Transitional Power Investment map
- Prepared provincial maps of Kandahar, Zabul, Uruzgan and Helmand Provinces for the USAID Office of Agriculture (OAG)
- Prepared a PLSO map

2.12.4 EQUALS Water and Power GIS Team

- Updated Afghanistan Transitional Energy Investment Plan map for USAID-OEGI
- Prepared and updated the map of the Kandahar 20kV distribution network
- Prepared and printed Water Infrastructures maps: Dams, Irrigation Canals and Hydrological Stations maps for the MoEW team

2.12.5 EQUALS Road GIS Team

- Updated master roads GIS database in coordination with the MoPW
- Prepared and published to the web 10.1 demo map showing Afghanistan Road Network
- Updated the USAID Afghanistan Road Network (Historical) road map

2.12.6 EQUALS NMT Team

- Field engineers received training in the use of GPS smart phones and GPS cameras for field work.
- Field engineers received training in the use of AISCs II interactive GIS web applications for better QC checking of project sites.
- AIDC/NMT field engineers conducted re-inspections of project sites in several provinces to help with the project's final stages.

2.12.7 Results - USAID Building Sites Inspections, Confirmation and Cataloging

As part of the AIDC's focus on the collection of infrastructure data from off-budget development projects funded and implemented by U.S. government agencies and organizations, post-occupancy inspections of 1,370 completed USAID building sites were conducted in order to verify their current uses and conditions.

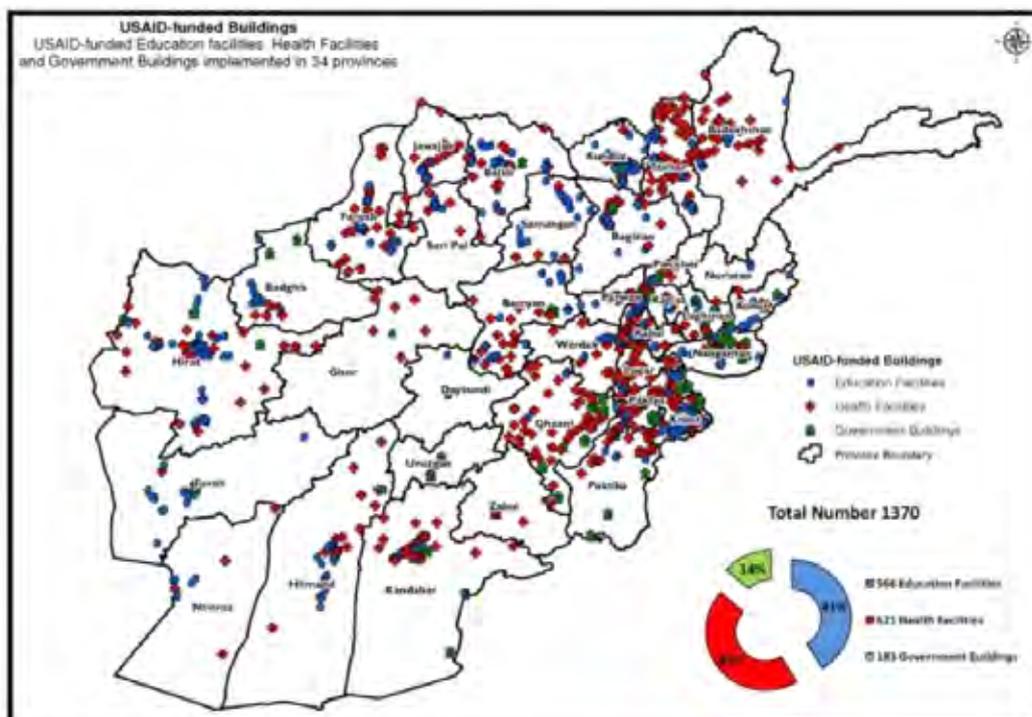
2.12.8 Quality Assurance Services

AIDC provided the following QA services:

- Partnership with Kabul GIRoA representatives (ministry personnel, etc.) in the organizing of all site inspections.
- Partnership with provincial GIRoA representatives (ministry personnel, etc.) in locating the villages where inspections needed to take place and determining security risks.
- Visiting the villages that were determined safe and using collection templates on smart phones outfitted with cameras and GPS chips to take GPS readings, geotagged photos and verify the current purpose of use and status.
- Produced reports for each location.

2.12.9 USAID Building Sites Inspections Results

Map 3: USAID-funded buildings that were implemented in 34 provinces.



Between July 2013 and April 15, 2014, the AIDC conducted more than 1,190 inspections. If site inspections were blocked due to security issues or weather (e.g., Taliban road blocks, or roads blocked by snow, etc.), the engineers tried to revisit these sites two or three times before they were successful.

168 buildings could not be visited due to security issues and two buildings due to weather-related issues. Ten building site inspections were cancelled in Kandahar due to problems with the provincial GIROA ministry staff.

More than 1,190 buildings were inspected and geotagged pictures were provided on 100% of all site inspection reports. Where possible, the building band was included, as demonstrated below:



IMAGE 68: Badal Darah Middle School (SR106)
Visit Date: February 17, 2014



IMAGE 69: Qarabagh DH (1511)
Visit Date: September 12, 2013

Map 8: Used as Intended Status: Off-budget USAID building inspections conducted by AIDC field engineers and verifying results for the current purpose of use and status.



This map shows the 12 USAID-funded buildings that were closed by the Taliban or were damaged/destroyed due to war activities.

The table below shows the “used as intended” classification:

- Yes, meaning the building is still be used as a school, health or government facility;
- No, meaning the building was closed by the Taliban or completely destroyed due to the war activities and can no longer be used as intended.

No	Name	RC	Province	District	Town Village	Building Type	USAID Reference	Intended Status
1	Nawa District Center	RC East	Ghazni	Nawa	Nawa	Government	PRTGZN035	No
2	Bir Taka Primary School	RC Southwest	Hilmand	Garmser	Beat Taka	Education	S135	No
3	Bartaka BHC	RC Southwest	Hilmand	Garmser	Bartaka	Health	C 123	No
4	Shindand DH(CHC)	RC West	Hirat	Shindand	Shindand	Health	1192	No
5	Hisa Awl Khair Khana CHC	RC Capital	Kabul	Kabul	Dih Kipak	Health	1659	No
6	Tulakan CHC	RC South	Kandahar	Panjwayi	Meshan	Health	C 193	No
7	Tulakan BHC	RC South	Kandahar	Panjwayi	Talkan	Health	C 192	No
8	Tulukana(2) BHC	RC South	Kandahar	Panjwayi	Tulukana	Health	2016	No
9	Nakhonie BHC	RC South	Kandahar	Panjwayi	Nakhonie	Health	2013	No
10	Mushan CHC	RC South	Kandahar	Panjwayi	Mushan	Health	2015	No
11	Melan BHC	RC East	Paktya	Gardiz	Melan	Health	C 314	No
12	Malalai Girls Secondary School	RC South	Uruzgan	Tirin Kot	Tirin Kot	Education	IOMKHD027	No



IMAGE 70: Chehil Baghtuipashi CHC (1988)
Use as Intended: Yes
Visit Date: March 08, 2014



IMAGE 71: Mehlan BHC (C 314).
Use as Intended: No (Destroyed by Taliban)
Visit Date: December 14, 2013



IMAGE 72: Bayan Payan Middle School (S326A) Use as Intended: Yes
Visit Date: August 23, 2014



Image 73: Bertaka Primary School (S135)
Use as Intended: No (Taliban closed school)
Visit Date: January 02, 2014

Table 20: Off-budget USAID-funded building program results

No.	Province	Visited	Security	Weather	Provincial GIROA Problem	Total	Remark
1	Badakhshan	53	0	2	0	55	Due to snow the road was blocked. 2 projects were not visited.
2	Badghis	12	10	0	0	22	10 projects were not visited due to security. (Engineer Sayed Hussan Mohammad Engineering Officer of Education Directorate; cell phone: 079611309, and Dr. Abdul Aziz Tariq Director of Public Health Directorate of Badghis province; cell phone: 0793301590)
3	Baghlan	30	5	0	0	35	5 projects were visited due to security. (Dr Abdul Qawy Director of BDN Engineer Enayatullah Mayar Engineering Officer of Baghlan Education Directorate; cell phone: 0791721200)
4	Balkh	67	1	0	0	68	1 project was not visited due to security.
5	Bamyan	42	1	0	0	43	1 project was not visited due to security.
6	Daykundi	2	0	0	0	2	Province is finished.
7	Farah	27	5	0	0	32	5 projects were not visited due to security.
8	Faryab	59	10	0	0	69	10 projects were not visited due to security.
9	Ghazni	72	17	0	0	89	17 projects were not visited due to security.
10	Ghor	7	2	0	0	9	2 projects were not visited due to security.
11	Hilmand	24	9	0	0	33	9 projects were not visited due to security.
12	Hirat	103	8	0	0	111	8 projects were not visited due to security.
13	Jawzjan	33	5	0	0	38	5 projects were not visited due to security.
14	Kabul	99	5	0	0	104	5 projects were not visited due to security.
15	Kandahar	39	11	0	10	60	11 projects were not visited due to security, and 10 projects were not visited as the field engineer was not allowed to inspect.
16	Kapisa	8	4	0	0	12	4 projects were not visited due to security.
17	Khost	49	15	0	0	64	15 projects were not visited due to security.
18	Kunar	17	1	0	0	18	1 project was not visited due to security.

Table 20: Off-budget USAID-funded building program results (continued)

No.	Province	Visited	Security	Weather	Provincial GIROA Problem	Total	Remark
19	Kunduz	52	3	0	0	55	3 projects were not visited due to security. (Midways cell phone: 0799023282 , for public health projects call Safiullah CHW of MORLIN- CAF Kunduz province cell phone: 0799866126)
20	Laghman	28	0	0	0	28	Province is finished.
21	Logar	19	12	0	0	31	12 projects were not visited due to security.
22	Maydan Wardak	16	9	0	0	25	9 projects were not visited due to security.
23	Nangarhar	48	1	0	0	49	1 project was not visited due to security. (Dr. Jan Mohammad Head of the Agency for Assistance and Development of Afghanistan cell phone: 0799036522)
24	Nimroz	8	2	0	0	10	2 projects were not visited due to security. (Noor Ahmad Sheer Zad Director of the Public Health Directorate of Nimroz Province; cell phone: 0799203464)
25	Nuristan	1	3	0	0	4	3 projects were not visited due to security.
26	Paktika	32	14	0	0	46	14 projects were not visited due to security.
27	Paktia	70	9	0	0	79	9 projects were not visited due to security.
28	Panjshir	13	0	0	0	13	Province is finished.
29	Parwan	40	1	0	0	41	1 project was not visited due to security.
30	Samangan	22	2	0	0	24	2 projects were not visited due to security.
31	Sar I Pule	12	2	0	0	14	2 projects were not visited due to security.
32	Takhar	74	0	0	0	74	Province is finished.
33	Urzgan	5	0	0	0	5	Province is finished.
34	Zabul	7	1	0	0	8	1 project was not visited due to security.
Total		1190	168	2	10	1370	

2.13 MINISTRY OF ENERGY AND WATER

2.13.1 Accomplishments and Status

In addition to routine activities, the Water Team accomplished the following during this period:

Task No. 1: Capacity Building, Technical, Policy and Logistical Support

1.1 Facilitate periodic (weekly or bi-weekly) meetings of the Technical Secretariat of the Supreme Council on Water (TSSCoW)

The TSSCoW works under the leadership of the Supreme Council on Water (SCoW). It consists of relevant institutions in the water sector including the Ministry of Energy & Water, Mines, Rural & Rehabilitation Development, Urban Development, Economy, Finance, Foreign Affairs, Agriculture, Irrigation and Livestock, Public Health, National Environmental Protection Agency, Afghanistan Urban Water Supply and Sewerage Corporation (AUWSSC), and Kabul Municipality. The USAID EQUALS program administers the TSSCoW meetings and plays a vital role in the recruitment of expertise for developing related policies.

During the period of July 2012 through April 17, 2014, approximately 42 TSSCoW meetings were held with active participation of the relevant institutional representative in the water sector. These meetings were held on a bi-weekly, and sometimes weekly, basis. The TSSCoW achieved several key accomplishments in the water sector during this reporting period, including the following:

- i) Finalized flood policy and submitted to the SCoW for endorsement;
- ii) Drafted drought policy and sent it to MAIL for finalization;
- iii) Developed Capacity Building Policy for the water sector;
- iv) Confirmed transfer of groundwater management from Ministry of Mines (MoM) to MoEW;
- v) Successful organization of the 3rd National Water Conference on Water Resources Development and Management of Afghanistan, and drafting of the action plan for the 19 items of the declaration;
- vi) Workshop on Governance and Public Administration;
- vii) Presentation on Water Permit and Licensing Regulation;
- viii) Presentation on Helmand River Basin Master Plan Project;
- ix) Endorsement of the Capacity Building Policy and Strategy Framework; and
- x) Drafting of the Transboundary Water Policy.

1.2 Facilitate periodic (monthly or bi-monthly) meetings of joint TSSCoW and International Water Sector Donor Community

Facilitation of the periodic meetings between the TSSCoW and the International Water Sector Donors was initially part of the scope of work for the Water Supply and Sanitation Team (WSST). During the third quarter of 2012, the responsibility was transferred to the World Bank. In mid-2011, USAID took over responsibility for convening these meetings. EQUALS established and maintained a database of all of the water projects supported by international donors.

1.3 Executive and senior-level technical and advisory support to Minister, Deputy Minister and Directors

The WSST Team Leader convened periodic meetings with Minister Ismael Khan, Minister Noorzai, Deputy Minister (DM) of Water Mr. Ziaie, and Deputy Minister of Finance/Admin Mr. Sami to discuss the status of WSST activities; China/Turkey observational study tours; conducting of professional lectures/presentations at Kabul University on dam design, construction, operation and maintenance; and on WSST's technical and

engineering support, capacity building issues, dam design, construction and contractual issues related to the Ministry's current and planned water projects.

On a routine basis EQUALS, at the request of MoEW officials, participated in meetings, conferences, and seminars and provided professional opinions to the MoEW. For example, EQUALS attended a videoconference on the "Fourth Riparian Information Sharing and Consultation Meeting" relating to the Rogun Hydropower Project, on October 20, 2013. The video conference was chaired by the World Bank (WB) office in Dushanbe, Tajikistan.

I.4 Assist and mentor MoEW staff in establishing a digital library to include conversion of hardcopies to softcopies and make available to the public through a website

Procurement and design of the software for the digital library (DL) is complete. More than 2,000 documents available at the library of the TS at the MoEW are digitized and have been uploaded onto the DL. Two advisors from Arizona State University helped the WSST in the design and formatting of the DL. The WSST met with the two advisors, who happened to be in Kabul on a training tour of the Kabul University library. A link was prepared and sent to the advisors to review and comment on the DL. Negotiation was ongoing to hire these two advisors on a short-term basis for finetuning of the DL and training of at least two MoEW operators, for the period of April - August 2014. The MoEW had yet to decide who will have access to the DL.

I.5 Establish a water website for water-related activities of the TS and provide links to the digital library

Design of the water website and its registration with the Ministry of Communications was completed. Testing of the website by uploading documents and photos continued during the last quarter of 2013. A presentation of the water website was made to the TS members on April 14, 2014. Comments made by members of the TS were to name the water website "TSSCOW" and to expand the website to cover comprehensive areas of activities of the TS. Expansion of the water website was to continue during the period of April - August 2014 and was then it would be launched after the MoEW's approval. The website was designed to assist in promoting MoEW as a leading ministry on water issues in Afghanistan.

I.6 Development of a sustainability plan for the MoEW, including digital library maintenance and all functions for which EQUALS is providing support

Work on the development of a Sustainability Plan took place and was slated for completion by April 24, 2014.

Task No. 2: Capacity Building Program Activities and Accomplishments

Under the approved work plan, the CB program activities started in October 2012 and ended in April 2014. All seven tasks were completed successfully. They consisted of developing capacity-building policies and strategies, conducting training workshops, developing manuals and executing two study tours to China and Turkey.

Table 16: Capacity-Building Deliverable Submissions for JO-04

Task #	Deliverable Title	Type of Deliverable	Completion and Submittal Date to USAID
2.1	River Basin Capacity Building Survey	Final Report	September 30, 2013
2.2	Capacity Building Department Mentoring Program	Training Manual, Workshop CB Standard Operation Procedures Manual (endorsed by Deputy Minister for Administration and Finance and the HR Director and Capacity Building Manager at MoEW)	August 13, 2013 February 11, 2014
2.3	Kabul River Basin Agency CB Plan	One-year CB Plan Report	April 23, 2014
2.4	Infrastructure Project Management	Primavera Scheduling Workshop Manual and Report P6 Software Procurement Project SOP Manual	August 28, 2013 February 24, 2014 April 14, 2014
2.5	Supporting MoEW with the Capacity Building for Result Program	Final Report and Recommendations	April 14, 2014
2.6	International Water Best Practices	Two Observational Study Tours and Final Reports: China OST Report Turkey OST Report	February 9, 2014 April 14, 2014
2.7	Water Sector Capacity Building Policy and Strategy Framework	CB Policy Document (Endorsed by Technical Secretariat) Strategy Documents (Endorsed by Technical Secretariat)	December 26, 2013 December 25, 2013

Task 2 activities under the approved work plan are all complete. The following activities and accomplishments took place from July 1, 2012 through April 17, 2014:

2.1. Finalize the River Basins Capacity Building Participatory Assessment Survey, design and commence implementation of a capacity-building plan for one river basin.

In collaboration with the MoEW and the TSSCoW, a participatory rapid assessment (PRA) survey was conducted for the MoEW's five river-basin agencies during March and April 2013. This activity was a continuation of the water sector's capacity-building policy and strategy framework development process. The randomly-sampled survey aimed at gaining a general understanding of the current relevant capacity-building conditions in the selected river-basin agencies, and identifying and prioritizing the key CB issues. This six-month activity (March-September 2013) was completed in close coordination with MoEW senior leadership and management, the General Directorate of Water Management, and the General Directorate of Human Resources/Capacity Building Department from inception to reporting.

The survey instrument used in this report was designed initially based on best practices in capacity building in both integrated water resource management and river-basin institutions. These practices were

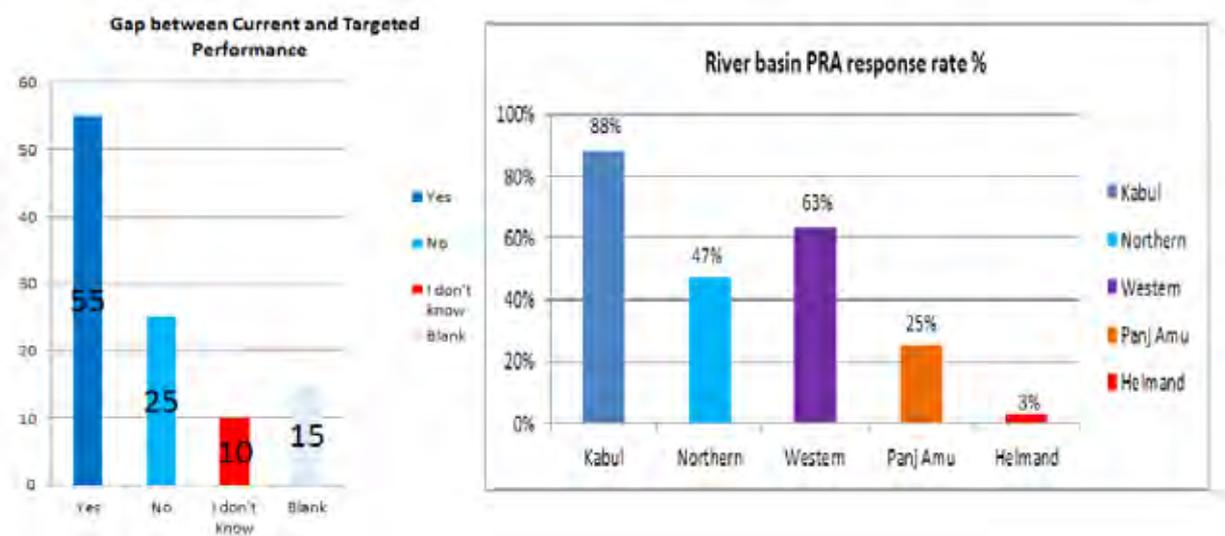
reviewed for their applicability to Afghanistan’s water-sector institutional framework, the MoEW Mandate, river-basin agencies and their subs. A survey form was then constructed for pilot testing in both English and Dari.

The survey form contained two sections:

1. General information about the respondents (15 questions), and
2. Capacity-building perceptions toward performance, CB benefits, task analysis and CB program priorities (5 questions).

The quickest distribution and collection was apparent with Kabul RBA, as shown in the chart below, since it is located in Kabul and the management was very interested in and supportive of the survey.

Chart I: Sample Analysis of the River Basin Survey – Mid June



Upon the completion of the survey analysis, the following conclusions were drawn:

- Upper and middle management recognized that there are performance gaps between current and targeted performance on both the institutional and individual levels. This recognition would facilitate the implementation of capacity-building interventions to bridge such gaps and minimize the resistance to those programs by the RBA’s staff.
- Respondents indicated that their best delivery method for capacity-building programs was through workshops and on-the-job training.
- The high level of education and stability of the work force (years of service and permanent employment—tashkeel) are two positive factors for RBA capacity-building planning and implementation.
- Due to the central role of the human resources management function, the RBA’s management has indicated that they perceive this as not a high priority, because they do not perform such duties.
- Though they consider planning to be one of their major tasks to perform on both the individual and institutional levels, the respondents indicated that it is one of their least critical tasks. This could be due to the fact that most planning is still being conducted at the ministry levels.
- Among the five RBAs, the Kabul RBA showed the most readiness to support capacity-building

interventions to enhance institutional and individual performance to meet the goals and objectives of the organization.

- The lack of women's participation in the survey could be due to the minimal representation for women in the middle and upper management in the RBAs and their sub-agencies.
- Tasks that are related to water rights, regulations, legal, and conflict management are perceived as the most critical tasks and are more frequently performed by the respondents (RBA's middle and senior management). Human resources management and physical resources management (logistics, procurement) are next in priority.
- Most respondents highly value the role of capacity building in benefiting the RBA's performance.
- There is a variable proficiency level in foreign languages, especially English. There is a need to further explore the level of interest of RBAs' staff regarding learning a foreign language such as English.
- Respondents (middle and upper management) indicate that they have an adequate level of computer literacy and access to computers to perform their duties. This could be due to the high percentage of university degree holders amongst the survey respondents.
- Lack of security, inadequate budget, and lack of equipment are the major difficulties and barriers to institutional and individual performance.

The survey results report was finalized and submitted to USAID on September 30, 2013. Per the request of DM Ziaie and USAID, the river basins survey report was translated into Dari and disseminated to the relevant MoEW directorates and departments, including the MoEW's Water and Administration Department, Water Management Directorate, and Human Resources Directorate.

2.14 CONDUCT AND COMPLETE A MENTORING PROGRAM FOR THE MOEW'S HUMAN RESOURCES DIRECTORATE/CAPACITY BUILDING DEPARTMENT, AND THE MOEW VOCATIONAL TRAINING CENTER

This CB mentoring task consisted of two major activities:

- Design, develop and conduct a CB management workshop for MoEW CB Department staff, and
- Design, develop and implement CB guidelines and Standard Operation Procedures Manual.

2.15 CB MANAGEMENT WORKSHOP (MAY - JUNE 2013)

A CB Management certificate-training workshop was customized to enable the current capacity-building staff at the MoEW to deliver best practices and approaches to capacity-building programs in order to achieve the goals and generate organizational success at their ministry. It aimed at addressing the challenges that the capacity building staff face, such as understanding the organization, managing learning solutions, and organizing and administering the capacity-building function. This workshop was designed to prepare CB staff at the Human Resources Directorate for tackling these challenges and setting them up for success in their roles. Therefore, this workshop was interactive and included self-assessments and small-group case study discussions. The instructor provided expert feedback on specific challenges that the participants raised during the workshop sessions. The workshop was divided into 12 sessions that included self-assessments, small group case study discussions, best-practice reviews, and feedback on specific challenges faced by participants.

