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ADVANCED SCIENCE & PARTNERSHIPS FOR INTEGRATED RESOURCE DEVELOPMENT PROJECT

QUARTERLY REPORT

April – June 2016

July 2016

This publication was produced for review by the United States Agency for International Development. It was prepared by Mendez England & Associates.

Advanced Science & Partnerships for Integrated Resource Development

REPORT THIRD QUARTER FY 2016

July 2016

Contract No. AID-OAA-I-14-00070/AID-111-TO-15-00001

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List of Acronyms

ASPIRED	Advanced Science and Partnerships for Integrated Resource Development
ATTC	Aquaculture Technology Transfer Center
AAB	Ararat Artesian Basin
BMO	Basin Management Organization
CEW	Clean Energy and Water
CoP	Chief of Party
COR	Contracting Officer's Representative
DO	Development objective
DSS	Decision Support System
EA	Environmental Assessment
EC	European Commission
EIMC	Environmental Impact Monitoring Center
EMMP	Environmental Mitigation and Monitoring Plan
ERGIS	Environmental Research and GIS
ESS	Environmental Scoping Statement
EU	European Union
GIS	Geographic Information System
GOA	Government of Armenia
HMC	Hydrogeological Monitoring Center
ICARE	International Center for Agribusiness Research and Education
IEE	Initial Environmental Examination
IR	Intermediate Result
ME&A	Mendez England and Associates
MoA	Ministry of Agriculture
MNP	Ministry of Nature Protection
MoENR	Ministry of Energy and Natural Resources
NGO	Non-Governmental Organization
PMP	Performance Management Plan
QA/QCQuality	Assurance and Quality Control
SCADA	Supervisory Control and Data Acquisition
PEER	Partnership for Enhanced Engagement and Research
PSRC	Public Services Regulatory Commission
SCWS	State Committee on Water Systems
SOW	Scope of Work
SWCIS	State Water Cadaster Information System
TO	Task Order
WRMA	Water Resources Management Agency
WADIDIQ	Water and Development Indefinite Delivery/Indefinite Quantity Contract
WUP	Water Use Permit
USAID	United States Agency for International Development
USATF	United States-Armenia Task Force
USGS	United States Geological Survey

1. Executive Summary

This Report describes the programmatic activities implemented by the Advanced Science and Partnerships for Integrated Resource Development (ASPIRED) Project in the third quarter of Year 1, covering the period of April 1 through June 30, 2016. The Quarterly Report reviews progress and achievements in each of the Project areas during the reporting period, and describes planned activities for the next quarter. It also highlights challenges and actions taken.

1.2 ASPIRED Summary

On September 29, 2015, the United States Agency for International Development (USAID) awarded Mendez England & Associates (ME&A) a contract to implement the ASPIRED project under the Water and Development IDIQ (WADI). The purpose of the ASPIRED project is to support sustainable water resource management and sustainable practices of water users in the Ararat Valley through the use of science, technology, innovation and partnership initiatives. The ultimate goal is to reduce the rate of groundwater extraction in the Ararat Valley to the sustainable levels.

To this end, the ASPIRED project focuses on several critical areas:

1. Water Resource Data
2. Technology
3. Regulatory framework/enforcement of laws
4. Coordination across stakeholders

A strong emphasis is placed on building partnerships with USAID Global Development Lab, the US Geological Survey (USGS), the private sector, research organizations and international donors to pilot innovative water and energy efficiency technologies, and to promote better water resource monitoring, planning and sustainable management.