A total of 10 staff members (eight male, two female) from the MoEW and Vocational Training Center

Management participated in the workshop. It consisted of eight members from the Directorates of Human Resources and two members from the ministry’s vocational training center.

Upon completion of the workshop, the following conclusions were drawn:

- The two groups from the Human Resources Directorate and the MoEW Vocational Training Center (VTC) were especially enthusiastic, hard-working and serious. Their entry skills to the course were moderate, to some extent. Still, they devoted considerable time to complete their assignments — staying as long as necessary in each session to complete their work, and readily accepting homework.
- This program provided an opportunity for the group to come closer together as a team, and to begin forming modular concepts of how the capacity-building organization functions and develops within the context of the MoEW.

2.15.1 CB Guidelines and Standard Operation Procedures (June 2013 - February 2014)

Upon completion of the CB Management workshop on June 18, 2013, the design and development of the CB guidelines and standard operation procedures (SOP) was initiated. Eleven working sessions were conducted from August - November, 2013, during which the MoEW’s Capacity Building Department reviewed the development progress in the capacity-building guidelines and the SOP document.

In order to validate the CB standard operation procedures document, a pilot CB program was initiated at the request of the HR Director to implement the proposed CB Guidelines and Standard Operating Procedures. The pilot program was positively received by the Deputy Minister for Administration, who asked the HR Director to continue supporting this program. The CB staff members conducted four needs assessment interviews with the four HR Directorate Units’ Managers by using the proposed CB Guidelines and forms. The team analyzed the data collected and identified seven programs. Based on the HR Directorate’s needs, MoEW goals and available resources, a three-hour CB program was selected by the team. A series of consultations with the MoEW CB staff continued to finalize the pilot training course materials utilizing the SOPs’ related forms. To that end, the MoEW’s CB Department conducted a pilot training workshop titled: “Principles of Public Administration”. The WSST conducted and monitored a “dry-run” workshop on December 23, 2013 in order to provide feedback and recommendations for the CB Department staff. Finally, the MoEW’s CB team was able to conduct the pilot program on December 24, 2013, successfully utilizing its own resources. Ten participants (six male, four female) from the Human Resources Directorate attended the workshop. The pilot workshop was positively received by the CB Department staff, who stated they were happy to have learned how to implement processes following the needs assessment, as they had previously relied on donors to do this work for them.



IMAGE 53: Pilot CB program developed by the MoEW CB Department utilizing the “Proposed CB Guidelines and Standard Operating Procedures”; 24 Dec 2013



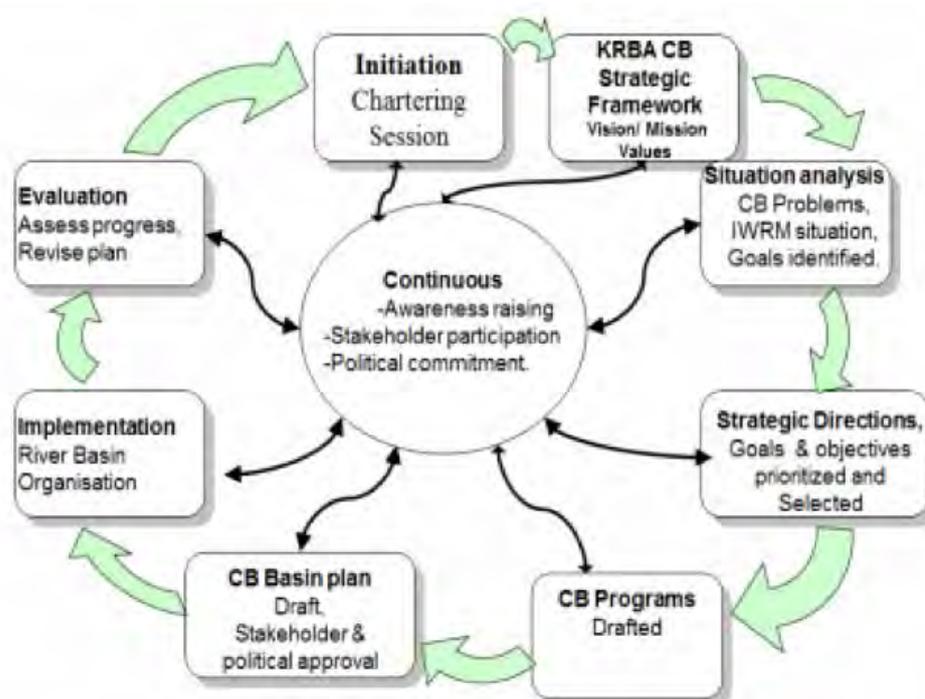
IMAGE 54: Ms. Rahila Seddiqi, MoEW CB Manager, presenting at the pilot workshop developed by the MoEW CB Department; 24 Dec 2013

On January 29, 2014, the Capacity Building Guidelines and Standard Operation Procedures was completed, endorsed and signed by the MoEW Deputy Minister for Administration, Human Resources Directorate, and MoEW's CB Department Team. The document (in Dari and English) was sent to USAID as a contractual deliverable for this task. Forty copies of the manual were handed to the CB Department Manager for distribution to all MoEW departments with official letters signed by the HR Director.

2.16 PREPARE CAPACITY-BUILDING DEVELOPMENT PLAN FOR THE KABUL RIVER BASIN AGENCY (KRBA)

The Kabul River Basin Agency Capacity Building Plan is a need-based and results-oriented plan that was developed in close collaboration with the relevant MoEW departments in general, the water management directorate, the Kabul River Basin Agency and its 14 sub-agencies, and the Human Resources Capacity Building Department. This randomly-sampled survey was conducted in two phases during March - April 2013 and September - November 2013, respectively. The total number of samples was 121, targeting upper and middle management in those entities. The response rate was 75%. A chartering session for the 14 sub-agency directors and MoEW senior management was conducted to provide them with the CB development steps on September 2, 2013. Following this session, multiple coordination meetings were held with the Kabul River Basin Agency management.

Figure 1: KRBA Capacity Building Plan Steps



A four-hour focus group session took place with the following three sub-agency directors: Ghazni Sub-river Basin Director, Mid-Kabul River Basin Director, and Upper Panjshir River Basin Director. The purpose of this focus group was to discuss the CB situation and the capabilities in those three sub-agencies. Furthermore, the outcome of the session helped in validating the results of the survey. As part of the participatory approach in developing the CB plan, a one-day workshop for the Kabul River Basin directors was conducted at the MoEW on December 11, 2013. 14 sub-agency Directors, the General Director of Water Management Directorate Mr. Sultan Mahmood and Kabul River Agency General Director participated in the workshop.

The plan has four sections. The first section provides a short summary on the Kabul River Basin and the legal framework of the Kabul River Basin Agency (KRBA) and its organizational chart. The second section consists of the CB development process and the agreed-upon capacity-building framework elements such as vision, mission, and values. The third section summarizes the CB survey results, CB fact sheets on each of the 14 KRB sub-agencies, stakeholders' matrix, and CB challenges and strategic directions. The fourth section provides the topical CB areas in relation to the staff grade-level knowledge and skill requirements. Furthermore, it consists of the implementation tools and a summary of a one-year action plan with a proposed 12 programs and their budgets.



IMAGE 55: The one-day workshop for Kabul River Basin Agency and sub-agency directors and MoEW Water Management Directorate; 11 Dec 13.



IMAGE 56: Mr. Sultan Mahmoodi, General Director of Water Management, providing feedback during the one-day workshop; 11 Dec 13.

The estimated budget for this plan is close to \$160,000. The proposed budget took into consideration that KRBA will utilize its facilities and staff to coordinate the implementation of this plan. Each of the proposed programs (technical and managerial) consists of details regarding target departments, goals and objectives, training content, duration, number of students and estimated direct costs.

Table 17: KRBA CB Action Plan

Course Code	Course Title	Priority	Duration Hours	No. of Participants	Estimated Direct Cost
KRBA 1	Integrated River Basin Management	High	40	20	\$10,000
KRBA 2	Capacity Building Department Mentoring Program	High	40	20	\$10,000
KRBA 3	Principles of Project Management	Medium	20	20	\$5,000
KRBA 4	Project Planning, Scheduling Utilizing Primavera 6/MS Project	Medium	40	15	\$10,000
KRBA 5	River Basin Performance Improvement Planning	High	40	25	\$10,000
KRBA 6	River Basin Water Quality Program	High	20	15	\$5,000
KRBA 7	River Basin Facilities' Maintenance Management Program	High	100	15	\$25,000

Course Code	Course Title	Priority	Duration Hours	No. of Participants	Estimated Direct Cost
KRBA 8	Negotiation and Conflict Resolution	Medium	20	40	\$5,000
KRBA 9	Public Administration and Governance	High	40	20	\$10,000
KRBA 10	Kabul River Basin Communication and Community Outreach	High	40	20	\$10,000
KRBA 11	Water Users' Association Trainers' Development Program	High	40	20	\$10,000
KRBA 12	Establishing Capacity Building Department at KRBA - One Time Cost	High	360	5	\$50,000
TOTAL			800	235	\$160,000

Kabul River Basin Agency CB Plan provides a linkage between the water-sector capacity-building strategy framework and MoEW's capacity-building function.

2.17 INFRASTRUCTURE PROJECT MANAGEMENT

This task had three subtasks. The first was to design, develop, and conduct a project-scheduling workshop for the project management unit's staff (project managers and site engineers). The second subtask was to procure three licenses of Oracle's Primavera 6 with one-year maintenance. The third subtask was to design and develop project guidelines and a standard operation procedures manual that can be used as a reference for current and future PMU staff.

2.17.1 Project Scheduling Workshop (June 2013)

This training workshop provided hands-on training for Primavera client/server-based solutions, leading 13 MoEW PMU participating staff through the entire project life cycle, from planning to execution, with a focus on project scheduling. The workshop, which was conducted in collaboration with the Afghanistan Builders' Association, had three segments: project framework and scheduling fundamentals, hands-on Primavera classroom instruction, and on-the-job team assignments.

A graduation ceremony was conducted at the MoEW on August 14, 2013. The ceremony was attended by the Deputy Minister, Mr. Ziaie, USAID Mission Deputy Director, Mr. Jerry Bisson and other dignitaries from the MoEW and USAID-Kabul Water Team. During the ceremony, each speaker reiterated the importance of capacity building in supporting the goals and objectives of the Ministry of Energy and Water and the ongoing infrastructure water projects.



IMAGE 57: Image 86: Ahmad Fawad Safi, one of the CB management participants, receiving his certificate in the presence of MoEW DM Ziaie, USAID Mission Deputy Director, 14 Aug 13.



IMAGE 58: USAID Kabul Water Team Dr. Keshawarz and Dr. Gul Afghani Saleh visiting the class on June 26, 2013.

The workshop's final report was submitted to USAID and the MoEW on August 28, 2013.

2.17.2 Primavera 6 Procurement and Installation

As part of sustaining the impact of the workshop, three licensed copies of Primavera 6, Version 8.3 were procured to support the PMU department. The following MoEW staff members were selected to have the software installed on their laptops:

- Director for Monitoring of Implementation of Water Development Projects
- Project Manager for Pashdan Dam/Acting Team Leader for Project Management Unit
- Shah-wa-Arus Project Manager.

The installation and handover was completed on February 24, 2014.

2.17.3 Project Guidelines and Standard Operation Procedures

The proposed Manual of Project Management Guidelines and Standard Operation Procedures is based on international best practices, as well as the WSST's practical experience with its MoEW counterparts. It was developed based on the participatory efforts and discussions with the relevant MoEW project-management departments and their prioritization. It focused on the relevant project functions and general implementation guidelines and standard operation procedures tasked by the Design and Construction Management of the Development Projects Unit (DCMDP), which plays the role of PMU at MoEW.

The manual consists of four parts: introduction, defining the project management functions, project planning, and project implementation. Because the focus of the manual is the PMU, more emphasis was given to project implementation, which includes a variety of areas such as the project implementation team, project performance monitoring, project QA, financial monitoring (invoice approval process), human resources management, project management information system, and risk management.

2.17.4 Assist the MoEW in its development of a technical proposal submitted to the World Bank-funded program - Capacity Building for Results (CBR)

The WSST provided assistance to the MoEW to comply with the requirements of the CBR program. The original role was to support MoEW's CBR committee in the development of its technical proposals to secure funding and assistance from the program. By the time WSST was tasked to work on this assignment, the Ministry had not yet submitted or received any pre-qualifications from the CBR. There were only four MoEW Directors who were funded by the program at its inception, as an opening stage to introduce it to the line ministries.

As of March 2014, there was no decision received from the Civil Service Commission for MoEW with regard to tier designation. This was communicated to the Senior CB Advisor during a meeting with the Director of Water Policy on March 5, 2014. The final report for this task was submitted to USAID on April 14, 2014.

2.17.5 Out-of-Country Observation Study Tours (OSTs)

The scheduled observational study tours (China and Turkey) targeting the project management unit and the river-basin agencies were conducted successfully. A total of 10 MoEW officials participated in these two OSTs.

2.17.5.1 China OST (November 2013)

The first OST took place during the period of October 29 - November 09, 2013 with five engineers and project managers from the MoEW. The delegation traveled to Kunming, China to participate in the 3rd International Symposium on Rockfill Dams. The engineers were accompanied by the WSST Team Lead.

Table 18: Participants in the China OST

No.	Title
1	Project Manager for Pashdan Dam
2	Site Engineer
3	Deputy Project Manager for Machalghoo Dam
4	Deputy Project Manager for Pashdan Dam
5	Deputy Project Manager for Almar Dam

Following the pre-departure orientation, the six participants departed for China on October 29, 2013 and arrived safely in Kunming on October 30, 2013. They attended the conference pre-registration session on October 31, 2013.



IMAGE 59: During the OST pre-departure meeting, the Pashdan Dam Project Manager conducted a dry-run presentation for his MoEW's delegates' paper to be presented in China on November 03, 2013



IMAGE 60: EQUALS Senior Capacity Building Advisor presented the MoEW OST delegates with a summary of conference activities, logistics, financial arrangements, stakeholders' compact and other issues during the pre-departure orientation meeting; 28Oct13

The six delegates attended the conference and presented their paper on November 03, 2013. They then departed for the Yichang region to conduct a four-day technical site visit to the three dam construction sites. They returned to Kabul on November 09, 2013. A series of individual debriefings were conducted for the six delegates. Post-OST evaluation forms were completed by the participants.



IMAGE 61: MoEW Project Manager delivering the team's paper at the conference; 03Nov13



IMAGE 62: The China OST delegates at the Three Gorges Dam; 05Nov13

2.17.5.2 Turkey OST (March 2014)

A one-week observational study tour (OST) was conducted during the period of March 16-23, 2014. Five directors from the river basin agencies and the policy directorate participated in this OST. It was conducted in collaboration with the Turkish Water Institute in Istanbul, Turkey.

Table 19: Participants in the Turkey OST

No.	Title
1	General Director, Kabul River Basin
2	Director, Water Policy Directorate
3	Director, Northern River Basin
4	Director, Panj Amu River Basin
5	Director, Arghandab Sub River Basin

The integrated water resources management and river basin management in Turkey was the focal point of this program. The OST exposed the delegates to regional experiences in a country that has experienced water-sector reform in river-basin management. This OST was initiated by contracting the Turkish Water Institute, which coordinates and implements activities that consist of a series of workshops and technical site visits in Istanbul, Ankara and Eskisehir.

The MoEW participants were introduced to the current institutional framework and legislation of the Turkish water sector. This sector has recently developed new tools in order to meet the dynamic needs of integrated river-basin management, such as:

- Allocation of responsibilities amongst parties in the fields of agriculture, industrial and domestic water allocation and management;
- Recent regulations in the water management policy;
- Adaptation of the European Water Framework to the domestic law of 2014 and preparation process of the "Framework Turkish Water Law 2013"; and
- Roles and responsibilities of the stakeholders involved in river basin management plans

The participants were familiarized with the decision-support systems, policies and tools that were used in the Integrated Water Resources Management (IWRM) and RBM process in 2014, such as:

- Economical, mathematical, and climatological models developed in 2014;
- Water database, GIS, expert system examples; and
- Preparation process of river-basin management models in 2014

MoEW's delegates learned about the organizational structure and functional mechanisms of the Turkish Water Institute (SUEN), which serves as a model for a coordinating actor of multilevel water governance.

During the OST, a series of technical site visits were conducted to the water and waste-water facilities in one of the river basins close to Istanbul to provide participants with first-hand experience on how such systems are integrated to meet the socio-economic demands in that river basin. These systems play a vital role in meeting the water needs of urban areas such as Istanbul, a metropolitan city with a population of 16 million.

Another focus area of the OST was how the river-basin management is conducted from the national to the basin levels. A field visit to one of the irrigation/water user associations located in one of the river basins close to Ankara was conducted.



IMAGE 63: Dr. Elif Atasoy Aytis from the Tubitak Marmara Research Center presenting the river basin protection actions; 19 Mar 14



IMAGE 64: Concluding the site visit at Eskisehir Irrigation/Water User Association; 21 Mar 14

2.17.6 Facilitate development of Afghanistan's Water Sector Capacity Building Policy and Strategy Framework

A significant milestone in the endorsement of the Water Sector Capacity Building Policy and Strategy Framework was achieved during a two-hour meeting on December 09, 2013. The Technical Secretariat Capacity Building Group representing the Ministry of Energy and Water, Ministry of Agriculture, Irrigation and Forestry, Ministry of Rural Development, Ministry of Urban Development, National Environmental Protection Agency, Ministry of Higher Education, Afghanistan Urban Water Supply and Sewerage Corporation, and Kabul Municipality signed a memo addressed to the Deputy Minister of the MoWE, approving and recommending the Technical Secretariat to endorse the two documents.

These two signed CB documents were officially presented and submitted to the Technical Secretariat during its biweekly meeting on December 25, 2013. Deputy Minister stated that capacity building was very important in all areas and also thanked USAID-EQUALS. Deputy Minister expressed his contentment and added that this document is evidence of the close coordination between different ministries in the water sector.

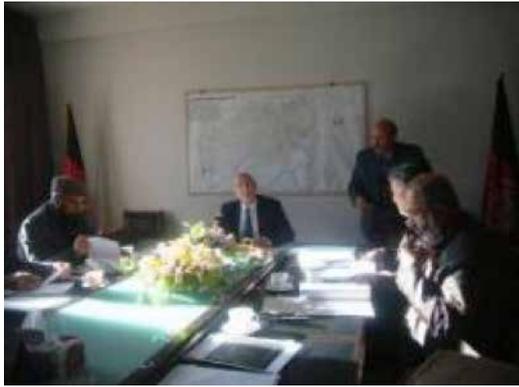


Image 65: EQUALS Engineer presenting the endorsed water sector capacity building documents during the TS Meeting; 25Dec13

The two deliverables under Task 2.7: Water Sector Capacity Building Policy (Dari and English) and Water Sector Capacity Building Strategy Framework (Dari and English) were submitted to USAID on December 25, 2013. The Technical Secretariat members endorsed the two documents at the January 22, 2014 meeting after giving the participating ministries an opportunity to provide their feedback and comments.

Task No. 3: Transboundary Water Capacity Building and Policy Support

Starting in October 2012, the WSST engaged in building the capacity of the GIRoA to promote effective and equitable transboundary water management with its neighbors. This has primarily taken the form of capacity building through formal means such as workshops, seminars, and information sessions, as well as informal mentoring on case-by-case issues or bi-weekly meetings with senior staff. Workshop materials were developed and translated into Dari for future reference and have been used by various institutes during additional training. The following describes the formal and informal capacity-development training conducted from October 2012 through April 2014.

2.18 FORMAL CAPACITY BUILDING TRAINING

Training on Hydro-diplomacy: Over the course of two weeks (February 2-6 and February 23-27, 2013) 80 hours of training was provided to 23 participants (two female, 21 male) from six agencies on hydro-diplomacy. Course materials were delivered in Dari on international law, trans-boundary waters, and negotiation. Participants included senior staff at the MoEW, Ministry of Defense, and Ministry of Foreign Affairs (MoFA) as well as sub-director level staff from the Ministry of Interior, NEPA, Ministry of Tribal and Boundary Affairs, and members of the TSSCoW. Training and reference materials were developed in Dari and distributed to all participants. The materials have been used by the Department of Geography and Law Faculty at the Kabul University as well as the Institute of Diplomacy (Ministry of Foreign Affairs).

Training on Public Administration: Three full days of training (March 10-13, 2013) were provided to seven representatives (one female, six male) of the TSSCoW and MoEW on public administration methods, tools for management, and planning.

Training on Water Governance: A week-long course (March 16-21, 2013) was given to 18 representatives (one female, 17 male) of the TSSCoW and MoEW on water governance including an assessment of translating the Water Law 2009 into practice, governance models and decentralization of responsibilities.

Transboundary water resources in Afghanistan: A week-long training (May 18 – 22, 2013) on International Law and Transboundary waters was given to 35 MoFA staff (two female, 33 male) as part of their training for diplomacy. The training was conducted at the Institute of Diplomacy at MoFA.

Columbia River Treaty Case Study: A one-day seminar (January 14, 2013) was prepared and delivered to two senior staff from the MoFA and MoEW on the Columbia River Treaty as a focus for discussing implications for Afghanistan of the approach to downstream benefits. The seminar was in preparation of a study tour to Oregon and Washington states to review the Columbia River.

2.19 INFORMAL CAPACITY BUILDING AND MENTORING

Informal capacity building and mentoring primarily focused on bi-weekly meetings with members of MoFA (Director of Border Affairs and Security Cooperation) and MoEW (Department of Policy, Hydrology and Information, Deputy Minister's office). All of the meeting notes and resulting document briefs were translated into Dari. Among others, these included:

1. Assessment of notification needs for Shahtoot Dam based on World Bank meeting with MoEW regarding consultation processes with riparian.
2. A summary briefing document for the MoEW on the cost of Afghan hydro-power development versus importing power from neighboring countries.
3. Meeting brief and comments on the Rogun Dam Meeting (November 11, 2012).
4. Crafting statement for Afghanistan regarding Rogun Dam; this was used in part by Deputy Minister Ziaie at the Regional Meeting in Dushanbe (August 21, 2013).
5. Major issues associated with water-sharing agreements in the Aral Sea and Protocol 566 and implications for Afghanistan, including a recommendation for Afghanistan to assert rights through the Rogun Dam consultation process.
6. Meeting brief with the World Bank (February 11, 2013) on Rogun Dam and outlining potential concerns for Afghanistan (revised comment-statement for Afghanistan).
7. Amu Darya water issues including legal history, assessment of clauses and commitments and detailed analysis of certain clauses, and their relationship with the succession of states and implications for development on Kokcha and Kunduz rivers.
8. Harirud/Murghab water issue including a legal history, issues pertaining to projected development and a summary of downstream interests. The brief was an initial attempt at discussing some benefit sharing.
9. Kabul Basin water issue including a legal history, issues pertaining to projected development and a summary of downstream interests. The brief was an initial attempt at discussing some benefit sharing.
10. Initial assessment of the United Nations Economic Commission for Europe (UNECE) Transboundary Water Convention and 1997 UN Convention on Transboundary Watercourses as applied to Afghanistan (not translated into Dari).
11. Helmand River Treaty overview with MoFA staff in preparation for a meeting of the Helmand River Commission (January 2014), including an informational meeting on the Iranian complaint to the UN in the year 2000.

2.19.1 Transboundary Policy Frameworks

National Transboundary Water Policy (NTWP): In November 2012, Deputy Minister requested assistance be given to GIZ to develop the NTWP. This took a priority role from that point onwards. Assistance was given in the form of re-drafting and soliciting input for subsequent drafts. The sensitivity of the issue is such that time is required for the different ministries to filter the draft policy and debate the issues internally. Between November 2012 and September 2013, close coordination between MoEW/MoFA/GIZ/EQUALS, and GIZ and USAID/EQUALS were considered to be jointly assisting the GIRoA to develop

a NTWP. A day-long workshop was held for senior staff and TSSCOW to review the NTWP, during which the bulk of the policy was reviewed, revised, and accepted. Following the workshop, GIZ informed EQUALS that the draft was in sufficiently solid form and that they would not be participating any more in its development. The policy was again reviewed by the TSSCOW from December 2013 through April 2014.

Currently, the policy is under review by the MoFA. After completion of review by MoFA, the policy will be sent to the Supreme Council on Water for final endorsement. The GIRoA will benefit from the policy, as several funding agencies including the World Bank and Asian Development Bank have indicated that they are interested in assisting with large infrastructure projects provided there is a clear policy to deal with transboundary water issues.

Basin Approaches to Transboundary Waters in Afghanistan: A report was developed (January/February 2014) as a supplement for the National Policy on Transboundary Water. The report outlines broad level approaches for the government of Afghanistan to assist in engaging with its neighbours in relation to the development of water resources that may have transboundary implications. It outlines various transboundary water issues in the Amu Darya Basin, the Kabul River Basin, Harirud and Murghab Basins, and the Helmand River Basin. Each of the major basins has waters flowing to neighboring countries. Moreover, each is markedly different in terms of physical, socio-economic, and geo-political settings. Consequently, the approach to engagement in each basin must reflect these differences while at the same time being consistent with the fundamental principles contained within the NTWP. The report therefore serves to assist and guide dialogue with neighbouring countries. While acknowledging the importance of international groundwater resources, the report focuses on surface water resources. The report was submitted to USAID on April 11, 2014.

Task No. 4: Engineering and Technical Support, Quality Assurance, and Capacity Building

2.19.2 Review technical documents related to the five major dams being designed and constructed by the MoEW

EQUALS supported the ministry in the review of technical documents related to the 10 projects listed below. During the course of JO-04, more than 50 documents were reviewed and memos were sent to the ministry with WSST findings and recommendations. Samples of these reviews are available in Appendix B. The memos included review of reports pertaining to the following dams:

- Shah-wa-Arus Dam: Construction methodology, concrete mix design, QA manual, thermal analysis, cracking issues, seismic hazard assessment, consolidation and curtain grouting reports;
- Pashdan Dam: Hydrology and flood assessment, design of cofferdam and main embankment dam, diversion channel and outlet structure, spillway design, construction methodology, QA manual, seismic hazard assessment, irrigation channels and conveyance structures;
- Machalgho Dam: Hydrology and flood assessment, geotechnical issues, design of cofferdam and main embankment dam, diversion channel and outlet structure, spillway design, access road, irrigation channels and conveyance structures;
- Almar Dam: Geotechnical issues, design of cofferdam dam, diversion channel, access road, irrigation channels and conveyance structures, seismic hazard assessment;
- Kamal Khan Dam: Sheet piling for foundation seepage control and construction issues;
- Shahtoot dam: Geotechnical issues, design of main embankment dam, diversion tunnels, seismic hazard assessment, value engineering;
- Gambiri Dam: Geotechnical issues, design of main embankment dam, sedimentation ponds, irrigation channel;

- Bakhshabad Dam: Inception report and design criteria;
- Baghdara Dam: Geotechnical investigations; and
- Lorah Dam: Request for Proposal.

2.19.3 Review construction and shop drawings of five major dams under construction by the MoEW

EQUALS supported the ministry in the review of design and construction drawings related to the 10 projects listed above. Over 20 drawing sets were reviewed per the needs of the MoEW and memos were sent to the ministry with WSST findings and recommendations. Samples of these reviews are presented in Appendix C.

2.19.4 Conduct project site inspections of the five major dams being constructed by the MoEW

The engineers of the MoEW do not have experience in dam construction. The contract documents for the five major dam projects that are under construction were based on the premise that the ministry will engage the services of highly experienced international consultants to supervise these projects under a design-bid-build concept. The selected contractors lacked the requisite expertise and the absence of supervisory consultants exacerbated the design and construction issues. EQUALS supported the ministry with assessments and QA of these projects through periodic site visits undertaken by WSST experts. Site visit reports containing observations, conclusions, recommendations, tables with urgency of actions and photographs were submitted to the MoEW after each site visit, with a copy sent to USAID. More than 20 visits were paid to various dam sites throughout JO-04.

In the fourth quarter of 2012, EQUALS accompanied a delegation from the MoEW led by Minister Ismail Khan to the Almar Dam site. Project sites in the Northern provinces of Baghlan, Faryab, Mazar-e-Sharif, Kunduz, Jawzjan, and Takhar were also visited. The purpose of this trip was to visit the MoEW planned and under-construction water and power projects in the Amu Darya and Northern River Basin and construction. Additionally, a reconnaissance visit along the shorelines of the Amu Darya River where erosion is threatening infrastructure and agricultural lands was conducted.

Shah-wa-Arus Dam: This dam was visited 11 times by the WSST due to the high level of construction activity and issues with quality of concrete work. Quality of construction work on roller compacted concrete, facing conventional concrete (CVC), foundation grouting, and health and safety issues were critically observed and documented. At the commencement of concrete placement, the MoEW was cautioned about concrete curing, monitoring of concrete temperature and improper construction of contraction joints.

Pashdan Dam: Since the contractor was fully mobilized and foundation excavation was active, the Pashdan Dam was visited five times by the WSST during 2013. The issue of design flood required frequent visits to the project site. The design flood estimated by the current consultant was almost three times the flood estimated at the feasibility stage. This high flood required a massive spillway and diversion arrangement that would almost double the project's estimated cost from \$118 million to \$220 million. A number of site visits were made to evaluate the catchment and investigate alternatives for spillway and diversion channel location. Due to the active involvement of the WSST, a cost savings of \$96 million was realized and the project will be executed without cost overrun. Another achievement of WSST on this project was the elimination of a \$10 million flood channel, which was assessed to be unnecessary.

Almar, Machalghoo and Kamal Khan Dams: Due to security issues, the Almar Dam was visited only twice, while the Machalghoo and Kamal Khan dams were visited only once. Major issues noted at the Almar Dam site included the presence of karstic limestone in the vicinity of the dam site and fairly weak marlstone in the foundations. The designer was asked by the MoEW to review the dam design in view of these observations so that a safe structure is designed and constructed. Major changes in the design of the Machalghoo Dam were recommended on the basis of highly jointed rock observed at the site and geotechnical bore logs. The MoEW decided to change the dam type from a roller compacted concrete gravity dam to a rockfill with central clay core embankment on the basis of WSST's observations and recommendations. Site engineers were trained in the QC testing for homogeneous earth embankment dams at the Kamal Khan Dam project.

2.19.5 Mentor, Train and Build Capacity of Project Management Unit within MoEW

EQUALS experts regularly shared and discussed their observations with the MoEW personnel as part of on-the-job training. Dam, geotechnical, hydraulic, and hydrologic engineering and QC/QA (QC/QA) training sessions for the MoEW's field staff were conducted in Kabul, as well as in MoEW's regional offices. In total, 104 participants were trained, of whom 24 were females. The training was more than 280 hours.

During November 2013, the WSST held meetings with the MoEW Deputy Minister of Water and then with the Director of Design. EQUALS proposed to involve MoEW's design team in the review of documents that were sent to EQUALS by the Project Implementation and the Project Planning sections of the MoEW. Subsequently, formal training of more than 15 engineers (five female, 10 male) of this group commenced. The training was conducted with the help of PowerPoint slides as well as the use of training videos.

On-the-job-training was conducted by discussing findings of report reviews and site visits with MoEW engineers. Additionally, the discussions during meetings with the consultants/contractor greatly enhanced the technical knowledge of these engineers. As an example, EQUALS utilized the meeting with the Pashdan Dam Project Manager (PM) on November 16, 2013 for capacity building. The focus of the meeting was the Pashdan Dam spillway alternatives report "Main Dam Spillway Alternatives (DM-931-05-SA, REV 1, 11 Oct 13)" and the Spillway Alternatives Drawings submitted by the contractor. During the meeting, each of EQUALS' observations was explained to the PM and he was apprised of the technical reasoning behind the observations.

Training sessions were held during site visits, such as:

- During the Shah-wa-Arus Dam site visit on October 8, 2013 a two-hour training course on standardized report writing (daily report, non-conformance report and environmental deficiency report) was conducted for the MoEW at the project site. The critical areas of each report were explained in detail. Nine engineers (male) were trained. Standard templates were created for the daily field reports and for the non-compliance reports. The templates were forwarded to all of the field engineers and they were trained on how to use them.
- Lectures were presented at the Herat office of the MoEW on the types of embankment dams, their construction practice, filling of daily report forms, non-conformance performance and preparation of other reports for streamlining and monitoring construction operation. The participants included the MoEW's QA/QC engineer and two field engineers. Six personnel of the contractor were also invited for the training.
- Training was conducted on February 23, 2014 for two field engineers in the Lugeon testing of rocks. The engineers will use this information to confirm correctness of testing procedures being used by the contractor of the Shah-wa-Arus Dam.
- Training of field engineers was conducted during the March 2013 site visit to the Shah-wa-Arus Dam in the use of nuclear densitometers to determine the moisture content and the dry density of the RCC. Discussed and trained the field inspectors in using the concrete core equipment.

- Training in the field of soil testing, field inspections of levee embankment construction, sheet piles for the foundation of levee and other construction issues for four field engineers of the Kamal Khan Dam during the first quarter of 2013.
- Prior to departure on the China OST, on October 7, 2013, the WSST conducted a one-day training for MoEW engineers on embankment dam engineering so that they would have the requisite background for grasping the material presented in the conference on rock-fill dams. Seven engineers (male) were trained.
- Training sessions were also held for the MoEW staff to review construction bills of quantities and invoice preparation. In March 2013, EQUALS organized a two-day workshop to train the field engineers in the review of the application for payments in correlation with the bill of quantities and technical specifications.



Image 66: Training of design group engineers in progress; 22Feb14



Image 67: Training of Engineer Ibrahim and Engineer Karim in Lugeon testing; 21Feb14

2.19.6 Review invoices and contractual documents related to the five major dams currently under design and construction by MoEW

EQUALS created and introduced a few standard forms and/or procedures for contractors' submittals and field reports, such as introducing invoice-processing procedures in order to assist the MoEW in the processing and standardization of the contractors' applications for payments. An Invoice Review/Approval Procedure was drafted to include a standard Excel template with the appropriate equations, and delivered to the MoEW Project Manager. A presentation was made to the MoEW Project Manager as well as to the contractors' representative on how to use the template and what needs to be attached to their invoices as supporting documentation.

The following invoices were reviewed:

- Shah-wa-Arus Dam: Reviewed Invoice No. 13 - 18 and comments were submitted to the MoEW PM. Additional invoices were reviewed in the 4th quarter of 2012 and 1st quarter of 2013. Comments on the invoices included the supporting documents and how to calculate the retainage amount on each invoice.
- Pashdan Dam: Invoice No. 1 and 2 with 11 volumes of supporting documents.
- Machalghoo Dam: Invoice No. 1 and No. 2 were reviewed and comments were made on embankment excavation and concrete volumes.
- Almar Dam: Invoice No. 1 and 2.
- Kamal Khan Dam Phase II: Invoice No. 1 and 3.

2.19.7 Miscellaneous Support Activities

The comments, conclusions and recommendations of the WSST regarding the review of documents, plans, and invoices were routinely conveyed to the MoEW engineers. Similarly WSST's QA assessment of construction work was sent to the MoEW after each site visit. As a part of capacity building, transfer of technology, and training activities of the MoEW engineers, the WSST ensured that findings of the major activities were discussed with the MoEW. The WSST also actively participated in meetings with the consultants and contractors of the water supply, irrigation and hydropower projects to advise the ministry on technical issues pertaining to various reports, design drawings, and invoices submitted by the consultants/contractors or to discuss QA and construction issues with the contractors/designers of the five dams currently under construction.

The WSST routinely facilitated periodic joint meetings of the MoEW and contractors regarding the dam projects. These meetings were often presided over by Mr. Ismail Khan, Minister of Energy and Water until mid-2013, and subsequently by Minister Mr. Arif Noorzai. These meetings focused on challenges including security and the contractors' slow response to progress with design and construction. Some of the significant activities of the WSST are listed below:

- Assisted the ministry in exploring alternative planning, design and construction options for 12-km long flood control structures along Amu Darya;
- Assessed the Dahala Dam raise currently under design and procurement by the USACE;
- Participated in the presentation of a pre-feasibility study of 22 dams in the Northern provinces, presented by the Water and Power Consultancy Services (WAPCOS);
- Attended the bi-weekly meeting of the MoEW Minister with the water group of the Ministry, during which the agency for technical cooperation between Germany and Afghanistan, GTZ, presented the national water master plan, and details of water demand scenarios and the water balance study were presented;
- Contributed to Primavera project management software training in order to make the training as practical as possible by incorporating examples from ongoing projects. Schedules were developed for the Shah-wa-Arus and Pashdan projects to make the training more practical and interesting for the participants. The Director of Water Projects Coordination was invited to assess the impact of the training and discuss the achievements with the trainees. He appreciated the efforts of USAID and EQUALS in enhancing the skills of the MoEW engineers in the field of project management. The trainees made a presentation to the USAID team comprising Dr. Keshawarz and Dr. Gul Afghan Saleh; they were impressed by the achievements of the MoEW engineers.
- At the request of the Ministry, EQUALS drafted job descriptions for the six positions of hydrologist, hydraulics engineer, legal specialist, economist, executive director and administrative assistant. These positions were announced to create a cell within the MoEW to address transboundary issues.
- WSST graded the written tests of candidates for various engineering positions and assisted the ministry by conducting interviews of 29 candidates, 12 for the position of PM and another 17 for the position of site/quality assurance engineers, at different times during 2013/14. The WSST noted that generally, candidates possessed weak technical backgrounds. To be useful for the Ministry, they would require intensive training in all disciplines of dam design and construction.
- At the Ministry of Finance, participated in the interviews for the position of "Design and Construction Planning Management Advisor" to be procured under the Civilian Technical Assistance Program (CTAP) and brought to the MoEW.

- Delivered 12 presentations (each lasting 90 minutes) at the Faculty of Engineering, Kabul University. The presentations were delivered over three consecutive days. The audience comprised eight engineers (three female, five male) from the MoEW, the engineering faculty and more than 72 senior students (63 male, nine female) of Kabul University. The presentation topics included: dams engineering, embankment dams, slope stability analysis and settlement, embankment dam details and construction, hydrology and design of hydraulic structures, operation and maintenance, and QA/QC of hydropower projects. Subsequently, the WSST organized a certificate award ceremony at the Faculty of Engineering of Kabul University on October 27, 2013. This ceremony was attended by USAID representatives, the Ministry of Higher Education, the Kabul University Chancellor and other university faculty and students.
- Assisted the MoEW in the drafting of a Cure Notice to be issued by the PM to the contractor of the Shah-wa-Arus Dam Project.
- Prepared draft guidelines on quality assurance and reporting by field personnel.
- WSST's Contract Specialist conducted the following activities:
 - Held meetings with the MoEW Director of Procurement on current capacity and training needs for Procurement Department staff.
 - Worked with MoEW Project Managers and engineers on communications with contractors, contract management and administration relating to the five dams under construction.
 - Conducted a five-day workshop on Public Procurement for MoEW Procurement Department staff.
 - Conducted a two-hour presentation on construction contracts for MoEW Engineering and Design Department staff.
 - Completed memorandum for the MoEW on the issue of whether the contracts for the five dams under construction are firm fixed-price contracts or unit rate contracts.

2.19.7.1 TASK NO. 5: GENERAL ASSISTANCE

Throughout JO-04, the EQUALS WSST convened regular bi-weekly meetings with the USAID water team to provide updates on the status of its activities. Minutes of the meetings were prepared and submitted. Also, the WSST organized meetings for USAID officials with relevant ministry officials.

The EQUALS WSST organized for USAID to conduct presentations for the MoEW and the Technical Secretariat of the Supreme Council personnel on Water regarding the USAID Afghanistan Water Strategy and Proposed Concept Activities for 2013 - 2018.

The EQUALS WSST conducted presentations for USAID and other USG officials on its activities to include the Transboundary Water Policy for Afghanistan.

2.1.2 Salient Issues and Concerns

- Only approximately 5% of the Transboundary Water Policy text remained to be reviewed and edited by the TSSCoW members. Review of the Transboundary Water Policy was included in the agenda of a meeting scheduled for May 5, 2014. In the meantime, the Technical Secretariat was waiting for comments from the MoFA. EQUALS WSST continued to encourage completion of the Transboundary Water Policy review. Lack of interest on the part of the TSSCoW members has caused a delay in completion of a major milestone - completion of the National Policy on Transboundary Water.
- Due to reduction of workforce at the WSST, the capacity-building activities as well as the technical/engineering support at the MoEW decreased while expectation of the MoEW remained the same as before.

- Recruiting of a contract specialist with engineering and construction experience will be a major challenge. Qualified experts will not come to Kabul due to security concerns.

2.20 ROADS—OPERATION AND MAINTENANCE

2.20.1 Salang Corridor Repair and Maintenance

Under JO-10 EQUALS continued project inspections and monitoring and provided deliverables such as daily and monthly reports, as described in the scope of work under JO-05. In 2014 the Salang Corridor Repair and Maintenance (R&M) IP, Omran Holding Group (OHG), continued R&M activities until the end of November 2014 and then provided winter maintenance activities on the Salang Tunnel from January 1 to April 19, 2015. A joint OHG/EQUALS and MoPW survey of the road repair and maintenance works for the 2015 construction season (Phase II) was undertaken from 12 to 23 April 2015. The Salang Corridor R&M Phase II works commenced on 1 August 2015 and continued to 25 October 2015. From November 3, 2015 to 8 March 2016 the OHG contractor implemented the Salang Tunnel maintenance works including the replacement of defunct shaft (1no) and jet (5nos) fans that were installed during the 2014-2015 winter season. In the period from March 5 to 9, 2016, EQUALS QA Engineers took part in a joint OHG/EQUALS and MoPW warranty inspection of 25.774 km of the Salang Corridor R&M works, which was completed under Phase II.

During the JO-10 period, under Phase II of the project from October 1, 2014 through March 31, 2016, EQUALS engineers provided 465 daily site inspections reports on the Salang Corridor and Tunnel R&M activities, which included 10 reports in 2014, 364 reports in 2015 and 91 reports in 2016.

2.21 UNDER JO-10 FROM JULY 01, 2014 TO MARCH 23, 2016

2.21.1 Roads—New Construction and Rehabilitation

2.21.1.1 GARDEZ TO KHOST ROAD, SECTION 2, PHASE IV

During the period from July 10, 2014 to January 12, 2016, EQUALS QA engineers conducted 445 site inspections and provided 544 associated daily reports on Sections 2C, 2D and 2E of the Gardez-Khost Road construction project. The EQUALS Team Lead and other expats working on this project performed more than 80 site visits during this period to check and evaluate the quality and quantity of work done by the IP contractor.

The Substantial Completion Inspection (SCI) of the GK Road Construction Phase IV was done on December 14, 2015. The official road-opening ceremony was held at the Ministry of Public Works on December 15, 2015 and attended by MoPW, USAID, MECC, IRD and Tetra Tech representatives. The final inspection report, along with a punch list of 317 items to be monitored during a one-year warranty period, was submitted to USAID on January 12, 2016.

Other activities during the reporting period included monitoring and oversight of the MECC Emergency Operations and Maintenance contract of the Gardez-Khost Road Section 2 Phase IV segments. This work was performed during the winter months of 2014/2015.

2.21.2 Roads—Operation and Maintenance

2.21.2.1 SALANG CORRIDOR REPAIR AND MAINTENANCE

Under JO-10, EQUALS continued from JO-04 the inspections and monitoring of repair works and submitted daily and monthly reports in accordance with the approved workplan. In 2014 the Salang Corridor Repair and Maintenance (R&M) IP contractor, Omran Holding Group (OHG), continued R&M activities until the end of November 2014 and then provided winter maintenance activities on the Salang Tunnel from January 1 to April 19, 2015. A joint OHG/EQUALS and MoPW survey of the road repair and maintenance works for the 2015 construction season (Phase II) was undertaken from 12 to 23 April 2015.

The Salang Corridor R&M Phase II works commenced on August 1, 2015 and continued to October 25, 2015. From November 3, 2015 to March 8, 2016, the OHG contractor implemented the Salang Tunnel maintenance works, including the replacement of defunct shaft (1 no) and jet (5 nos) fans that were installed during 2014-2015 winter season. In the period from March 5 to 9, 2016, EQUALS QA Engineers took part in a joint OHG/EQUALS and MoPW warranty inspection of 25.774 km of the Salang corridor.

2.21.2.2 SALANG CORRIDOR R&M WORKS, COMPLETED UNDER PHASE II

During the JO-10 period, under Phase II of the project from October 1, 2014 through March 31, 2016, EQUALS engineers provided 465 daily site inspections reports on the Salang Corridor and Tunnel R&M activities, which included 10 reports in 2014, 364 reports in 2015 and 91 reports in 2016.

2.21.2.3 EMERGENCY ROADS OPERATION AND MAINTENANCE (O&M)

During the JO-10 period, under the Emergency Road O&M component, EQUALS QA Engineers were engaged in the QA oversight of the USAID IPs' activities on four projects aimed at the rehabilitation of selected sections of the Kishm-Faiz Abbad road, the Baghlan-Kunduz road and the Kabul-Kandahar highway in Ghazni and Wardak provinces.

2.21.2.4 UNDER KISHM-FAIZ ABBAD ROAD EMERGENCY O&M PROJECT

EQUALS performed 25 site-monitoring inspections and submitted 25 daily reports to USAID with regard to the emergency works performed by the contractor, State Women Corp (SWC), at 17 locations along the Kishm-Faiz Abad road. On September 2, 2015, an EQUALS QA engineer conducted site inspection of the road works at the end of the warranty period for the project.

2.21.2.5 UNDER BAGHLAN-KUNDUZ ROAD EMERGENCY O&M PROJECT

EQUALS conducted 29 site-monitoring inspections and submitted 29 daily reports to USAID with regard to the emergency works implemented by the USAID Implementing Partner (IP), Omed Afghan Construction and Engineering Company (OACEC) on four (4) selected locations along Baghlan-Kunduz Road. On September 05, 2015 following the completion of one-month warranty period EQUALS conducted a final inspection of the works and submitted Final Warranty Inspection Report.

2.21.2.6 UNDER KABUL-KANDAHAR EMERGENCY O&M PROJECT

EQUALS conducted daily inspections and submitted to USAID 59 daily reports describing the emergency works performed by the IP, Faizi Masroor Construction Company (FMCC), at five locations (near Nanai, Mula Nohbaba, Baran Qala and Moshaki) for gabion-wall construction and embankment backfilling, three locations (Nanai, Mula Nohbaba and Moshaki) for asphalt paving and two locations (Nanai and Mula Nohbaba) for stone-pitching project activities. From February 2 to 4, 2016, EQUALS conducted a final inspection of the works at the end of the one-month warranty period.

2.21.2.7 UNDER KABUL-GHAZNI ROAD EMERGENCY O&M PROJECT

EQUALS conducted daily site-monitoring inspections and submitted 59 daily reports to USAID with regards to the emergency works performed by the IP, BCURA Construction Company. The BCURA contractor was unable to complete the project due to local community and security issues. Subsequently, on March 13, 2016, the work order was terminated by USAID for convenience. On March 15, 2016 the BCURA/EQUALS representatives conducted a joint assessment of the completed works for the purpose of processing the final payment to the contractor. The inspection report was prepared and submitted to USAID on March 22, 2016.

2.22 AFGHANISTAN INFRASTRUCTURE DATA CENTER (AIDC)

In the summer of 2009, the USAID HRLS Afghanistan Infrastructure Data Center (AIDC) was established with funding from the USAID/Afghanistan OEGI. The AIDC was an outgrowth of the construction QA projects implemented by IRD under the HRLS program. IRD began implementing the follow-on program (EQUALS) in April 2011.

AIDC's work includes infrastructure project/asset and security incident data capture, verification, cataloging, mapping and reporting and addresses the needs of three primary user groups:

1. Donor agency managers, contracting officer's representative (COR) program staff
2. Implementing partner project managers
3. Host-country ministry infrastructure information managers

With a central office based in Kabul, AIDC has distributed more than 1,000 packets of infrastructure and security-related information—in the form of maps, data catalogs, reports and web services—on a regular basis to the USAID Afghanistan mission and Washington, DC headquarters; the U.S. Embassy in Kabul; ISAF; Government of the Islamic Republic of Afghanistan (GIROA) ministries; and other international donors, approved by USAID. AIDC has trained/mentored more than 30 civil servants at five ministries in basic asset management, basic computer use, GIS, use of GPS, use of GIS smart phones and database management.

The AIDC built relationships with five line ministries supported by the USAID OEGI. While conducting training in GIS technical skills and office management best practices, the AIDC team established Infrastructure Data Centers (IDCs) in the ministries of Public Works, Education, Public Health, Mines, and Economy. The goal of those IDCs was to enable the government of Afghanistan to effectively collect, catalog, and report vital infrastructure information to key decision makers. By doing so, these IDCs help ensure that this information will be used in a sustained manner after off-budget infrastructure activities have come to an end. These IDCs have leveraged 21st-century technology to provide the Afghan government with the skills necessary to continue the development of infrastructure record keeping.

AIDC was also tasked with USAID building-site inspections, to include confirmation and cataloging of all 1,370 USAID constructed buildings contained within the USAID-funded and IRD-EQUALS-maintained Afghanistan Infrastructure and Security Cartography System (AISCS). With two expatriate team leads, one senior Afghan GIS manager and five Afghan GIS specialists, two senior Afghan engineering coordinators, and more than 12 Afghan field engineers, the AIDC team collected the requested information and produced daily inspection reports. The expatriate team leads provided overall oversight, mentoring, and training to the local staff coordinators. Throughout the course of this job order, the AIDC provided these vital services to USAID and the Afghan ministries, developing processes that will allow for the long-term development of these activities with minimal inputs from outside donors for the foreseeable future.

Mapping and Data Support to USAID

As USAID continued to transition its own planned activities, its need for the EQUALS database team to provide information quality assurance and technical support for data contained in the AISCS was vital. EQUALS was also responding to a significant increase in requests from agencies such as the Special Inspector General for Afghanistan Reconstruction (SIGAR) and the USAID Office of Afghanistan and Pakistan Affairs (OAPA).

The EQUALS program continued to conduct QA/QC activities in multiple sectors and across the country, and USAID continued to need the AIDC team for mapping and data management activities in support of EQUALS QA/QC activities. The roles and responsibilities of the AIDC team were required to ensure EQUALS mission-critical information technology ran smoothly, efficiently and successfully.

The EQUALS AIDC Field Inspection Engineers increasingly relied on mobile (smart phone) technology to capture and transfer QA information in the field. With the AIDC development of infrastructure data collection templates on smart phones outfitted with cameras and GPS chips, field inspection engineers had the necessary tools to travel discreetly and collect infrastructure project data in the field. The AIDC team continued to improve and expand on the mobile applications used by field staff.

The EQUALS AIDC team QA/QC workflow continued to improve the development and application of secure, web-based software. This software reduces internal deviations and mistakes, which plague paper-based workflows.

The EQUALS program, in particular the AIDC team, provided timely and coordinated efforts to meet all USAID internal and external data/map calls.

2.23 POWER QUALITY ASSURANCE

2.23.1 Kandahar-Helmand Power Project: JO-02

EQUALS QA had not assessed developments/progress at the Breshna Kot substation due to unavailability of a security team and transportation to the project site for security reasons. The IP was providing transportation and security at that time.

Due to the transition of PSC to APPF beginning on March 22, 2012, all IP expatriate and local national employees were temporarily demobilized on March 3, 2012, scheduled to return to Durai Junction substation March 26-31, 2012. Employees did not return to the project site until the first week of May 2012. From March 3, 2012 until the first week of May 2012, the IP conducted intermittent site visits to monitor the project. They relied mainly on daily inspection reports (DIR) submitted by their subcontractor.

All IP expatriate and local national employees originally scheduled to return to the project site from March 26-31, 2012 returned during the first week of May 2012. The IP continued to forward daily inspection reports to USAID (copying EQUALS). A total of 36 DIRs were forwarded from April 18, 2012 to June 5, 2012. EQUALS Structural QA conducted a site inspection from May 13 to 16, 2012. EQUALS forwarded a project site report to USAID on May 19, 2012.

2.23.2 Kandahar-Helmand Power Project: JO-04

The substantial completion inspection of Durai Junction substation (DJCN) was conducted with USAID and IP representatives on August 28, 2013. The final inspection followed on September 17, 2013. Punch-list items were closed on October 31, 2013. Representatives of EQUALS and Da Afghanistan Breshna Sherkat, the national electric company (DABS), representatives conducted a substantial completion inspection for Breshna Kot substation on October 14, 2013. Final acceptance inspection was completed on November 24, and the report was sent to USAID on November 30, 2013.

The seven MTU diesel-power generator sets at Breshna Kot substation during the JO-04 period were being dispatched when Kajaki hydro-generation was not available. Unit 5 broke down in early December 2013, and was replaced with the new one in May 2015 under warranty. On November 10, 2013, EQUALS conducted a final inspection for the Shorandam Industrial Park (SIPD) diesel power plant. The plant was not available for immediate dispatch, pending installation of a 20 kV disconnect switch.

EQUALS continued to be engaged in inspections and material handover verifications. EQUALS started reviewing the project as built and preparing final documentation as Black & Veatch (B&V) started to submit these documents to USAID.

EQUALS continued to provide technical support to DABS in the operation of the BK and DJCN substations, and the SIPD and KDEG diesel power plants. EQUALS verified spare-parts requirements for these facilities and engaged in training DABS operators in prudent plant management practices, through the mobilization of senior trainers to provide this highly technical training package. The training team prepared work plans and training handbooks for “problem solving” assistance to DABS. The training classes started on January 15, 2014 and continued until April 17, 2014.

2.23.3 Training/Problem Solving and Support of DABS: JO-04

Despite the training DABS received through the KHPP project, the O&M crews continued to face numerous challenges in fully implementing preventive maintenance practices. This was due to the latest generation and technology of the equipment, with which DABS personnel were not familiar. To overcome this difficulty, USAID approved a more detailed training program that concentrated on the operation and maintenance of the new equipment. It also offered support to DABS during this transition period, up to the end of the warranty period. For this reason, a training concept was designed that covered these needs.

The concept had 4 sections:

1. Linemen and line managers
2. Operation and maintenance of the substation
3. Operation and maintenance of the MTU diesel-generation plant
4. GIS training and application development to support the operation of the technical and commercial activities of DABS

The courses were very successful and well attended. The first part contained the basics of every section, which assisted DABS personnel in covering any gaps regarding the theoretical aspects of operation and maintenance. The on-the-job training familiarized DABS personnel with the newly installed equipment. Apart from the operators, the Kandahar DABS Managers and Directors also participated. DABS expressed the desire also to train new and current personnel from other SEPS (South East Power System) stations, including Durai Junction, Lashkar Gah, Logar, and Ghazni. This training is planned under the OY3 Work Plan for KHPP, pending USAID approval.

Training progressed well, despite the fact that not all trainees could be present on the same day due to attend training due to the shift rotation of monitoring substation operations, conducting medium voltage rehabilitation work and conducting diesel plant operations. The general feedback from the trainees was that they are keen and eager to learn more about substation, medium voltage distribution and MTU engine systems.

2.23.4 Assessment of Final Documentation: JO-04

Starting in mid-February 2014, EQUALS was engaged with the review of the final drawings submissions for the two main substations in Breshna Kot and Durai Junction.

B&V concluded the submission of the final drawings for the Durai Junction substation and EQUALS commenced the review. To do this, the local senior engineers spent time at the Durai Junction site to crosscheck the final drawings with the actual situation on site.

On July 18, 2012, USAID asked EQUALS to develop a progress/percentage complete assessment of a work-in-place (WIP) table, which was discussed with the IP on July 26, 2012. The KHPP Project Control and Scheduler developed a list of WIPs on August 03, 2012. This was scaled down to a shorter list of activities by EQUALS QA Kandahar on August 4, 2012 and forwarded to USAID for review and comments.

EQUALS received instructions from USAID on August 5, 2012 to validate KHPP-procured equipment at the AMTEX Village laydown yard. An inspection was conducted on August 7, 2012. Seven additional MTUs arrived on August 9, 2012.

The EQUALS Power QA team continued to monitor Kandahar Helmand Power Project (KHPP) component projects. DIRs from the IP were received and showed continuous work progress. The SCI of Durai Junction substation (DJCN) was conducted with USAID and IP representatives on August 28, 2013, and the final inspection followed on September 17, 2013. The work on the Breshna Kot substation continued with the 20kV switchgears temporarily energized on September 13, 2013 and was substantially completed on October 14, 2013.

2.23.4.1 CLIN I KANDAHAR POWER DISTRIBUTION SYSTEM

2.23.4.1.1 KANDAHAR BRESHNA KOT SUBSTATION (KDBK)

At the end of the first quarter of 2013, the construction of the Breshna Kot substation progressed, with equipment beginning to be placed on foundations/supports.

1. On June 9, 2013, EQUALS submitted a report to USAID on the review of the unified grounding system of the Breshna Kot substation and generation sites.
2. On June 29, 2013, EQUALS submitted to USAID a report on the review of the 90% design submittal by B&V.
3. On September 9, 2013, EQUALS submitted to USAID a review of the SEPS Transmission Plan for Kandahar City-Update document from B&V.
4. On September 11, 2013, EQUALS submitted to USAID comments on the Temporary 20kV Energizing Procedures and outage 20130910 at Breshna Kot substation, submitted by B&V.
5. On September 27, 2013, the KDBK was fully energized and reached substantial completion.
6. On October 14 2013, EQUALS, DABS and B&V representatives performed a substantial completion inspection for the remaining five open punch-list items.
7. On October 23, 2013, EQUALS was invited to witness the turnover of tools and spare relays (SEL 421 and 451) stored at AMTEX Village.
8. On October 24, 2013, EQUALS witnessed the turnover of spare parts of electrical equipment from B&V/AEPC to DABS Breshna Kot substation.
9. On November 24, 2013 EQUALS performed the final inspection with B&V and DABS. The report was submitted to USAID on November 30, 2013.

EQUALS continued supporting DABS (because B&V left the site at the end of October 2013) in the operation of the BK substation, including the verification of spare-parts requirements.

2.23.4.2 REFURBISH KANDAHAR CITY MEDIUM-VOLTAGE (MV) DISTRIBUTION SYSTEM

EQUALS conducted MV distribution inspections as DABS was installing the material (poles, insulators, conductors and accessories). During the first quarter of 2013, the progress was limited primarily due to lack of material. The work then accelerated and DABS installed most of the supplied material by the end of September 2013. EQUALS QA had four local national engineers available to support these efforts. From October 2013 to April 2014, EQUALS carried on monitoring and supporting DABS in completing the installation of the rest of the materials, as well as training and improving the capabilities of DABS linemen and managers.

DABS supported the EQUALS data collection efforts to evaluate the MV distribution improvements on completion of repairs.

- On June 25, EQUALS submitted to USAID a report on the validation of the materials that arrived at the laydown yard of B&V in AMTEX Village.
- On September 9, 2013, EQUALS submitted to USAID the comments on the Southern Power System Long-Term Planning Study-rev3 document from B&V.
- On September 26, 2013, B&V filed for a notice of substantial completion of this sub-CLIN. Given that this contract subcomponent did not involve construction performed by the contractor, B&V requested that the inspection requirement be waived. On September 30, 2013, USAID put aside the inspection requirement as requested.
- On October 10, 2013, EQUALS submitted comments on “Kandahar City Electric Distribution Planning Study (CLIN 1.2 Mod 10, task v(a)),” submitted by B&V.
- On December 12, 2013, EQUALS submitted a report on the Final Inspections of the documents submitted by B&V regarding the refurbishment of the 20kV network in Kandahar.

2.23.4.3 CLIN 1.5 KANDAHAR BRESHNA KOT GENERATION (KDEG)

The IP issued the notice to proceed (NTP) with USAID consent to the subcontractor (PGS) on September 3, 2012.

On September 26, 2012, there was a construction kick-off and mutual understanding meeting between the IP and subcontractor.

The addition of seven generating units to the Breshna Kot substation was completed. EQUALS QA conducted numerous site visits during construction and witnessed commissioning tests on March 23, 2013. A demonstration run was performed on March 25, 2013 and USAID accepted the facility. The facility was on emergency standby (for periods when power from Kajaki was not available) and connected to the old Breshna Kot substation until the new substation was energized. After the new Breshna Kot substation was energized, the MTU diesel generators were connected to their final feeders and dispatched according to DABS concept.

The seven MTUs installed at BK only operate when power from Kajaki is not available. On November 30, 2013, Unit # 5 had failed.

Other noteworthy developments:

- On December 1-3, 2013, EQUALS conducted the first observations in regard to the failure of MTU generator # 5. A preliminary report was submitted to USAID.
- On January 14, 2014, EQUALS conducted a visit to the MTU facility to check on fuel-containment issues and the status of Unit #5 repairs.
- On January 21, 2014, EQUALS submitted to USAID a report that postulated a different reason for the failure of Unit #5. The spray nozzle is intended to provide lubrication for the cylinder walls. Loss of that lubrication, along with the piston overheating, caused the failure.

2.23.4.4 CLIN 2 INSTALLATION AND COMMISSIONING OF DURAI JUNCTION SUBSTATION

- EQUALS appointed a QA engineer to Durai Junction on July 19, 2012. Eventually due to APPF issues, he went on site on August 29, 2012.
- On January 10, 2013, when the IP subcontractor tried to tension the aluminum conductor steel reinforced (ACSR) wires along the transmission line towers (types C and A) from inside the boundary wall towards the outside of the compound area at the west of switchyard, two cross arms of transmission line type C (east cross arms of transmission line toward the switchyard) twisted and broke.

- A cure notice was issued to B&V by USAID on February 7, 2013. The initial response to this notice was issued on the March 7, 2013 by B&V.
- On June 22, 2013, EQUALS submitted a report to USAID on the review of the cut over and energizing plan of the Durai Junction substation.
- On July 07, 2013, EQUALS submitted a report to USAID on the stringing of the HV conductors in Durai Junction substation.
- The substantial completion inspection of Durai Junction Substation (DJCN) was conducted with USAID and IP representatives on August 28, 2013; the final inspection followed on September 17, 2013.
- On September 21, 2013, EQUALS submitted the final inspection report with three items remaining to be completed by B&V. On October 22, 2013, these three items were completed by B&V and USAID was notified.
- On November 18, 2013, EQUALS conducted site inspections at Durai Junction Substation to continue monitoring the status of warranty issues observed during the site visit of October 30, 2013. This involved the 110kV circuit breakers E03.3 Q0 and E03.3-Q0.
- On February 20, 2014, EQUALS conducted a site visit to Durai Junction Substation to further monitor the status of warranty issues observed during the site visit on December 8, 2013. EQUALS completed the Durai Junction Substation initial report and submitted it to USAID on February 27, 2014, serving as an early warning of a potential grave situation at Durai Junction substation.
- EQUALS continued, after the final acceptance inspection visit on September 17, 2013, to monitor DABS in the operation of the Durai Junction substation remotely from the BK Substation.

2.23.4.5 CLIN 2 SUB-CLIN 2 PROCURE EQUIPMENT FOR ADDITIONAL SUBSTATIONS

On October 21, 2013, B&V uploaded the material inspection receiving reports (MIRR) for the transformers, circuit breakers, and switchgear to I-backup. EQUALS reviewed the factory acceptance testing (FAT) records and found these to be complete and correct.

EQUALS reviewed the design of the 20kV switchgear to be installed at Durai Junction substation and found it to be adequate.

2.23.4.6 CLIN 4 SHORANDAM INDUSTRIAL PARK (SIPD) DIESEL POWER PLANT

On July 14, 2012, EQUALS conducted a site visit to the Shorandam Industrial Park Diesel Power Plant (SIPD) to assess the chronic engine failures on the Cummins QSK23-G3 engines and determine its root cause. EQUALS QA believed that the fuel/preservative and/or lubricant remaining in the engine degraded during the extended storage and was being released into the system due to operations of the engine. A report was sent to USAID recommending draining the engine oil from one of the engines and inspecting it for residue, including along the fuel system. The issue was resolved by changing the oil and coolant of the engines.

- On August 21, 2012, EQUALS QA submitted the intermediate re-commissioning report to USAID.
- On August 01, 2012, engines at SIPD were re-started at 10:30AM and exported power to Feeder 514S at 11:30AM. EQUALS QA was not able to attend the first day of the re-start period due to APPF issues.
- On October 05, 2013, B&V filed for final inspection of CLIN 4 (SIPD), addressing Modification 10 with USAID.
- On November 07, 2013, USAID notified EQUALS to conduct the final inspection for CLIN 4 (SIPD) and EQUALS conducted this inspection on November 10, 2013.

2.23.4.7 KAJAKI SUB-CLIN 6.2, SUB-CLIN 6.3 AND CLIN 5 KAJAKI CAMP IMPROVEMENT - LOW VOLTAGE ELECTRICAL UPGRADE

- On May 31 2012, USAID partially revoked the suspension of work issued on December 22, 2011 for CLIN 5 - Rebuild the Kajaki Dam Substation and Local Distribution System.
- On April 13, 2013, EQUALS submitted a review of B&V's proposed 13.8 kV network upgrade through the Kajaki Man-Camp.
- On April 13 2013, EQUALS took part in the CIGAR visit to the Kajaki site regarding the installation of Unit 2. EQUALS gave technical clarifications to the CIGAR party on the GFE for Kajaki Unit 2.
- On April 14 2013, EQUALS submitted a review on B&V's proposed low-voltage upgrade of Kajaki Man-Camp.
- On April 20, 2013, EQUALS submitted a report on the review of the GFE for Unit 2 storage conditions and status of equipment.
- On October 7 2013, B&V filed a request for CLIN 6 Sub-CLIN 3 substantial completion inspection with USAID.
- On October 8 2013, USAID notified EQUALS to conduct the substantial completion inspection from October 13-15, 2013. EQUALS submitted the completion report to USAID on October 18, 2013.
- On October 22, 2013 EQUALS submitted a report on the GFE for Unit 2, storage conditions, after all of the upgrades in the Kajaki laydown yard were concluded by B&V.
- On October 28, 2013, B&V filed a request for a final inspection and acceptance of Sub-CLIN 6.2 "Repair GFE, Provide Missing and Additional Equipment" with USAID. EQUALS conducted the final inspection from October 30 to November 01, 2013 and submitted a final inspection report to USAID on November 05, 2013.
- EQUALS participated in the Kajaki Unit 2 conference with USAID, B&V, GFA, and DABS in Dubai from December 11 to 15, 2013. The workshop addressed the turnover of the project and the GFE from B&V to DABS and GFA, the new contractor for the installation of Unit 2 in Kajaki.
- On March 16, 2014, EQUALS submitted a review of the final drawings of the low-voltage upgrade of Kajaki Man-Camp.

2.23.4.8 KANDAHAR-HELMAND POWER PROJECT: JO-08

The EQUALS Power QA Team provided USAID with independent QA services for design, construction, and maintenance projects of the Kandahar Helmand Power Project (KHPP) based in Kandahar.

EQUALS was involved in several primary activities at KHPP which included the following:

- EQUALS conducted daily inspections of substations and diesel plant operations. EQUALS submitted to USAID daily power generation and operations reports, with a focus on emerging issues. EQUALS documented equipment/systems failures and prepared reports for USAID. In addition, EQUALS carried out inspections, studies, and analytical services as directed by USAID.
- EQUALS conducted daily inspections of MV transmission line refurbishment by DABS, prepared daily QA reports, and updated and maintained GIS based progress monitoring maps.
- EQUALS analyzed equipment, parts, and system failures associated with Breshna Kot (BK) and Durai Junction (DJ) substations, and MTU and SIP diesel power units. Failure circumstances were documented and detailed event reports prepared for USAID. EQUALS assisted USAID, DABS, and B&V to develop a common database of facts and events surrounding substation and diesel power generation failures.

- EQUALS conducted practical training sessions addressing prudent control room, diesel plant, and transmission line practices. Training packages were developed in discussion with DABS, with a particular focus on issues that operators and linemen face on a daily basis. EQUALS established training schedules and conducted classroom and on-the-job training sessions. Operational support and follow-up audits were carried out to ensure that learned skills were being implemented.
- EQUALS conducted GIS training to help DABS develop capacity to utilize in-house GIS systems effectively. EQUALS assessed needs, designed training sessions, trained, and worked closely with DABS personnel to establish a functioning GIS system capable of independent operations. EQUALS also guided and directed trainees to update and map the DABS Kabul distribution system.
- EQUALS conducted the KHPP closeout, including WIs of each constructed facility at the end of the one-year warranty period. This included reviewing and assessing B&V closeout packages including “as-built” drawings, design packages, and specifications. EQUALS reviewed and assessed emerging issues relating to B&V engineering, procurement, and construction of the KHPP project. Other tasks were also carried out as assigned by USAID.

2.23.4.9 CLIN 1.1 KANDAHAR BRESHNA KOT SUBSTATION (KDBK)

- EQUALS monitored and supported DABS in the operation of the KDBK substation on a daily basis and submitted daily and monthly substation operations reports to USAID.
- EQUALS reviewed and verified the as-built drawings submitted by B&V for the Breshna Kot substation and recommended their acceptance.
- EQUALS visited the BK substation to conduct a 12-month WI, as directed by USAID. The WI aimed to inspect and verify the equipment status in regard to the functioning of the substation. EQUALS conducted the inspection with DABS, B&V and AEPC representatives. The KDBK 12-month warranty report was submitted to USAID on September 29, 2014.

2.23.4.10 CLIN 1.2 KANDAHAR MEDIUM VOLTAGE (MV) DISTRIBUTION SYSTEM (KCDE)

- The EQUALS QA Team carried out daily inspection of the refurbishment of the transmission poles in Kandahar City and provided onsite quality assurance services. EQUALS submitted Kandahar MV QA reports to USAID.
- EQUALS visited the Breshna Kot substation to conduct the 12-month WI, which involved inspection and verification of the equipment status as well as proper functioning of the USAID-provided material used to refurbish the 20kV distribution network of Kandahar. EQUALS submitted the report to USAID on October 25, 2014.

2.23.4.11 CLIN 1.5 KANDAHAR BRESHNA KOT GENERATION (KDEG)

- EQUALS provided QA and technical assistance/support to DABS in the O&M of the MTU generation plant.
- EQUALS monitored and supported DABS in diesel plant operations and submitted Breshna Kot daily generation reports to USAID.
- On April 09, 2014, the joint team of EQUALS, DABS and B&V performed the final WI for Breshna Kot MTU site. EQUALS submitted the final WI report on April 10, 2014.

2.23.4.12 CLIN 2 INSTALLATION AND COMMISSIONING OF DURAI JUNCTION SUBSTATION

- EQUALS provided quality assurance services and monitored DABS in the operation of the DJCN substation and reports were submitted to USAID on a daily basis.
- EQUALS reviewed and verified the as-built drawings submitted by B&V for Durai Junction substation and recommended their acceptance.

- EQUALS visited Durai Junction substation to conduct the 12-month WI, which involved inspection and verification of the equipment status as well as proper functioning of the substation. EQUALS submitted a report to USAID.

2.23.4.13 CLIN 4 SHORANDAM INDUSTRIAL PARK (SIPD) DIESEL POWER PLANT

- EQUALS monitored and supported DABS in the operation of the LSIP generation plant. EQUALS submitted daily and monthly operations reports to USAID.
- EQUALS conducted the 12-month Post MOD 10 WI, which involved inspection and verification of the equipment status as well as proper functioning of the material and equipment provided by USAID. EQUALS submitted the report to USAID on October 26, 2014.

2.23.4.14 SUB-CLIN 6.2, CLIN 5 LOW VOLTAGE ELECTRICAL UPGRADE

- The EQUALS contract provided for WIs to be performed prior to the expiration of the warranty. In accordance, EQUALS completed WIs for CLIN 5 and Sub CLIN 6.2 on October 14, 2014.

2.23.4.15 SUB-CLIN 6.3 KAJAKI CAMP IMPROVEMENT

EQUALS visited the Kajaki man camp to conduct the 12-month WI of Sub CLIN 6.3, which involved inspection and verification of the equipment status as well as proper functioning of the USAID-provided material and equipment to upgrade the man camp in Kajaki to support the installation of turbine #2. EQUALS submitted the report to USAID on December 16, 2014.

2.23.4.16 DABS GIS SUPPORT: JO-08

EQUALS assisted DABS with implementing the distribution network mapping. DABS management recommended that the team prioritize mapping the MV network since this data is urgently required for planning and operations, including all MV feeders mapped from each substation up to the transformers and junction stations. On February 8, 2015, the mapping of Kabul North substation feeders commenced.

EQUALS supported the DABS GIS team to conduct analysis of the data captured under the USAID/AEIC project. The objective was to identify what could be incorporated into the current mapping activity.

EQUALS assisted DABS in preparing to mobilize the mapping of the Kabul distribution network which started in February, 2015.

The GIS project was officially closed in December 2015, and the DABS GIS capacity close-out report was finalized and submitted to USAID separately. A final presentation to DABS senior management and USAID representatives was held on November 17, 2015. The presentation explained the outcomes of the project, as well as the current capabilities of the DABS staff to collect field data and then create digital maps of all assets of the MV network in a specific area of Kabul.

2.23.4.17 EQUALS KHPP DABS TRAINING: JO-08

EQUALS was required by USAID to carry out the following activities:

- Develop training packages in discussion with DABS, with a particular focus on issues that operators and linemen face;
- Establish a training schedule, and conduct classroom and on-the-job training sessions;
- Carry out follow-up audits to assure that learned skills are being implemented; and
- Continue operational support.

The KHPP work plan recognized that DABS had faced difficulties in operating the stations and diesel plants that USAID had recently turned over to DABS. EQUALS initiated a major training program to develop the capacity of DABS operators.

2.23.4.18 TRAINING/PROBLEM-SOLVING AND SUPPORT OF DABS

EQUALS, through the KHPP project, carried out training of DABS O&M personnel. A training concept was designed that would cover the required needs to fully implement preventive maintenance practices.

Participants from all the training groups were assessed through written tests at each level and at the end of the training; successful trainees were issued with certificates.

EQUALS carried out several training sessions, which included the following:

- Training of the DABS operators on the MTU diesel engine systems;
- Two training sessions for the DABS substation operators on the substation operations and maintenance;
- A training program on inventory control and warehouse management;
- A QA training program for DABS-PIU (Project Implementation Unit) for the Kajaki Unit #2 Installation Project; and
- A training program designed to teach project construction planning and scheduling practices using Microsoft Project to DABS Kajaki Unit #2 Project Implementation Unit Team members.

2.23.4.19 SHORANDAM INDUSTRIAL PARK DIESEL POWER PLANT: JO-02

On May 19, 2012, EQUALS submitted to USAID its findings and recommendations on the Shorandam Industrial Park diesel power plant, based on the EQUALS QA inspection team visit to SIP on April 14, 2012.

2.23.4.20 TARAKHIL 105 MW DIESEL POWER PLANT TASK ORDER 27 - DABS TRAINING: JO-02

The EQUALS QA team completed reviewing the B&V demobilization plan and list of assets, inventory and property displacement to be submitted for QA review.

- The DABS trainees were trained in using the foam house and deluge systems and restoring the systems to normal operation.
- The QA team observed the firefighting training conducted by Afghan Firefighting Department trainers in the form of theory and practical classes during the week of May 26 through June 2, 2012.
- USAID and DABS announced the presence of a follow-on training contract for all thermal plants as well as the building of a National Training Center at KPP.

2.23.4.21 DARUNTA HYDROELECTRIC REHABILITATION PROJECT 11.55 MW: JO-02

The EQUALS QA team conducted an O&M assessment and provided continued technical support including QA oversight and monitoring of DHPP to maintain its operability for 6 to 10 months.

The QA team recommended the Preventive Maintenance Plan covering issues on all three units: the excessive heat buildup in the rotor-stator poles, replacing defective radiator tubes, leaking hydraulic valves, replacing governors for Unit 2 and 3, and flushing all of the water lines to prevent further damage and catastrophic failures during the summer.

The team assisted the DHPP in using the existing stuffing box wattle packing seals, leaking valves, and tools from the storage containers to ensure that Unit 1 is running continuously without major problems and frequent shutdowns.

During maintenance tasks, DHPP work crews completed the cleaning of the 180 µm filter, and 80 µm filter elements on the Thordon skid. This was necessary to prompt proper cooling and quality of water supply to the water-lubrication bearing and unit radiators/oil bath.

The team recommended Nangarhar DABS to implement an aggressive preventive maintenance plan on all units as described in the O&M assessment report submitted on June 13, 2012.

2.23.4.22 DARUNTA HYDRO POWER PLANT (DHPP):JO-04

From December 2012 to January 2014, the EQUALS QA team developed and delivered customized training packages for the O&M crews of the Darunta hydropower plant. A total of 24 trainees (in two groups of 12) nominated by Nangarhar Da Afghanistan Breshna Sherkat (NDABS), the Nangarhar branch of DABS, and Darunta management received more than 90 days of training in theoretical and practical plant operation techniques. The training was organized into Basic, Operation, and Maintenance sessions, and resulted in an observed knowledge/skills increase and the establishment of routine maintenance practices and procedures. This training had a positive direct impact on the operation and maintenance of the plant, resulting in an increased operability of the power plant over the year. Notably, the O&M crews now understood how to troubleshoot plant faults; unit outages were significantly reduced as a result.

On January 22, 2014, a certificate ceremony was held at DABS HQ in Kabul for all 24 trainees. The DABS Chief Operating Officer (COO), the USAID Contracting Officer Representative for Darunta, the IRD EQUALS Chief of Party (CoP), the NDABS Operations Director, the Darunta Plant Manager, and all 24 trainees were present. The trainees were awarded with certificates and DVDs of all training manuals and training reports. These were also handed over to DABS HQ, NDABS, and Darunta Plant management.

The EQUALS QA team also completed the verification and inventory of Darunta spare parts, equipment, and logistics training materials from the previous contractor (ANHAM) that were stored on site. This process commenced November 15, 2013 and was conducted in the presence of two DABS representatives as part of the USAID formal property transfer. The process was concluded on December 10, 2013, and the final DABS COO signature was obtained at the end of January 2014.

2.23.4.23 TO 19 NLCC BUILDING:JO-02

The team conducted routine visits to the NLCC building and observed that all outstanding items on the punch list were not rectified by FCEC and/or B&V. The QA team anticipated that some of the items would be resolved as part of the warranty enforcement; USAID was asked to follow up on their resolution.

2.23.4.24 TO 19 NLCC BUILDING:JO-04

At the request of USAID, the team visited the NLCC building on July 31, 2012 to observe the completion of outstanding items on the USAID/QA punch list. EQUALS QA received the NLCC final completion and acceptance letter from USAID on April 09, 2013; the project was officially closed.

EQUALS QA observed completion of outstanding items on the NLCC building, referring to the agreed notes in the August 12, 2012 meeting minutes. On September 22, 2012, EQUALS QA arranged a visit to the NLCC building with DABS, FCEC and the USAID COR for the final inspection. The completion certificate was submitted to USAID, DABS and NLCC management for final signatures on September 23, 2012. The document needed to be signed by all parties involved for circulation upon completion.

2.23.4.25 KAJAKI UNIT 2:JO-04

The EQUALS QA team conducted a condition assessment (April 11 to 13, 2013) and participated in the inventory assessment (July 13 to 22, 2013) of Government Furnished Equipment (GFE) for Kajaki Unit 2. The purpose of these assessments was to finalize the formal handover of GFE to DABS from B&V.

EQUALS Kajaki obligations were substantially completed and a final inspection was conducted.

DABS awarded the installation and commissioning contract for Kajaki Unit 2 to GFA Consulting Ltd. EQUALS was invited to, and participated in, the Kajaki Unit 2 workshop with USAID, B&V, GFA, and DABS in Dubai from December 11 to 15, 2013. The EQUALS Mechanical Engineer and the Power Team Lead attended this Conference in Dubai. As the QA service provider, EQUALS contributed to the conversation by highlighting potential technical risks and suggesting mitigating measures/solutions.

The information exchange workshop addressed the transition and turnover process for the project, as well as for the GFE from B&V to DABS and GFA. GFA was mobilized at project sites on January 1, 2014.

From January to April 17, 2014, during Phase I of the project, EQUALS participated in the weekly meetings held among USAID, GFA, and DABS.

2.23.4.26 DABS EMBED TEAM—KAJAKI UNIT 2: JO-04

USAID awarded the QA role for the construction of Kajaki Unit 2 to EQUALS in 2014. EQUALS provided two types of support, as follows:

- Direct participation in the project-planning phase, which began in January 2014. EQUALS attended weekly review meetings with USAID, DABS, and the contractor (GFA), and conducted technical and schedule evaluations as needed. EQUALS provided Kajaki Unit 2 site inventory support; and
- Provision of quality national engineers as embedded staff to the Project Implementation Unit (PIU) of DABS. The embedded staff was instrumental in organizing DABS project activities, reviewing and assessing the contractor's technical and management reports, managing project finances, and carrying out procurement and expediting functions associated with project planning, or Phase I of the project, which was scheduled to last from January to June 2014.

2.23.4.27 KAJAKI HYDROPOWER PLANT UNIT #2 INSTALLATION: JO-08

IRD-EQUALS was contracted by USAID (provider of funds) to provide QA services for the project for the benefit of the provider of funds. IRD-EQUALS provided USAID with independent third-party QA monitoring of all procured material and site installation activities, including permanent plant components, as well as temporary work areas such as warehouses, laydown yards, laboratories and workshops.

Completion of significant activities for the installation of Unit #2 at Kajaki hydropower plant took place and these included the following:

- EQUALS engaged in monitoring construction progress for Kajaki Unit 2 hydropower plant and submitted installation quality assurance reports to USAID as the independent third party QA;
- EQUALS reviewed submissions from 77 CC and sent comments/clarifications to USAID;
- EQUALS witnessed and monitored the delivery of materials to the Kajaki site by 77 CC to confirm quality of materials in accordance with the required specifications; and
- EQUALS advised USAID on several Kajaki Unit #2 main issues affecting the progress or quality of the works carried out by the contractor. These issues were tracked and discussed during the weekly coordination meeting until resolutions were implemented.

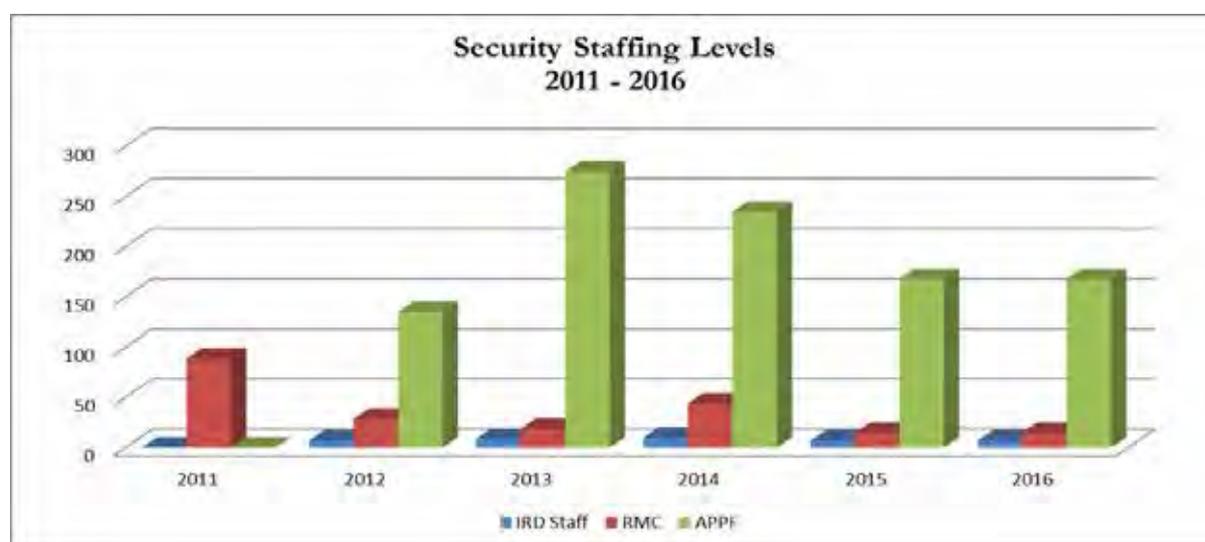
3. PROGRAM UPDATE SUPPORT

3.1 RISK MANAGEMENT COMPANY (SECURITY)

A combination of risk management companies (RMCs) were employed over the duration of the EQUALS project. Edinburgh International RMC (EIRMC) and Pilgrims Risk Management Company (PRMC) were contracted throughout the period to provide risk management consultants and logistical support services to both Kabul and Kandahar along with support for movements countrywide as required. Nakhil RMC was also employed for the duration of EQUALS though specifically dedicated to the eastern region and the Gardez-Khost road area of operations in support of construction efforts there. These contracted RMCs provided mentorship, training, capacity development and management oversight to our government-contracted Afghan Public Protection Force (APPF) to both the mobile security teams (MST) in their role to protect program personnel, property, material and information (PPMI) and maintain order and deter criminal activity centered around mobile operations in and around the area of responsibility (AOR) and AMTEX Village. RMC and APPF manning was contractually correct during the mentioned period, where the breakdown was as follows:

- RMC Consultants fluctuating between four and 20.
- APPF fluctuating between 19 and 275.

The below table indicates the number of security personnel employed over the life of the EQUALS program; of particular note is the transition from RMC-led guard forces to APPF-contracted provisions, visible below from 2011-2012. APPF-contracted levels remained our most fluctuating figure as we transitioned to ownership of Camp Liz and also numerous programmatic villas in the Wazir Akbar Khan area of Kabul, and the significant reduction beginning in 2014, whereby EQUALS relocated to the Baron Hotel in an effort to reduce program footprint, risk and security costs.



3.2 PROGRAM MOVEMENTS

EQUALS was enabled to conduct 12,792 personnel movements during the life of the project. These movements were conducted within Kabul but also as far afield as Kajaki in Helmand and Mazar-e-Sharif in the north, encompassing areas such as Salang and Durai Junction. Despite numerous safety and security concerns from April 2011 to March 2016, the contracted RMCs along with our APPF contingent were able to maintain momentum in program operations while ensuring the safety of all personnel operating in the field. The chart below offers a visual representation of all movements conducted by program staff over the mentioned period:



3.3 SAFETY AND SECURITY TRAINING

Effective safety and security training was critical due to the nature of the project, its location, and hostilities within the mentioned AORs. EQUALS ensured that safety and security training was achievable, practical and realistic, taking into consideration the knowledge level of all staff and the prevailing security conditions in order to reduce the associated and inherent risks to operations and PPMI. Training was structured and delivered to three distinct groups—IRD staff, the contracted RMCs and the APPF—and was driven by the ever-changing security conditions across Afghanistan, the antigovernment elements’ (AGE) modus operandi (MO) themes and trends, and focused on “what to do and when to do it” during a security-related incident. The chart below offers a visual representation of all trainings delivered, with a combined attendance total of 34,610:

Training was reviewed periodically to ensure that it was current, allowing for individual and collective training development decisions to be made in line with the country security setting and operational requirements. All training was formally recorded in accordance with Appendix I to Annex P to PSP-Program Training Records.

3.4 SERIOUS INCIDENT REPORTS

A serious incident is an “event, action, occurrence or near miss that has caused, or had the potential to cause, adverse effects to program operations and PPMI.” Serious incident reporting (SIR) via the contracted RMC provided EQUALS management, IRD Office of Risk Management and Global Security and USAID Partner Liaison Security Office (PLSO) with an accurate picture of events that directly or indirectly affected program operations in all EQUALS area of responsibility, and enabled EQUALS to prepare and respond appropriately. During the reporting period, EQUALS operations were disrupted by a small number of serious incidents. Two of the most notable recent incidents are summarized below. The table below represents a breakdown of some 613 EQUALS-reported SIRs, recorded throughout the duration of the project and covering all of our areas of operation, including our outpost in Paktia Camp Liz, which accounted for the majority of our serious incident reporting, due mostly to insurgent activity. IDF was of particular concern to our team posted in Camp Liz, due to its proximity to another ANA outpost.

On September 15, 2015, an evacuation of Kajaki U2 was implemented due to a deteriorating security situation, whereby insurgent activities in the immediate vicinity had intensified to an untenable level, causing high levels of concern for personnel to remain at site. The IP Security Team and the RMC initiated a full evacuation (RMC and APPF remained on site). The evacuation caused months of delays in carrying out EQUALS’ role in oversight of works at KHPP. This was closely monitored by PSRM and reported within EQUALS and USAID chains of reporting, along with findings and lessons learned.

On January 4, 2016, a VBIED (a truck carrying in excess of 3,000 pounds of explosives) exploded in the vicinity of Camp Sullivan, Camelot around 300 meters straight-line distance from the Baron Hotel. Alarms were sounded and personnel locked down, all movement within the compound curtailed, and accountability conducted confirming no EQUALS casualties. Due to the nature, size and devastation caused by the attack, the main access routes to the Baron were blocked for a period of time. This had an effect on one member of staff travelling in from Dubai, because international flights were cancelled in to Kabul. This was resolved shortly after, but there are still ongoing operations to bolster security in the area.

3.5 SECURITY SUMMARY

Throughout the life of the EQUALS program, security remained a high priority, with oversight provided from the PRSM office to numerous locations countrywide. The varied geographical nature of operations conducted by EQUALS program staff over the duration of the project provided numerous technical challenges for the provision of security, from the conduct of road missions from Kabul to Mazar, Salang and Paktia, to aviation missions utilizing contracted rotary-wing assets and also commercial fixed-wing craft to enable movements to outposts and to Kajaki in Helmand province, as well as the setting up and securing and subsequent demobilization of a manned camp (Liz) in Paktia province.

Over the reporting period, the security conditions across Afghanistan remained fluid. With AGE utilizing and enhancing various methods of attack, it was a challenge to remain current with their current threat and trend patterns. A significant number of attacks of varying MOs, mostly towards Afghan National Security Forces (ANSF), have remained a concern. MOs that EQUALS both directly and indirectly experienced in the AOR ranged from indirect fire (IDF) and small-arms fire (SAF) to improvised explosive devices (IEDs). Continual collaboration with ANSF, PLSO and the RSO office in the US Embassy, along with a number of local intelligence sources, ensured that threat reporting and prevailing threat levels were monitored and verified for credibility, assessed accordingly to determine the appropriate level of risk, and mitigation measures were implemented in a concentrated effort to reduce the associated risk level to an acceptable residual risk level in order to prevent any delays and/or disturbances to EQUALS' programmatic operations. All in all, a professional approach to safety and security while supporting EQUALS has led to no critical injury or fatalities to any staff members and minimal stop work/time lost at field locations, and ultimately to the successful delivery of program activities.

4. CHALLENGES AND LESSONS LEARNED

Challenges

4.1 VERTICAL STRUCTURES

Inclusion of a memorandum of understanding (MOU) or similar agreement with GIRoA prior to the commencement of construction, to incorporate facility operation and maintenance costs into the provincial department budget, should be considered for future programs.

4.2 NATIONAL MONITORING TEAM LESSONS LEARNED

The ability to provide national coverage was accomplished through engagement of engineers from respective or adjacent provinces, along with a driver to provide transportation. This methodology ensured staff had maximum security by being able to “blend in” and not draw attention to themselves. This was most relevant at a time when the announcement that ISAF forces would be drawing down had already been made, and insurgents were targeting national staff working for international organizations as well as GIRoA employees/representatives.

4.3 TRANSPORTATION SECTOR LESSONS LEARNED

EQUALS staff implemented methods and procedures to improve IP-contracted scope of work coordination to enhance the value of the field inspections and subsequent deficiency identification and resolution. By the end of the period of performance, EQUALS and USAID IPs’ communication and coordination of construction work had greatly improved. EQUALS management learned to work effectively to provide, train, and equip technical and support staff with what was needed, within the limits of the current benefit levels.

The most important tasks performed by the roads QA engineers involved the timely and, in many cases, daily inspections of work performed. As travel to most of the USAID-directed projects would be problematic in the best of conditions, with continued insurgent activity surrounding these project sites, the QA engineers faced constant logistics challenges in performing their duties. To help minimize the logistics burden on the QA engineering staff, EQUALS management learned to work directly with the USAID IP management points of contact to ease this problem for local national personnel.

Due to the current limited capacity of commercial laboratories in Kabul and in the rest of Afghanistan, the IRD EQUALS laboratory has been a vital asset, successfully evaluating materials/samples and testing equipment for all roads and vertical structures testing needs. Also, with the draw-down of coalition forces and large infrastructure projects, many high-quality, independent materials testing laboratories have discontinued testing business. The EQUALS materials testing laboratory has been an invaluable and independent facility in support of QA services, where the tests results can be considered untainted.

Though EQUALS has implemented some small-scale training programs for ministry engineers, the skills and knowledge of technical staff at the ministries is very basic regarding materials testing. Engagement of MoPW engineers and senior management to recognize the importance of QA inspections as well as independent material testing is highly desirable.

4.4 POWER SECTOR CHALLENGES

4.4.1 KHPP

EQUALS observed that procurement of spare parts and consumables for the MTUs by DABS took some time, and as result, some MTUs were switched off. This affected power production at Breshna Kot. EQUALS advised DABS to stock all necessary consumables and spare parts, which would avoid deficiencies during operations.

EQUALS noted that DABS devised expeditious ways to restore malfunctioning units back to producing power by transferring parts from units that might be out of service at the time. MTU Unit #5 fan assemblies and fuel injectors were all removed and used in other units. Restoration of MTU Unit #5 could have become a major issue.

EQUALS experienced difficulty in accessing the project sites due to the unpredictable security situation in the region. Site visits, monitoring and technical assistance from the EQUALS team needed to be frequent without limitations. The EQUALS QA team on site could be extended to cover a wider scope of events during a particular day/period.

Despite the availability of the MTU units for power production, their operation has been decreasing since the delivery of DoD fuel to Breshna Kot was stopped. Production of energy using the MTU units was sometimes done only for emergencies or when there was no delivery of power from Kajaki hydropower plant. In such cases, DABS used its own fuel to operate the MTU generating plant.

Due to the ongoing security insurgent activities within and around the Durai Junction area, the transmission lines to/from the substation are constantly interrupted/disconnected, resulting in a shortage of power supply. Also DABS reported damages on some of the substation equipment due to the insurgent activities. The ongoing insurgent activities have also affected DABS trained personnel. They no longer wish to stay in Durai Junction for fear of their lives.

EQUALS QA services produced a positive result for the KHPP project.

The permanent presence of EQUALS local engineers on site, and the frequent site visits by expat engineers, assisted DABS during the operation and maintenance of the KDBK substation and MTU units. The direct flow of information and reports from field sites to USAID was very beneficial. On several occasions, EQUALS found IP work reflecting serious deviations from approved designs and standards. Examples included the following:

- The separate battery room in the Durai Junction substation was eliminated during construction. As a result, the lead-acid batteries were placed in the control room, against safety codes. EQUALS reported the deviation to USAID, and with solid technical arguments, the IP constructed a separate battery room.
- EQUALS reported to USAID on the monopole transmission towers in Breshna Kot. The towers provided support for only one 110kV circuit, instead of the contractual requirement for two 110 kV circuits.
- At Breshna Kot, a 150mm gravel subgrade under the concrete pavement was eliminated and reported to USAID. As a result, very strict monitoring of the concrete pavement pouring became a standard procedure.
- Daily reporting of activities on the various sites highlighted schedule delays. As a result, the IP increased manpower to accelerate work and reduce the delays.

EQUALS insisted on examining the results of equipment tests and commissioning tests performed by the IP on substations. This enabled the QA Team to confirm that proper tests were being conducted, and to ensure safe and functional protection schemes were in place for the substations.

EQUALS supported USAID in bringing the failed diesel generator unit MTU 5 of the BK generating plant under warranty, which led the IP to replace the diesel engine.

EQUALS supported USAID in bringing the failed closing coils of the 20 KV switchgear of BK substation under warranty, which led the IP to redesign the closing circuit and replace the burnt coils.

EQUALS engineers advised and coached operators on resolving operation/maintenance issues. While designing additional training and problem-solving support for DABS, the following points were identified:

- There was a large knowledge gap—almost two technological generations—between the systems with which DABS was familiar, and the newly installed systems.
- There was a lack, in some cases, of some basic technical knowledge.
- Commercial training offered by the manufacturers and the IP was conducted at a rapid pace and assumed a certain level of technical knowledge of the new equipment. Because this level of knowledge was often lacking, DABS personnel found it difficult to absorb new knowledge.

To mitigate the above points, EQUALS designed new training courses based on the following:

- An emphasis on covering some basic technical principles;
- Explaining new technology;
- Fielding questions from and providing answers to specific questions from DABS personnel; and
- An emphasis on conducting the training and problem-solving at a slower pace, which allowed time for DABS personnel to truly understand the new technology.

As a result, the first cycle of training was successful, and left Kandahar DABS personnel feeling confident in having acquired new knowledge. A second cycle of training is planned to train DABS personnel from other areas of the country.

4.4.2 Inventory and Warehouse Management

EQUALS noted that DABS lacked consumables at certain periods during operations and yet there were no spares in stock. This resulted in reduced power production. There was a lack of inventory, and store management and consumables could not be procured in time to make replacements. EQUALS organized training on inventory control and warehouse management, with an aim to equip the store-men and plant operators with skills to control and manage tools and spare parts. This training enabled DABS to have a record of all spares and the ability to track those that are running out in time for early procurement.

4.4.3 Fuel Spillages at LSIP

EQUALS advised DABS to increase the number of operators at LSIP to enable proper management. However, DABS is not able to recruit new staff in time, and EQUALS observed that as a result of having one person per shift, fuel spillage was frequent. EQUALS advised DABS to install a back-flow pipe to the tanks from the day tanks to avoid fuel spillage during operation. Spillage of fuel in the trenches has reduced as a result.

4.4.4 DHPP and Tarakhil

Despite several improvements in the current O&M practices, the O&M crews continue to face numerous challenges to implement fully preventive maintenance practices. In addition to the advanced age of the plant, there has been no capital maintenance/rehabilitation carried out in the last 20 years. Other challenges include frequent breakdowns, lack of essential spare parts and maintenance tools, unavailability of spare parts from the original equipment manufacturer (OEM), a limited maintenance budget provided by DABS, and a lack of awareness demonstrated by DABS' higher management regarding the importance of preventive maintenance.

Additional maintenance-based practical sessions could not be arranged due to the limitations of unit shutdown. Trainees could have learned even better if the EQUALS team could have arranged some major maintenance during the training sessions, which was not possible due to the necessity of continuous running of the unit to generate sufficient power for the city of Jalalabad.

4.4.5 Kajaki Hydropower Plant Unit #2 Installation

Due to the remote location in a hostile neighborhood, security was a major challenge for the implementation and monitoring of the project. On September 15, 2015, the GFA security manager informed all parties of an unexpected evacuation from the Kajaki site due to the serious security issue down in Tangi and the insurgent attacks on the ANA check posts. Evacuation of EQUALS engineers from the Kajaki site was implemented on September 16, 2015. Partial re-mobilization on the Kajaki site was carried out when the security situation was assessed and site security clearance was issued by USAID on November 23, 2015. Full remobilization was implemented on February 11, 2016.

The EQUALS QA team presence at the Kajaki hydropower site for the installation of Unit #2 has assured maintenance of quality of works in all the respective engineering fields as well as health and safety. EQUALS pointed out crucial project issues that could affect quality, cost or schedule for the project. Some of the positive outcomes of the EQUALS QA team's involvement on the project include the following:

- EQUALS advised USAID on the 77CC method of painting of the GFE equipment to enable efficiency as per the required specifications. Painting of GFE equipment improved.
- EQUALS advised USAID that GFA/77CC should re-access the Transformer Lifting Plan. 77CC could indicate a detailed layout plan of the transformer placement area, including elevations, to indicate inverts and extents of the working area to avoid unforeseen impediments during the installation process.
- The IP lacked reasonable, accurate, and achievable schedules and progress analysis. EQUALS continuously advised 77CC on the unrealistic project schedule and advised on the best ways to resolve the issues. 77CC's recovery schedule improved drastically and became more realistic.
- EQUALS recommended constant measurement of the spiral case levelling at each stage of construction to avoid major error or deviations.
- EQUALS continuously submitted comments on 77CC submissions of method statements, works procedures and plans. The reviews resulted in better documentation presentation from the IP.
- EQUALS inspected and noted that 77CC had cut 24 nos. of reinforcing steel at the spiral case pedestal locations along the draft tube cone next to the ring. A stop work order was issued to 77CC by GFA due to unacceptable cutting of rebar around the draft tube cone, resulting in a design deviation.
- EQUALS managed to advise and assist the IPs to ensure thorough tracking of submissions, drawings, and procured materials, among other things.
- EQUALS advised USAID that due to the remote location of the Kajaki site, construction planning should allow for sufficient amounts of construction tools, equipment, consumables, spare parts, and other regular requirements, so that the project remains self-standing and is able to independently execute construction with minimum dependence on outside sources. The project needed to develop unhindered ways to transport procured heavy equipment, such as the cubicles (switchgear, excitation, control). A helicopter with higher lifting capacity than at present could offer one such choice. As a result, USAID/Tetra Tech arranged for the hiring of an MI26 for delivery of major equipment from Kandahar to Kajaki.
- EQUALS noted and advised that implementation of GFE painting was carried out with considerable initial confusion and lack of proper QA/QC, leading to repainting after test failure. Lack of evidence to "do it right the first time" threatened the project performance.
- EQUALS advised that assessment and testing of GFE equipment should be done at the earliest opportunity. This could cause serious delays, should failures occur in the items and not be immediately detected and corrected. The IPs needed to assess the performance capability of all GFE equipment.

5. CHALLENGES

5.1 VERTICAL STRUCTURES

5.1.1 Ongoing Challenges

- **Inordinate Delays in Projects Completion:** Many projects under the Vertical Structures program experienced inordinate delays in their completion periods. Under the CHEF program for example, it took almost one year for the contractors to complete rectification of punch-list items after these projects had been accepted as being substantially complete. This has been an ongoing challenge, and it is suggested that USAID's implementing partners rectify this issue by selecting construction contractors who have the financial and technical resources to undertake projects that are required to be built to international standards, including management systems and processes to meet approved schedules of work. Also, in order to have more realistic timeframes for project completion, performance periods should also take into account delays due to weather, local holidays, security, etc.
- **Operation and Maintenance (O&M) of Completed Projects:** Post occupancy assessments of CHEF projects conducted by EQUALS revealed that the end users had no plans in place, nor did they have sufficient funds available to them to maintain and operate the completed buildings. The responsible authorities will have to produce proper O&M plans and also allocate sufficient funds to keep these buildings fully functional and in a useable condition in the medium to long term. Also, it is recommended that the assigned staff at these facilities be given training on how to operate and maintain buildings built to international standards; the local staff is not currently familiar with either the equipment, materials or techniques.

5.2 ROADS CHALLENGES

5.2.1 Security

A significant delay to the G-K road Phase IV construction schedule was caused due to the volatile security situation within the project area and particularly along Section 2C of the road between Km 27 and Km 30. On June 8, 2015, MECC stopped construction activities in Section 2C following the June 7 attacks by AGEs targeting MECC/IRD and APPF personnel. The work on Section 2C was only resumed three months later, on September 8, 2015, after additional security measures were implemented by the APPF, Afghanistan National Army (ANA) and the National Department of Security (NDS) along this road segment.

5.2.2 Communication and Coordination with USAID Road Construction IPs

EQUALS roads QA management staff often faced challenges regarding communication and coordination with USAID IP MECC. For EQUALS staff to perform the QA monitoring and inspection tasks effectively, timely communication of the IP construction work performed and associated documentation is critical.

5.2.3 Implementation of Roads QA Site Inspections

The roads QA engineering teams working on the G-K Road construction Phase IV faced numerous challenges while implementing the required field construction progress and quality assurance inspections. It is essential that USAID IPs cooperate and provide support to the QA engineers in terms of listening to/accepting EQUALS professional explanation/advice aimed at prevention of QA/QC-related issues and/or improvement of the road construction works quality. Drawing the contractor supervisory staff's attention to observed workmanship/quality deficiencies in the field was especially difficult on a few occasions and resulted in heated discussions between the MECC and EQUALS field staff on-site.

EQUALS management worked to improve the cooperation between the contractor's field supervisors/foremen and EQUALS road QA engineers. The roads QA monitoring staff learned to communicate effectively with the contractor's staff in the field, thus mitigating potential friction between the two organizations.

5.2.4 Contractor's Management Issues

During the G-K road construction Phase IV, the EQUALS QA engineering teams often witnessed the MECC contractor's poor management practices that affected quality and progress of the road construction works. These were mainly due to a lack of proper coordination between the MECC field and Kabul-based management staff and inadequate/untimely supply of required human and material resources to the field.

EQUALS management drew the USAID COR/ACOR's attention to the IP management issues during regular meetings as well as through ad-hoc reports. EQUALS submitted numerous recommended measures aimed at the improvement of MECC management practices to ensure the G-K road construction works could be completed on time and to specified quality standards.

5.3 POWER SECTOR CHALLENGES

Due to the remote location in a hostile neighborhood, security was a major challenge for the implementation and monitoring of the project. On September 15, 2015, the GFA security manager informed all parties of an unexpected evacuation from the Kajaki site due to the serious security issue in the Tangi area and the insurgent attacks on the ANA check posts. Evacuation of EQUALS engineers from the Kajaki site was implemented on September 16, 2015. Partial re-mobilization to the Kajaki site was carried out when the security situation was assessed and site security clearance issued by USAID on November 23, 2015. Full remobilization was implemented on February 11, 2016.

Since the commencement of construction activities in February 2015, 77CC has repeatedly demonstrated four main weaknesses that have contributed to self-imposed delays and continued and increased project risk:

- Delays in the completion of the inspection and testing of GFE to determine the level of repair/refurbishment (or replacement) required for items such as the generator magnetic poles. This repeated delay by 77CC should be challenged in any claim, should 77CC use the argument of the requirement of extensive repair or replacement of major assemblies as a consequence of the testing results.
- Work method statements have required multiple reviews and even once approved are not always followed on site. This results in questions being raised on site as to how the work is to be performed, and so correct installation and allocation of resources can be monitored. This process of additional checking causes further delays at the expense of 77CC, and cannot be considered as the basis for a claim.
- Poor quality control by 77CC on site has resulted in significant delays, with early examples including anti-corrosion painting of the draft tube, and welding of the spiral case. Both of these events resulted in significant delays and cannot be considered as the basis for a claim.
- 77CC does not have the capacity to prepare realistic procurement and construction schedules or even a three-week look-ahead schedule. EQUALS has on many occasions assisted 77CC to prepare realistic schedules, but the contractor failed to incorporate important key elements such as "time to complete." The impact is continued delays and inaccurate reporting that may eventually lead to a reduction in quality.

6. LESSONS LEARNED

6.1 VERTICAL STRUCTURES

The award of contracts for completion of the remaining works in Faryab, Jawzjan and Balkh FoHE projects suffered from delays. Thus, the substantial completion dates for these projects were revised based on the actual contract award. This resulted in a change in the QA level-of-effort (LoE) and various revisions to the work plan and budget were issued and approved by the CO.

Refresher training for EQUALSVS field engineers on the following was found to be successful:

- Quality assurance inspection methodology;
- Coordination with IPs on field activities;
- Material testing procedures;
- Familiarity with environmental mitigation procedures;
- Interpretation of technical drawings and specifications; and
- Capacity building of QA/QC and provincial engineers.

6.2 ROADS

6.2.1 Assisting Weak USAID IPs

From the very beginning, it was clear that MECC was a weak IP. By the end of the G-K Road Construction Phase IV project, MECC was able to complete the construction within the specified time frame and quality standards. However, the project would not have been achieved to such a high degree of success without (a) close QA oversight of the MECC activities and (b) project management technical assistance provided by the EQUALS Road Team throughout the construction period. Also important was effective reporting to and action taken by USAID on the observed work quality and progress issues.

6.2.2 Performance Issues and Capacity Building of USAID IPs

There were certain issues on the part of MECC, mainly related to inadequate and ineffective QC practices, work organization and project management methods, that affected and slowed down the implementation of the G-K Road construction Phase IV project. The IP performance issues included the following:

- Lack of in-house work schedule development by the IP contractor;
- Weak on-site management, and poor organization of the construction process itself (day-in and day-out planning by site management of IP contractor);
- Little coordination between the master schedule and on-site work;
- Insufficient enforcement of QC procedures by the IP contractor, including poor control over the IP's field laboratory equipment calibration and accuracy;
- Substandard health and safety of the IP workers at site and residential accommodation;
- Lack of the IP contractor design capacity;
- Lack of effective communication between the IP field managers and their senior management based in Kabul;

- Lack of coordination between the IP field management staff and local authorities and communities to improve the security environment and facilitate the road construction activities; and
- Inability to monitor and resolve local community-related issues effectively and on time, in order to prevent delays to the road construction schedule.

The above issues affected the works quality, road construction progress and the IP staff's health and safety conditions at the construction camp facilities.

EQUALS staff implemented procedures to improve coordination to enhance the value of the field inspections and the resultant deficiency identification and resolution. These included regular meetings of EQUALS management with the IP contractor field supervisory staff and senior management to address the issues hindering the road construction progress and quality of the works. In addition, within the daily reports to USAID and during meetings with USAID, EQUALS drew the COR's attention to the IP contractor performance and management problems affecting the quality and progress of contracted works and recommended solutions to overcome the issues. By the end (but only at the final stages, when the IP's senior management became engaged) of the JO-10 period of performance, EQUALS and USAID IP's communication and coordination of construction work performed had greatly improved, to the point where EQUALS no longer needed to provide managerial and planning support to MECC on site staff.

Based on the experience of the G-K Road Phase IV construction project, it is recommended that for any forthcoming USAID-funded infrastructure rehabilitation projects of similar scale and importance, USAID identify and select national contractors that have a proven history of successful delivery of large projects implemented in high-security-risk areas and under complex community environments.

When donors plan national construction in Afghanistan, and there are no available contractors with such proven histories, weaknesses like these must be researched as part of the due diligence process. When an IP with any of these weaknesses is selected, compensating measures must be planned for and taken, in order to ensure successful completion of the contract. Refer to Appendix K for more information.

In the foreseeable future, in order to facilitate the effective implementation of high-profile infrastructure projects, it is advised that USAID continue to engage international consulting firms for the provision of third-party QA and/or design and construction supervision services. Apart from ensuring specified quality of works and proper use of USAID funds, the consultants should be tasked to develop the capacity of the national counterparts and contractors by providing project management technical assistance through:

- Promotion of proven project management methods at all levels;
- Provision of continuous on-the-job training and mentoring of the national staff; and
- Introduction of advanced QC practices.

6.3 POWER

EQUALS QA Team presence at the Kajaki hydropower site for the installation of Unit #2 has assured maintenance of quality of works in all the respective engineering fields as well as in health and safety. EQUALS has identified crucial project issues that could affect quality, cost or schedule for the project. Some of the positive outcomes of EQUALS QA team involvement on the project include the following:

- EQUALS advised USAID on the 77CC method of painting of the GFE equipment to enable efficiency as per the required specifications. Subsequently, painting of GFE equipment improved.

- 77 CC rectifier and battery system: EQUALS presented its comments and arguments on the type of battery for Kajaki at the Kajaki Unit 2 coordination meeting on February 8, 2016. The comments and arguments were presented during a special meeting on the subject, in July 2015, at USAID's offices, between USAID, DABS, GFA and IRD. These comments were accepted by ALL parties involved, that the batteries have to be "wet" (flooded lead acid) and of 600 Ah capacity, according to the contract. The GFA approval mentions: "The batteries and rectifiers need to be as per contract i.e. Wet type 600 Ah and rectifiers 100 A." Apparently the delivered batteries at the Kajaki powerhouse are sealed type and not wet (without liquid electrolyte).
- EQUALS advised USAID that GFA/77CC should re-assess the Transformer Lifting Plan. 77CC should submit a detailed layout plan of the transformer placement area including elevations to indicate inverts and extents of the working area to avoid unforeseen impediments during the installation process.
- The IP lacked reasonable, accurate, and achievable schedules and progress analysis. EQUALS repeatedly advised 77CC on the unrealistic project schedule and advised on the methods to resolve the issues. 77CC Recovery Schedule improved dramatically and became more realistic.
- EQUALS recommended constant measurement of the spiral case leveling at each stage of construction to avoid major error or deviations.
- EQUALS continuously submitted comments on 77CC submissions of method statements, works procedures and plans. The reviews resulted in improved documentation presentation, however, further improvement is required.
- EQUALS inspected and noted that 77CC had cut 24 nos. of reinforcing steel at the spiral case pedestal locations along the draft tube cone next to the ring. A stop work order was issued to 77CC by GFA due to unacceptable cutting of rebar around the draft tube cone, resulting in a design deviation.
- EQUALS managed to advise and assist the IPs to ensure thorough tracking of submissions, drawings, and procured materials, among others.
- EQUALS advised USAID that due to the remote location of the Kajaki site, construction planning should allow for sufficient amounts of construction tools, equipment, consumables, spare parts, and other regular requirements, so that the project remains self-standing and is able to execute construction independently with minimum dependence on outside sources. The project needed to develop unhindered ways to transport procured heavy equipment, such as the cubicles (switchgear, excitation, control). A helicopter with higher lifting capacity than at present could offer one such choice. As a result, USAID/Tetra Tech arranged for hiring of an MI26 for delivery of major equipment from Kandahar to Kajaki.
- EQUALS noted and advised that implementation of GFE painting was carried out with considerable initial confusion and lack of proper QA/QC, leading to repainting after test failure. Lack of evidence from 77CC of an attitude of "do it right the first time" threatens project performance.
- EQUALS advised that assessment and testing of GFE equipment should be done at the earliest opportunity. This may cause serious delays should failures occur in the items and not be immediately detected and corrected. The IPs needed to assess the performance capability of all GFE equipment.

7. SALIENT ISSUES AND CONCERNS

7.1 VERTICAL STRUCTURES [LV37]

7.2 ROADS

On completion of the G-K Road Construction Phase IV, the EQUALS Material Testing Laboratory equipment was intended to be transferred to the Kabul Polytechnic University (KPU), with EQUALS Lab technicians providing guidance on equipment installation and basic training in the equipment use for KPU staff. However on December 24, 2015, during transportation of the equipment from Camp Liz to Kabul, the convoy with lab equipment was intercepted in Gardez by the local government authorities and diverted to the Paktia University. The containers with the lab equipment were unloaded and retained by Paktia University, with no training provided.

7.3 WWST

- Only approximately 5% of the Transboundary Water Policy text is still remaining to be reviewed and edited by the TSSCoW members. Review of the Transboundary Water Policy was included in the agenda of a meeting scheduled for May 05, 2014. In the meantime, the Technical Secretariat was waiting for comments from MoFA, while EQUALS WSST continued to emphasize to TSSoW the need for the completion of the Transboundary Water Policy review. Lack of interest on the part of the TSSCoW members has caused a delay in completion of a major milestone—completion of the National Policy on Transboundary Water.
- Due to reduction of workforce at the WSST, the capacity-building activities as well as the technical/engineering support at the MoEW decreased, while expectations of the MoEW remained the same as before.
- Recruiting of a contract specialist with engineering and construction experience was a major challenge, as qualified experts were not willing work in Kabul due to security concerns.

7.4 POWER

Generator shaft straightness issue: The final measurement of generator shaft straightness is still outstanding. As this issue has already been delayed, any further delay may delay completion of the project.

Humidity in the transformer body: EQUALS observed that the blue silica gel in the breather for the power transformer Phase I has changed to black/dark blue indicating that the gel is saturated with moisture and needs to be replaced. EQUALS advised USID that 77 CC should investigate what caused the change of color.

77 CC rectifier and battery system: EQUALS presented its comments and arguments on the type of battery for Kajaki at the Kajaki Unit 2 coordination meeting on February 8, 2016. Moreover the same comments and arguments were presented during a special meeting on the subject, in July 2015, at USAID's offices, between USAID, DABS, GFA and IRD. These comments were accepted by ALL the parties involved, that the batteries have to be "wet" (flooded lead acid) and of 600 Ah capacity, according the contract. The GFA approval mentions: "The batteries and rectifiers need to be as per contract i.e. Wet type 600 Ah and rectifiers 100 A." Apparently the delivered batteries at the Kajaki powerhouse are sealed type and not wet (without liquid electrolyte).

Integration of old analog and new digital control technologies requires thorough analysis at present, since it can create considerable issues during plant commissioning, due to incompatibility.

Due to suspected insurgent activities, the 110kV transmission line was continuously vandalized along the transmission lines between DJCN Sangin and Kajaki substations.

DABS experiences non-availability of fuel to run the MTUs at Breshna Kot and hence less generation.

At the moment DABS does not operate LSIP due to lack of diesel fuel.

8. ANNEXES AND PICTURES

8.1 VERTICAL STRUCTURE

8.1.1 CHEF Projects under JO-09



IMAGE 01: CHEF-002, Gardez 100-bed hospital
Groundbreaking ceremony by Paktika Governor Mr. Juma Khan Hamdard. This photo was taken during the HRLS –II program.
N: 33.630878 E: 69.232596



IMAGE 02: CHEF-002, Gardez 100-bed hospital
Installation of scaffolding and shuttering in foundation of 100 Bed Hospital in progress. Photo was taken during the HRLS-II program.
N: 33.630878 E: 69.232596



IMAGE 03: CHEF-002, Gardez 100-bed hospital
Photo showing the inside view of the boiler room.
N: 33.630878 E: 69.232596



IMAGE 04: CHEF-002, Gardez 100-bed hospital
Photo showing interior view of dining hall.
N: 33.630878 E: 69.232596



IMAGE 05: CHEF-002, Gardez 100-bed hospital
View of the green area B3. N: 33.630878 E: 69.232596



IMAGE 06: CHEF-002, Gardez 100-bed hospital
View of the reception counter

8.1 VERTICAL STRUCTURE

8.1.1 CHEF Projects under JO-09



IMAGE 07: CHEF-002, Gardez 100-bed hospital
View of the Operation Room corridor.
N: 33.630878 E: 69.232596



IMAGE 08: CHEF-002, Gardez 100-bed hospital
View of the Recovery Block Corridor.
N: 33.630878 E: 69.23259



IMAGE 09: CHEF-002, Gardez 100-bed hospital
Photo showing view in front of the main building.
N: 33.630878 E: 69.232596



IMAGE 10: CHEF-002, Gardez 100-bed hospital
Photo showing view in front of the main building.
N: 33.630878 E: 69.232596



IMAGE 11: CHEF-002, Gardez 100-bed hospital
Photo showing east side view of male female blocks. N:
33.630878 E: 69.232596



IMAGE 12: CHEF-002, Gardez 100-bed hospital
Photo showing east side view [PW39] of male female blocks. N:
33.630878 E: 69.232596

8.1 VERTICAL STRUCTURE

8.1.1 CHEF Projects under JO-09



IMAGE 13: CHEF-002, Gardez 100-bed hospital
Photo showing general view of various blocks.
N: 33.630878 E: 69.232596



IMAGE 14: CHEF-002, Gardez 100-bed hospital
Photo showing general view of various blocks.
N: 33.630878 E: 69.232596



IMAGE 15: CHEF-021, Khair Kot 20-bed hospital
Installation formwork in foundation before fixing steel bars.
Photo taken during the HRLS-II program. N:34.423611 E:70.433056



IMAGE 16: CHEF-021, Khair Kot 20-bed hospital
Installation formwork in foundation before fixing steel bars.
Photo taken during the HRLS-II program. N:34.423611 E:70.433056



IMAGE 17: CHEF-021, Khair Kot 20-bed hospital
West side view of the main building.
N:34.423611 E:70.433056



IMAGE 18: CHEF-021, Khair Kot 20-bed hospital
Photo showing front view of the main building.
N:34.423611 E:70.433056

8.1 VERTICAL STRUCTURE

8.1.2 Photos of QA Tasks Performed Under National Monitoring Team (NMT) Projects



IMAGE 19: SWSS Project, Parwan province
Testing of stand tap from spring/reservoir. ID: PR027-05
N: 35.13727 E: 69.12135;



IMAGE 20: MoPH Project, Daikundi Province
ID: 2175 Medical clinic inspected for evaluation of current
condition and recording GPS
N: 33.43612 E: 65.82736



IMAGE 21: USAID Building Project, Parwan Province ID:
J-PRN-001 Judicial Building inspected for evaluation of current
condition and recording GPS
N: 35.01391, E: 69.17039



IMAGE 22: CLTS Project, Sar Kateban Bala Village, Qarghaie
District, Laghman Province, ID-LG011-M02, Triggering
N: 34.69294123 E: 70.23111254



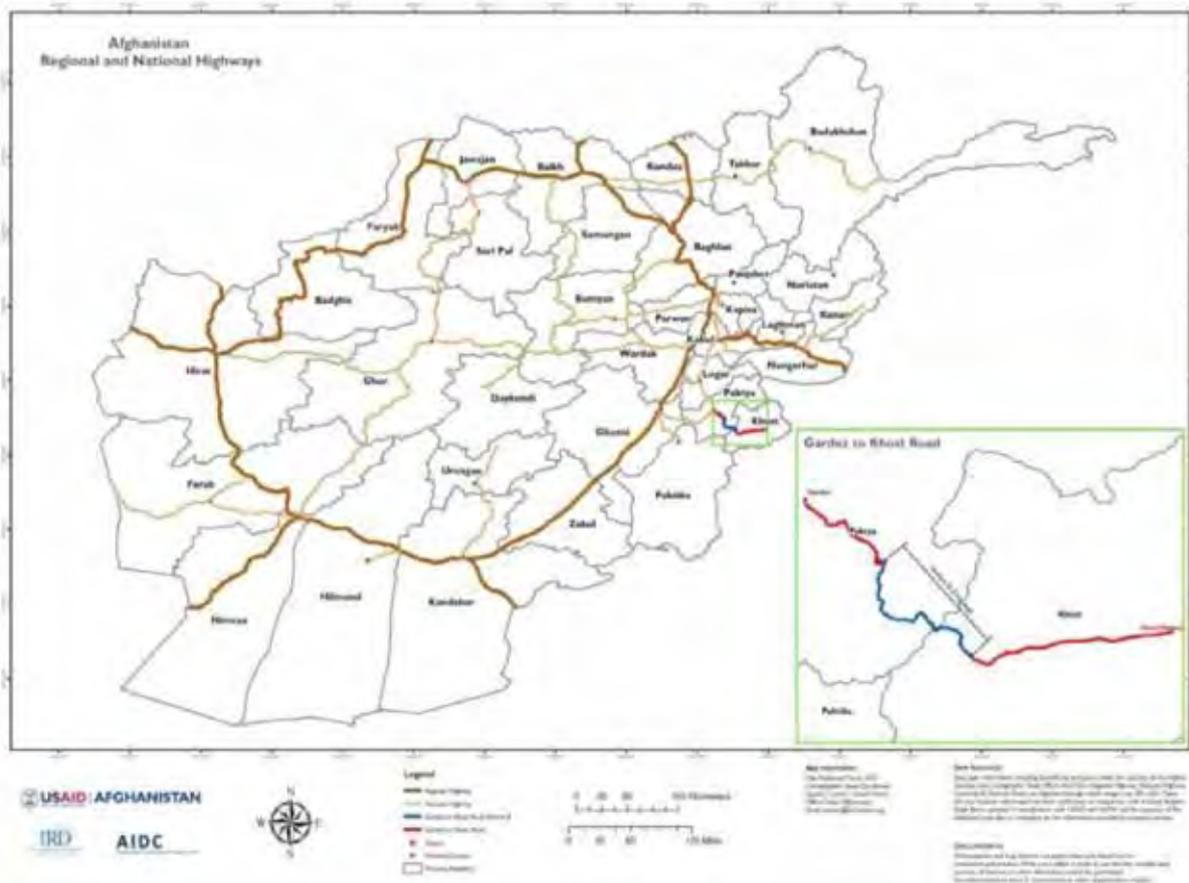
IMAGE 23: ACEP Project, PVPS and solar hot water system
project, center of Najrab District, Kapisa Province, ID-1.2.18
N: 34.01474, E: 69.5996



IMAGE 24: ACEP Project, Solar streetlights project, Shaikh Zayed
University, center of Khost Province ID- 1.4.5
N: 33.35052645, E: 69.87003514

8.2 ROADS

8.2.1 Map showing completed G-K Road project monitored by EQUALS engineers



8.2 ROADS

8.2.2 Photos below illustrates construction work on Section 2—Phase IV of the G-K Road



PHOTO 1: Rock excavation/side cutting from Km 49+600 to 49+700 LIS
N-33°22'42.56", E-69°27'36.85



PHOTO 2: Stone masonry work for retaining wall RW-50 from Km 59+890 to 59+910 RIS
N-33°20'38.96", E-69°32'12.27"



PHOTO 3: Steel fixing for top slab of Culvert C-103 at Km 36+614 B/S
N-33°24'33.62", E-69°22'35.69"



PHOTO 4: Paving of CAB for carriageway 1st Layer from Km 59+920 to 60+160 RIS
N-33°20'35.90", E-69°32'15.83"



PHOTO 5: EQUALS QA Manager giving training to IRD staff at Camp Liz



PHOTO 6: Paving of Asphalt Binder Course along the carriageway from Km 58+430 to 58+821 RIS
N-33°20'54.19", E-69°31'22.2

8 9.2 ROADS

8.2.2 Photos below illustrates construction work on Section 2—Phase IV of the G-K Road



PHOTO 7: Formwork for 1st step of abutment (A) bridge # 10 at Km 51+963.2 B/S
N-33°22'4.85", E-69°28'28.23"



PHOTO 8: Formwork for top/last step of Abutment (A) of Bridge # 9 at Km 50+013.8 B/S
N-33°22'50.26", E-69°27'44.38"



PHOTO 9: Pouring lean concrete 2nd layer for girder, 1st span of bridge # 9 from Km 50+013.8 to 51+030.6
N-33°22'50.80", E-69°27'44.89.82



PHOTO 10: Paving (and compaction) of asphalt binder course for carriageway from Km 38+320 to 38+570 R/S
N-33°23'34.67", E-69°22'49.50"



PHOTO 11: Formwork for 4th girder, 2nd span of bridge # 9 from Km 50+030.6 to 50+047.4
N-33°22'50.92", E-69°27'44.66"



PHOTO 12: Steel fixing for scour mattress (slope portion) downstream, 2nd span of bridge #9 from Km 50+013 to 50+047 L/S
N-33°22'51.28", E-69°27'44.38"

8.2 ROADS

8.2.2 Photos below illustrates construction work on Section 2—Phase IV of the G-K Road



PHOTO 13: Pre-final punch list inspection of Section 2D from Km 36+000 to 38+000 B/S
N-33°24'21.68", E-69°22'41.62"



PHOTO 14: Paving of asphalt wearing course from Km 27+000 to 27+840 LIS
N-33°28'32.43", E-69°23'13.07"



PHOTO 15: Final inspection of 2C, 2D and 2E sections, IRD, MECC and DoPW of Khost and Paktia.
N-33°21'4.67", E-69°30'30.75"



PHOTO 16: MECC handover Camp 44 to local community
N-33°22'0.08", E-69°25'13.64



PHOTO 17: Road opening ceremony at MoPW on 15 December 2015: Presentation by HE Minister of Public Works, Engineer Mahmoud Baligh



PHOTO 18: Road opening ceremony at MoPW on 15 December 2015: Presentation by Engineer Idrees Ahmad Noori, USAID Contracting Officer's Representative

8.2 ROADS

8.2.3 Summary of Request for Work Inspection from July 10, 2014 to January 10, 2016

NO.	ACTIVITY	TYPE OF REQUEST	ACCEPTABLE	ACCEPTABLE WITH CONDITIONS	NOT ACCEPTABLE	SUBTOTAL OF REQUEST
1	Materials (CAB, Steel, Concrete, Admixture, OGL, Borrow Area, Calibration, 27.5 Mpa, 25Mpa, 15Mpa Lab testing)	RFWI	3	72	39	114
		RFT	166	412	101	679
		RFS	2	9	5	16
2	Structures (Culvert, LD, RTW)	RFWI	23	4031	1484	5538
		RFT	780	2050	1393	4223
		RFS	8	191	293	94
3	Earth Work (Embankment, Subgrade, Roadway Excavation, Rock Excavation, Precise Leveling)	RFWI	2	1025	265	1292
		RFT	215	228	205	648
		RFS	9	109	42	160
4	Asphalt Binder Course Pavement & Surface Treatment	RFWI	1	229	47	277
		RFT	35	249	16	300
		RFS	1	26	7	34
5	CAB, Aggregate Course (Production & Placement)	RFWI	1	323	126	450
		RFT	118	274	144	536
		RFS	3	73	27	103
6	Snow Removal	RFWI	7	2	3	12
		RFT				0
		RFS				0
7	Watering for Dust Control	RFWI	14	396	38	448
		RFT				0
		RFS				0
8	Crush Transportation from Crush Plant # 35,41+400,41,41+300	RFWI	1	31	5	37
		RFT				0
		RFS				0

8.2 ROADS

8.2.3 Summary of Request for Work Inspection from July 10, 2014 to January 10, 2016

NO.	ACTIVITY	TYPE OF REQUEST	ACCEPTABLE	ACCEPTABLE WITH CONDITIONS	NOT ACCEPTABLE	SUBTOTAL OF REQUEST
9	Joint Survey for X Sections and Structures	RFWI				
		RFT				
		RFS		116	22	138
10	Emergency and Maintenance work	RFWI	2	11	4	17
		RFT				
		RFS				
11	Asphalt Tack Coat	RFWI	3	54	16	73
		RFT				
		RFS				
12	Calibration of Lab Equipment and Concrete Plant	RFWI		4		4
		RFT				
		RFS				
13	Bridge # 06	RFWI		27	10	37
		RFT	1	10		11
		RFS		1		1
14	Bridge # 07	RFWI		21	1	22
		RFT		4		4
		RFS				
15	Bridge # 08	RFWI		31	10	41
		RFT		4		4
		RFS				
16	Bridge # 09	RFWI	1	670	167	838
		RFT	51	170	77	298
		RFS	2	59	19	80

8.2 ROADS

8.2.3 Summary of Request for Work Inspection from July 10, 2014 to January 10, 2016

NO.	ACTIVITY	TYPE OF REQUEST	ACCEPTABLE	ACCEPTABLE WITH CONDITIONS	NOT ACCEPTABLE	SUBTOTAL OF REQUEST
17	Bridge # 10	RFWI	1	420	101	522
		RFT	34	161	38	233
		RFS		55	5	60
18	Bridge # 11	RFWI		5	1	6
		RFT				
		RFS				
19	Bridge#12	RFWI		12	1	13
		RFT				
		RFS				
20	Community Issue	RFWI		5	8	13
		RFT				
		RFS				
21	Rectification of Deficiencies	RFWI	1	51	16	68
		RFT				
		RFS				
22	Asphalt Prime Coat	RFWI		65	14	79
		RFT				
		RFS				
23	Joint survey for % of IPC#	RFWI				
		RFT				
		RFS		32		32
24	Joint Assessment for Causeway # 3	RFWI		3		3
		RFT				
		RFS				

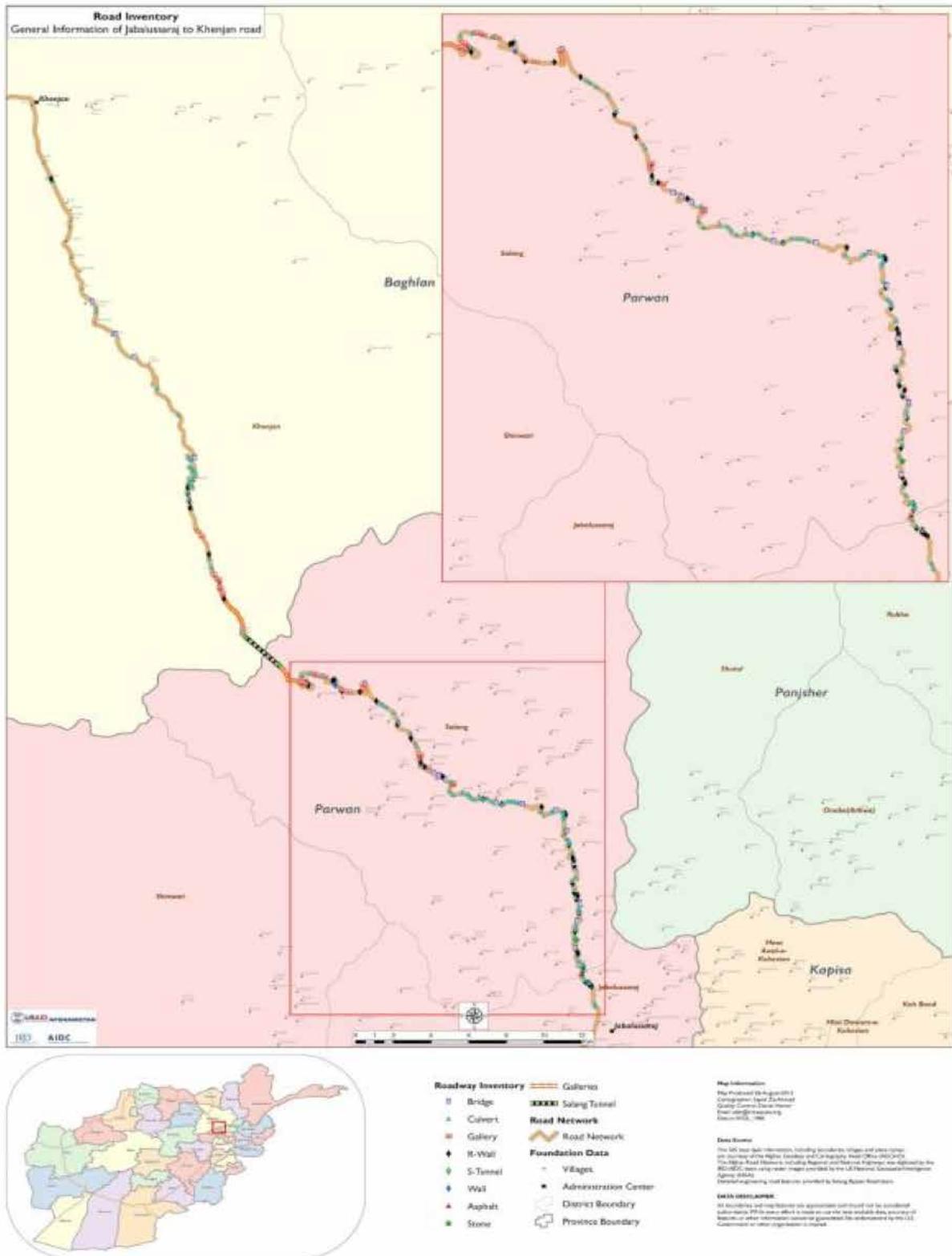
8.2 ROADS

8.2.3 Summary of Request for Work Inspection from July 10, 2014 to January 10, 2016

NO.	ACTIVITY	TYPE OF REQUEST	ACCEPTABLE	ACCEPTABLE WITH CONDITIONS	NOT ACCEPTABLE	SUBTOTAL OF REQUEST
25	Asphalt Wearing Course	RFWI	2	53	15	70
		RFT	14	80	4	98
		RFS				
26	Joint Inspection for Preparation of Punch list on Section 2C, 2D and 2E	RFWI	1	23	1	25
		RFT				
		RFS				
27	Joint Inspection for Rectification of Punch list on Section 2C, 2D and 2E	RFWI		35	8	43
		RFT				
		RFS				
28	Demobilization of Camps (35, 44 and 50)	RFWI		6	3	9
		RFT				
		RFS				
29	Schmidt Hammer Test for Structures	RFWI		5		5
		RFT				
		RFS				
30	Sampling of Aggregate for test	RFWI	8	6	1	15
		RFT				
		RFS				
31	Gradation and Soundness of Aggregate	RFWI				
		RFT	15	3	2	20
		RFS				
Total of Each Request		RFWI	181	7566	2357	10104
		RFT	1429	3612	1980	7021
		RFS	25	671	221	917
Overall Total Number of Requests			1635	11849	4558	18042

8.2 ROADS

8.2.4 Map showing completed Salang Corridor and Tunnel R&M project



8.2 ROADS

8.2.5 Photos below illustrate emergency R&M work on the Salang Corridor project



PHOTO 19: Paving of asphalt binder course from Km 16+427 to 16+456 L/S and C/L
N-35° 13'43.50", E-69° 12'3.31"



PHOTO 20: Stone masonry work on guard walls - work on rectification of punch list for Phase I from Km 16+894 to 16+902 L/S
N-35° 13' 57.93", E-69° 11'59.38"



PHOTO 21: Installation of jet fan inside the Salang Tunnel at Km 41+410 R/S
N-35° 18'10.12", E-69° 03'47.61"



PHOTO 22: Paving asphalt wearing course is in progress from Km 31+000 to 31+030 C/L
N-35° 17' 28.43", E-69° 06' 0.32"

8.2 ROADS

8.2.6 Photos of Roads Emergency O&M projects



PHOTO 23: Kishm-Faiz Abbad Road O&M: Installation of gabion baskets in Sang Ab Eshan Asli at Km 74+200 R/S. N-37 o 13' 18.11", E-70 o 22' 24.28"



PHOTO 24: Baghlan-Kunduz Road O&M: Embankment backfilling and compaction at Km 47+000 to 47+298 R/S N-36o 18' 16.59", E-68o 49' 15.12"



PHOTO 25: Kabul-Ghazni Road O&M: Gabion wall placement from Km 46+000 to 46+116 RHS. N-33o 57' 26.41", E-68o 41' 37.40"



PHOTO 26: Kabul-Kandahar Road O&M: Asphalt paving in Moshaki at Km 40+780 to 40+987 R/S. N-33o 15' 22.74", E-68o 13' 13.42"

8.2.7 Materials Testing Report Summary for JO-10

Month-Wise Details of Tests for the Period July 2014 to December 2015 (IRD Lab Located at Camp Liz)

MONTH	NO. OF TESTS/MONTH	TOTAL TESTS TO DATE	DELIVERABLE/MONTH	CUMULATIVE DELIVERABLES	NUMBER OF TESTS PASS/MONTH	NUMBER OF TESTS FAIL/MONTH	NUMBER OF CUMULATIVE FAIL TESTS	% PASS	% FAIL
JUL-14	251	251	78	78	240	11	11	96	4
AUG-14	37	288	78	156	37	0	11	100	0
SEP-14	130	418	78	234	128	2	13	98	2
OCT-14	105	523	78	312	101	4	17	96	4
NOV-14	201	724	78	390	194	7	24	97	3
DEC-14	203	927	78	468	195	8	32	96	4
JAN-15	145	1072	78	546	142	3	35	98	2
FEB-15	74	1146	78	624	74	0	35	100	0
MAR-15	84	1230	78	702	84	0	35	100	0
APR-15	64	1294	78	780	64	0	35	100	0
MAY-15	225	1519	78	858	222	3	38	99	1
JUN-15	160	1679	78	936	160	0	38	100	0
JUL-15	68	1747	78	1014	60	8	46	88	12
AUG-15	185	1932	78	1092	161	24	70	87	13
SEP-15	174	2106	78	1170	149	25	95	86	14
OCT-15	169	2275	78	1248	164	5	100	97	3
NOV-15	144	2419	78	1326	144	0	100	100	0
DEC-15	118	2537	78	1404	118	0	100	100	0
	2537		1404		2437	100		3.9	96.1

SUMMARY

Total Tests Done	2537
Total Deliverables Required	1404
Number & % of Tests Passed	2437 (96.1%)
Number & % of Tests Failed	100 (3.90%)

8.2 ROADS

8.2.8 Photos of disposition of property at Camp Liz



PHOTO 27: Providing training to the Paktia Education Department staff on erection of Alaska Tent



PHOTO 28: Handing over the survey equipment to Paktia University



PHOTO 29: Camp Liz hand over to Paktia Governor, January 30, 2016



PHOTO 30: Transfer of Nissan Pickup to Paktia University

8.2 ROADS

8.2.9 Photos of Material Testing being performed at Camp Liz Laboratory and in field



PHOTO 31: Gradation Test at Camp Liz



PHOTO 32: LA Test at Camp Liz



PHOTO 33: Collection of Binder Course Sample



PHOTO 34: Core Cutting Binder Course

8.2 ROADS

8.2.10 Photos of APPF Security Demobilization at Camp Liz



PHOTO 35: Provincial Governor's representatives and ANSF conducting Camp Liz orientation and final inventory checks on January 30, 2016



PHOTO 36: Provincial Governor's representatives and ANSF conducting Camp Liz orientation and final inventory checks on January 30, 2016



PHOTO 37: Provincial Governor's representatives and ANSF conducting Camp Liz orientation and final inventory checks on January 30, 2016



PHOTO 38: Provincial Governor's representatives and ANSF conducting Camp Liz orientation and final inventory checks on January 30, 2016

8.3 POWER

8.3.1 Photos of CLIN I Subcomponent I: Breshna Kot Substation



IMAGE 1: General View of the Switchyard at KDBK



IMAGE 2: 20kV Switchgear - A1 - Interior in BK (Warranty Inspection)



IMAGE 3: EQUALS conducted the 12-Month Warranty Inspection of KDBK Substation with DABS



IMAGE 4: EQUALS Engineer illustrating to DABS Operators in the Control Building at KDBK.

8.3 POWER

8.3.2 Photos of CLIN 1.5 Kandahar Breshna Kot Generation (KDEG)



IMAGE 5: EQUALS Engineer conducting training of DABS Operator



IMAGE 6: DABS Operators attending training conducted by EQUALS



IMAGE 7: EQUALS inspecting fuel tanks at Breshna Kot



IMAGE 8: EQUALS Engineers inspecting DABS oil for the MTU's at Breshna Kot



IMAGE 9: EQUALS monitored and witnessed the installation of new MTU #5 at Breshna Kot



IMAGE 10: EQUALS monitored and witnessed the installation of new MTU #5 at Breshna Kot

8.3 POWER

8.3.3 Photos of CLIN 4 Shorandam Industrial Park (SIPD) Diesel Power Plant



IMAGE 11: Disconnector installation complete (LSIP Warranty Inspection)



IMAGE 12: DABS Operator demonstrates future operation of feeder when commissioned (LSIP Warranty Inspection)



IMAGE 13: EQUALS Engineers Inspecting Fuel Tanks at LSIP



IMAGE 14: View of LSIP QSK 23 Units

1

8.3 POWER

8.3.4 Photos of CLIN 2 Subcomponent 1: Durai Junction Substation



IMAGE 15: Aerial view of Durai Junction Substation



IMAGE 16: General view of the Switchyard



IMAGE 17: General view of the Switchyard

8.3 POWER

8.3.5 Photos of Installation of Unit #2 at Kajaki Hydropower Plant



IMAGE 18: Hydrostatic pressure test for spiral case



IMAGE 19: Generator shaft 2 straightness tests used straightness indicator device



IMAGE 20: Installation of rebar for PRV house



IMAGE 21: Placement of pit liner on stay ring for alignment and adjustment



IMAGE 22: EQUALS Engineer conducting QA Civil Works training of the DABS PIU Team



IMAGE 23: EQUALS QA Engineers inspecting concavity welding in the spiral case

8.3 POWER

8.3.6 Site Visits by Sector by Year

#	TEAM	NO. OF SITES / REPORTS	APRIL 2011 TO MARCH 2012	APRIL 2012 TO MARCH 2013	APRIL 2013 TO MARCH 2014	APRIL 2014 TO MARCH 2015	APRIL 2015 TO MARCH 2016	TOTAL
1	Vertical Structure	Sites	5	10	4	3	3	
		Reports	3,747	928	2,772	1,025	628	9,100
2	Power	Sites	8	5	3	6	6	
		Reports	2,187	1,210	936	1,872	845	7,050
3	Roads	Sites	3	1	2	2	7	
		Reports	225	983	912	220	740	3,080
		Tests	911	4,609	4,233	4,927	4,959	19,639
4	National Monitoring Team (NMT)	Sites	2	2				
		Reports	3,902	3,715				7,617
TOTAL VISITS								26,847

APPENDIX E: EQUALS PMP DATA FOR OCTOBER 1, 2012 – DECEMBER 31, 2013

#	Performance Indicator	Impact/ Outcome/ Output	Indicator Definition & Unit of Measurement	Disaggregation	Data Source & Approach to Data Collection	Frequency, Person/Org Responsible	Base-line	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sep 2013	Oct-Dec 2013	Totals: Oct 2012– Dec 2013
STRATEGIC OBJECTIVE I: QUALITY ASSURANCE/QUALITY CONTROL OF INFRASTRUCTURE PROJECTS ACROSS AFGHANISTAN													
INTERMEDIATE RESULT 1.1: QA INSPECTION OF USAID-FUNDED INFRASTRUCTURE PROJECTS													
1.1.1	Number of projects receiving QA/QC monitoring	Output	Number of projects monitored by EQUALS engineers (project)	Sector	Workplan review; modifications to work plan	Monthly/ Sector Team Leads	–	VS – 13 NMT – 3 Roads – 1 Power – 5 TOTAL – 22	VS – 10 NMT – 2 Roads – 1 Power – 5 TOTAL – 18	VS – 10 Roads – 1 Power – 5 TOTAL – 16	VS – 10 Roads – 1 Power – 4 TOTAL – 15	VS – 10 Roads (JO–04) – 1 Roads (JO–05) – 1 Power – 4 TOTAL – 16	VS – 13 NMT – 3 Roads (JO–04) – 1 Roads (JO–05) – 1 Power – 5 TOTAL – 23
1.1.2	Number of inspection reports produced for each project	Output	Number of inspection reports submitted by EQUALS engineers for each project including monitoring, observation, and documentation of findings (inspection report)	Sector	Inspection report review	Monthly/ Sector Team Leads	–	VS – 580 NMT – 931 Roads – 175 Power – 169 TOTAL – 1855	VS – 316 NMT – 77 Roads – 176 Power – 324 TOTAL – 893	VS – 327 NMT – 21 Roads – 182 Power – 291 TOTAL – 821	VS – 147 Roads (JO–04) – 0 Roads (JO–05) – 184 Power – 277 TOTAL – 608	VS – 138 Roads (JO–04) – 34 Roads (JO–05) – 154 Power – 318 TOTAL – 644	VS – 1508 NMT – 1029 Roads (JO–04) – 34 Roads (JO–05) – 871 Power – 1379 TOTAL – 4821
1.1.3	Number of ad-hoc QA/QC reports	Output	Number of additional reports completed per request of USAID (reports)	Sector	Report review	Ad-hoc/Sector Team Leads	–	VS – 3 NMT – 4 Roads – 0 Power – 21 TOTAL – 28	VS – 4 NMT – 0 Roads – 0 Power – 18 TOTAL – 22	VS – 4 NMT – 0 Roads – 1 Power – 14 TOTAL – 19	VS – 5 Roads (JO–04) – 0 Roads (JO–05) – 7 Power – 5 TOTAL – 17	VS – 5 Roads (JO–04) – 0 Roads (JO–05) – 6 Power – 7 TOTAL – 18	VS – 21 NMT – 4 Roads (JO–04) – 0 Roads (JO–05) – 14 Power – 65 TOTAL – 104
1.1.4	Percentage of satisfactory test results where QA testing results were validated	Outcome	Materials tested by materials testing laboratory receiving satisfactory results (percentage)		Materials testing laboratory results documentation review	Monthly/ Materials Testing Manager	–	95%	98%	95.40%	94%	95%	95%
1.1.5	Number of QC tests conducted by IP and observed by EQUALS staff	Output	Number of QC tests conducted by IP and observed by EQUALS staff to verify results (QC tests)		Site visits by QA engineer including QA monitoring, observation, and documentation of findings.	Monthly/Team Lead (Roads)	–	1264	1031	2243	779	556	5873
1.1.6	Percentage of Environmental compliance checks where appropriate mitigation measures are in place	Outcome	Projects checked by QA engineers for environmental compliance receiving satisfactory results (percentage)	Sector	Review of IP environmental compliance documentation; environmental compliance report	Monthly/ Sector Team Leads	–	84%	92%	94%	88%	92%	90%

APPENDIX E: EQUALS PMP DATA FOR OCTOBER 1, 2012 – DECEMBER 31, 2013

#	Performance Indicator	Impact/ Outcome/ Output	Indicator Definition & Unit of Measurement	Disaggregation	Data Source & Approach to Data Collection	Frequency, Person/Org Responsible	Base-line	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sep 2013	Oct-Dec 2013	Totals: Oct 2012– Dec 2013
INTERMEDIATE RESULT 1.2: ASSIST USAID/OEGI WITH GEOGRAPHIC INFORMATION OF INFRASTRUCTURE INVESTMENTS													
1.2.1	1.2.1	Number of maps produced	Output	Number of maps AIDC unit produces per USAID request (map)		Map request log review	–	24	18	18	46	38	144
1.2.2	Average response time to produce a map	Output	Average response time to produce a map per USAID request (hours)		Initial request time report/submission time report; monitoring form	Monthly/AIDC Team Lead	–	72 hrs	96 hrs	96 hrs	96 hrs	96 hrs	91 hrs
STRATEGIC OBJECTIVE 2: GIROA TECHNICAL SUPPORT AND CAPACITY DEVELOPMENT FOR MINISTRIES													
INTERMEDIATE RESULT 2.1: IMPROVED CAPACITY OF THE AFGHAN WATER SECTOR													
2.1.1	Number of TSSCoW library soft copies available on digital library	Output	Number of TSSCoW library soft copy documents uploaded on digital library (document)		Website review	Monthly/ Water Team Lead	–	N/A	N/A	N/A	N/A	204	204
2.1.2	Number of meetings with TSSCoW administered by EQUALS staff	Output	All the meetings facilitated by EQUALS with TSSCoW to assist with transitioning the administrative affairs to TSSCoW with minimum or no involvement by USG		Meeting minutes review	Monthly/ Water Team Lead	–	6	10	4	4	3	27
2.1.3	Number of hours of trainings facilitated by IRD EQUALS staff Water sector	Output	Number of trainings facilitated by IRD EQUALS staff for Water sector (hours)		Training materials and module review; training course evaluation/ report; attendants sheet with hours	Monthly/ Water Team Lead	–	N/A	160 hrs	100 hrs	119 hrs	143 hrs	522 hrs

APPENDIX E: EQUALS PMP DATA FOR OCTOBER 1, 2012 – DECEMBER 31, 2013

#	Performance Indicator	Impact/ Outcome/ Output	Indicator Definition & Unit of Measurement	Disaggregation	Data Source & Approach to Data Collection	Frequency, Person/Org Responsible	Base-line	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sep 2013	Oct-Dec 2013	Totals: Oct 2012– Dec 2013
2.1.4	Number of staff trained within Water sector	Output	Number of Water sector staff successfully completing the trainings provided by IRD EQUALS (Staff Member)	Gender; type of training	Training attendants register; pre and post test assessments	Monthly/ Water Team Lead	–	N/A	Hydrodiplomacy: F – 2, M – 21 Public Admin: F – 1, M – 7 Water Governance: F – 1, M – 16 TOTAL: F – 4, M – 44	Int'l Law & TBW: F – 2, M – 33 CB Mgmt PI: F – 2, M – 8 Primavera: F – 0, M – 13 TOTAL: F – 4, M – 54	OJT for MEW Eng: F – 0, M – 9 KU Presentations: F – 3, M – 5 Materials Testing: F – 3, M – 6 TOTAL: F – 8, M – 28	CB Mgmt P2: F – 2, M – 5 PM Training: F – 0, M – 3 China OST: F – 0, M – 5 Design Group: F – 0, M – 20 Pilot CB Workshop: F – 6, M – 10 TOTAL: F – 6, M – 53	Training in Seepage and Stability of Embankment Dams: F – 0, M – 8 Training in Engineering Report Writing: F – 0, M – 10 Male – 179 Female – 22
2.1.5	Percentage change in pre and post test assessments as a result of trainings implemented by IRD	Outcome	Total percent change from baseline to end line score of Water sector staff who successfully completed training (percentage)	Gender; MoEW/ TSSCoW/type of training	Training attendants register; pre and post test assessments	Monthly/ Water Team Lead	–	N/A	N/A	N/A	N/A	N/A	N/A
INTERMEDIATE RESULT 2.2: IMPROVED CAPACITY OF GIROA OEGI-SUPPORTED MINISTRIES TO MONITOR AND TRACK INFRASTRUCTURE PROJECTS													
2.2.1	Number of on-budget assets catalogued in the Infrastructure Database Center	Output	Number of on-budget assets catalogued in the Infrastructure Database Center established at GIROA Ministries (assets)	Ministry	Document review/ Database review	Monthly/AIDC Team Lead	–	MoPW: 7,500 MoPH: 1,400 MoM/AGS: 60,000 MoEc: 75,000 MoEd: 4,600	MoPW: 527 MoPH: 215 MoM/AGS: 6448 MoEc: 1540 MoEd: 900	MoPW: 1054 MoPH: 430 MoM/AGS: 12896 MoEc: 30800 MoEd: 1800	MoPW: 2109 MoPH: 860 MoM/AGS: 25793 MoEc: 61600 MoEd: 3600	MoPW: 1582 MoPH: 645 MoM/AGS: 19345 MoEc: 46200 MoEd: 2700	MoPW: 5272 MoPH: 2150 MoM/AGS: 64482 MoEc: 140140 MoEd: 9000
2.2.2	Number of Ministry staff participating in training of trainer (TOT) activities at GIROA OEGI-supported Ministries	Output	Number of Ministry staff who successfully completed training of trainer activities at GIROA OEGI-supported Ministries (staff member)	Gender (F/M); Ministry	Training attendance register	Monthly/AIDC Team Lead	–	0	0	0	PW: F – 3, M – 4 MoPH: F – 1, M – 5 MoM/AGS: F – 1, M – 3 MoEc: F – 1, M – 4 MoEd: M – 4 TOTAL TRAINED (MALE) = 20 TOTAL TRAINED (FEMALE) = 6	MPW: F – 4, M – 7 MoPH: F – 1, M – 7 MoM/AGS: M – 7 MoEc: F – 3, M – 6 MoEd: M – 8 TOTAL TRAINED (MALE) = 35 TOTAL TRAINED (FEMALE) = 8	MPW: F – 7, M – 11 MoPH: F – 2, M – 12 MoM/AGS: F – 1, M – 10 MoEc: F – 4, M – 10 MoEd: M – 12 TOTAL TRAINED (MALE) = 55 TOTAL TRAINED (FEMALE) = 14

APPENDIX E: EQUALS PMP DATA FOR OCTOBER 1, 2012 – DECEMBER 31, 2013

#	Performance Indicator	Impact/ Outcome/ Output	Indicator Definition & Unit of Measurement	Disaggregation	Data Source & Approach to Data Collection	Frequency, Person/Org Responsible	Base-line	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sep 2013	Oct-Dec 2013	Totals: Oct 2012– Dec 2013
2.2.3	Number of training hours conducted by the TOT Ministry Staff	Outcome	Number of hours of trainings facilitated by the TOT Ministry Staff (hours)	Ministry	Training materials review; training course evaluation/ report; attendants sheet with hours	Monthly/AIDC Team Lead	-	0	0	0	MPW: 144hrs MoPH: 144hrs MoM/AGS: 144hrs MoEc: 144hrs MoEd: 144hrs	MPW: 128hrs MoPH: 128hrs MoM/AGS: 128hrs MoEc: 128hrs MoEd: 128hrs	MPW: 272hrs MoPH: 272hrs MoM/AGS: 272hrs MoEc: 272hrs MoEd: 272hrs
STRATEGIC OBJECTIVE 2: GIROA TECHNICAL SUPPORT AND CAPACITY DEVELOPMENT FOR MINISTRIES													
INTERMEDIATE RESULT 2.1: IMPROVED CAPACITY OF THE AFGHAN WATER SECTOR													
2.1.1	Percentage of TSSCoW library soft copies available on digital library	Output	Percentage of TSSCoW library soft copy documents uploaded onto digital library (percentage)	-	Website review	Monthly/ Water Team Lead	-	40%	65%	100%	100%	100%	100%
2.1.2	Number of meetings with TSSCoW facilitated by EQUALS staff	Output	All of the meetings facilitated by EQUALS with TSSCoW to assist with transitioning the administrative affairs to TSSCoW with minimum or no involvement by USG	-	Meeting minutes review	Monthly/ Water Team Lead	-	2	1	2	1	6	7
2.1.3	Number of MoEW staff trained within Water sector	Output	Number of Water sector staff successfully completing the trainings provided by IRD EQUALS (Staff Member)	Gender; type of training	Training attendants register; training materials	Monthly/ Water Team Lead	-	TOTAL: 21 (F-4, M-17)	TOTAL: 21 (F-6, M-15)	TOTAL: 21 (F-4, M-17)	Training in "Review of Geo-Technical Investigation Report for Project Design" (F-2, M-7) River Basin Management Observational Tour to Turkey (F-0, M-5) English Language training class for MoEW employees (F-2, M-5)	Female-14 Male-49	46

APPENDIX E: EQUALS PMP DATA FOR OCTOBER 1, 2012 – DECEMBER 31, 2013

#	Performance Indicator	Impact/ Outcome/ Output	Indicator Definition & Unit of Measurement	Disaggregation	Data Source & Approach to Data Collection	Frequency, Person/Org Responsible	Base-line	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sep 2013	Oct-Dec 2013	Totals: Oct 2012– Dec 2013
STRATEGIC OBJECTIVE 2: GIROA TECHNICAL SUPPORT AND CAPACITY DEVELOPMENT FOR MINISTRIES													
INTERMEDIATE RESULT 2.2: IMPROVED CAPACITY OF GIROA OEGI-SUPPORTED MINISTRIES TO MONITOR AND TRACK INFRASTRUCTURE PROJECTS													
2.2.1	Number of on-budget assets catalogued in the Infrastructure Database Center	Output	Number of on-budget assets catalogued in the Infrastructure Database Center established at GIROA Ministries (assets)	Ministry	Document review/ Database review	Monthly/AIDC Team Lead	-	Activity Completed	Activity Completed	Activity Completed	Activity Completed	-	Activity Completed
2.2.2	Number of Ministry staff participating in training of trainer (TOT) activities at GIROA OEGI-supported Ministries	Output	Number of Ministry staff who successfully completed training of trainer activities at GIROA OEGI-supported Ministries (staff member)	Gender; Ministry	Training attendance register	Monthly/AIDC Team Lead	-	Activity Completed	Activity Completed	Activity Completed	Activity Completed	-	Activity Completed

APPENDIX F: EQUALS PMP DATA FOR JANUARY 1, 2014 – APRIL 17, 2014

#	Performance Indicator	Impact/ Outcome/ Output	Indicator Definition & Unit of Measurement	Disaggregation	Data Source & Approach to Data Collection	Frequency, Person/Org Responsible	Base-line	Jan	Feb	Mar	April 01–17, 2014	Actual Jan 01–Apr 17, 2014	TARGET: Jan 01–Apr 17, 2014
STRATEGIC OBJECTIVE 1: QUALITY ASSURANCE/QUALITY CONTROL OF INFRASTRUCTURE PROJECTS ACROSS AFGHANISTAN													
INTERMEDIATE RESULT 1.1: QA INSPECTION OF USAID-FUNDED INFRASTRUCTURE PROJECTS													
1.1.1	Number of projects receiving QA/ QC monitoring (including environmental)	Output	Number of projects monitored by EQUALS engineers (project)	Sector/Program	Workplan review; modifications to work plan	Monthly/ Sector Team Leads	-	VS-8 Roads (JO-04)-1 Roads (JO-05)-1 Power-7 TOTAL-17	VS-3 Roads (JO-04)-1 Roads (JO-05)-1 Power-7 Total-12	VS-3 Roads (JO-04)-1 Roads (JO-05)-1 Power-7 TOTAL -12	VS-3 Roads (JO-04)-1 Roads (JO-05)-1 Power-7 TOTAL-12	17	18
1.1.2	Number of inspection reports produced for each project	Output	Number of inspection reports submitted by EQUALS engineers for each project including monitoring, observation, and documentation of findings (inspection report)	Sector/Project	Inspection report review	Monthly/ Sector Team Leads	-	VS-60 Roads (JO-04)-2 Roads (JO-05)-31 Power-79 TOTAL-172	VS-31 Roads (JO-04)-2 Roads (JO-05)-28 Power-68 TOTAL-129	VS-44 Roads (JO-04)-2 Roads (JO-05)-31 Power-80 TOTAL-157	VS-28 Roads (JO-04)-1 Roads (JO-05)-15 Power-40 TOTAL-84	542	546
1.1.3	Number of QC tests conducted by IP and observed by EQUALS staff	Output	Number of QC tests conducted by IP and observed by EQUALS staff to verify results (QC tests)	-	Site visits by QA engineer including QA monitoring, observation, and documentation of findings.	Monthly/Team Lead (Roads)	-	0	0	0	0	0	0
1.1.4	Number of independent materials tests conducted	Output	Number of independent materials tests conducted by EQUALS to verify IP materials	-	-	Monthly/ Team Lead (Laboratory Manager)	-	0	0	0	0	0	0
INTERMEDIATE RESULT 1.2: ASSIST USAID/OEGI WITH GEOGRAPHIC INFORMATION OF INFRASTRUCTURE INVESTMENTS													
1.2.1	Average response time to produce a map	Outcome	Average response time to produce a map per USAID request (hours)	-	Initial request time report/submission time report; monitoring form	Monthly/AIDC Team Lead	-	96hrs	96hrs	96 hrs	96 hrs	96 hrs	96 hrs

APPENDIX G: EQUALS PMP DATA FOR JULY 1, 2014–APRIL 17, 2016

#	Performance Indicator	Impact/ Outcome/ Output	Indicator Definition & Unit of Measurement	Disaggregation	Data Source & Approach to Data Collection	Frequency, Person/Org Responsible	Q3 2014 July–Sep 2014	Q4 2014 Oct–Dec 2014	Q1 2015 Jan–Mar 2015	Q2 2015 Apr–Jun 2015	Q3 2015 Jul–Sep 2015	Q1 2016 Oct–Dec 2015	Q1 2016 Jan–Mar 2016	Actual: Jul 2014–April 2016	Required: Jul 2014–Apr 2016
STRATEGIC OBJECTIVE 1: QUALITY ASSURANCE/QUALITY CONTROL OF INFRASTRUCTURE PROJECTS ACROSS AFGHANISTAN															
INTERMEDIATE RESULT 1.1: QA INSPECTION OF USAID-FUNDED INFRASTRUCTURE PROJECTS															
I.1.1	Number of projects receiving QA/QC monitoring	Output	Number of projects monitored by EQUALS engineers (project)	Sector	Work plan review; modifications to work plan	Monthly/ Sector Team Leads	VS-13 NMT-3 Roads-2 Power-5	VS-13 NMT-3 Roads- 2 Power-5	VS-10 NMT-2 Roads- 5 Power-5	VS-10 NMT-2 Roads- 5 Power-5	VS-10 NMT-2 Roads- 5 Power-5	VS-10 NMT-2 Roads-5 Power-5	VS-10 Roads-7 Power-5	VS-7 Roads-6 Power-5	VS-7 Roads-6 Power-5
I.1.2	Number of inspection reports produced for each project	Output	Number of inspection reports submitted by EQUALS engineers for each project including monitoring, observation, and documentation of findings (inspection report)	Sector	Inspection report review	Monthly/ Sector Team Leads	VS-383 NMT-931 Roads-263 Power-169	VS-318 NMT-77 Roads-120 Power-164	VS-157 Roads-192 Power-209	VS-167 Roads-220 Power-189	VS-146 Roads-252 Power-164	VS-182 Roads-250 Power-216	VS-108 Roads-170 Power-330	VS-1461 NMT-1008 Roads-1398 Power-1441	VS- 621 NMT-410 Roads-125† Power-1240
I.1.3	Number of ad-hoc QA/QC reports	Output	Number of additional reports completed per request of USAID (reports)	Sector	Report review	Ad-hoc/Sector Team Leads	VS-3 NMT-4 Roads- 0 Power-21	VS-3 NMT-4 Roads- 0 Power-23	VS-4 Roads-1 Power-24	VS-4 Roads-1 Power-31	VS-4 Roads-2 Power-30	VS-0 Roads-2 Power-60	VS-0 Roads-2 Power-0	VS-0 Roads-2 Power-189	VS-0 Roads-2 Power-108
I.1.4	Percentage of satisfactory test results where QA testing results were validated	Outcome	Materials tested by materials testing laboratory receiving satisfactory results (percentage)		Materials testing laboratory test results documentation review	Monthly/ Materials Testing Manager	VS- 95% Roads-98%	VS- 98% Roads-96.3%	VS- 95% Roads-99.3%	VS- 94% Roads-99.6%	VS-95% Roads-87%	VS- 94% Roads-99%	VS-95% Roads-0%	VS-95% Road-96.53 %	VS-100% Road-100%

† The number of JO-09 Actual Deliverables has increased than JO-09 Required Deliverable because of delays in construction activities at 20 and 100 Bed hospitals.