1.3 Highlights from the Reporting Period

- The following deliverables were submitted to USAID during the reporting period:
 - The proceedings of the training program on the inventory of groundwater wells and data collection protocols delivered by USGS;
 - Data Availability and Gap Analysis Report;
 - Assessment of Opportunities for Application of Advanced Technologies in Armenia in the Aquaculture Sector.
 - Stakeholders' Mapping Report
- The past quarter was marked with the following achievements of the ASPIRED project: 1020 wells, including 340 in 136 fish farms, and 98 groups of springs in the Ararat Valley were inventoried
- Completed the designs of the hydrological and climate change schemes of the decision support tool for Ararat Valley.
- The ASPIRED team digitized data on the lithological structure of the groundwater wells of the Ararat Valley, based on the fact sheets received from the National Academy of Sciences..
- The ASPIRED team digitized the hydrogeological paper-based map received from the Ministry of Energy and Natural Resources.
- Implementation of the Hayanist irrigation project began in June.
- Three meetings of the Interagency Task Force were held. The economic analysis of the

aquaculture sector and the preliminary recommendations on the optimal fee rates were discussed with the stakeholders during the ITF meetings and individual consultations.

- The ASPIRED team assisted MNP in the adoption process of the Southern Basin Management Plan. The plan was adopted by the Government on May 26, 2016.

2. Summary of Performance Indicators

Summary of performance indicators for the second quarter of FY 2016 is presented in the table below.

	Indicator	Target for Year 1	Quarter 3	LOP (as of now)	Frequency of reporting	Notes: Descriptions/Comments/Assumptions
1.1.1	Percent (of total) of datasets for the Ararat Valley publicly accessible	0	0	0	Annual	This indicator is 0 for Year 1. Total # of the main datasets are required which shall be incorporated in the geo-coded system for evidence-based decision making. 80% of all datasets available on Ararat Valley will be made public which is actually 100% of all the data which can be made publicly available in compliance with the RA legislation. The data will be disaggregated by ASPIRED project and USGS, Global Lab in proportions. Further projections (setting of targets) on data disaggregation by these agencies will be possible to make based on the Y1 outcomes.
1.1.2	Percent (of total) wells mapped in the Ararat Valley.	30	27 %	27%	Annual	The data was generated based on the inventory of wells and springs in Ararat Valley conducted by the HMC under the supervision of the ASPIRED project.
1.1.3	Number of stakeholders engaged in data collection activities	5	0	7	Annual	The target for Year 1 includes existing ASPIRED stakeholders (four government agencies and PEER grantee, all engaged in data collection activities). ASPIRED works with these organizations, plus two more stakeholders - the USGS and the Institute of Water Problems - are likewise engaged in the collection of data on groundwater resources in the Ararat Valley. The ASPIRED collaborates with the USGS under the data component. The ASPIRED team continued collaboration with these stakeholders during the 3 rd quarter.

1.2.1	GIS based DSS for the Ararat Valley developed	0	0	0	End of project	The target is 0 for Y1.
1.3.1	Number of fisheries with automatic data system installed	0	0	0	Annual	The target is 0 for Y1. Installation of the system is planned to start from Y2.
1.4.1	Percent (of total) coverage of groundwater extraction points monitored	28%	24%	24%	Annual	The data was obtained based on the inventory data. ¹
2.1.1	Number of groundwater extraction reduction technologies piloted and evaluated	0	0	0	Annually	The target is 0 for Y1. The activities are planned for Y2.
2.1.2	Thousands of cubic meters of water saved annually in Ararat Valley	0	0	0	Annually	The target is contingent upon indicator 2.1.1 which is set 0 for Y1.
2.2.1	Number of water use-related energy efficiency and/or renewable energy technologies piloted and evaluated	0	0	0	Annually	The target is 0 for Y1. The activities are planned for Y2.
2.2.2	Megawatt hour of energy saved annually	0	0	0	Annually	This target is contingent upon indicator 2.2.1 which is 0 for Year 1.
2.2.3	Clean energy generated annually	0	0	0	Annually	This target is contingent upon indicator 2.2.1 which is 0 for Year 1.
2.2.4	Gains in the reduction of GHG emissions as a result of USG assistance	0	0	0	Annually	This target is contingent upon indicator 2.2.1 which is 0 for Year 1.
2.3.1	Number of successful technologies recommended and shared with stakeholders and policy-makers	0	0	0	Annually	This target is 0 for Y 1.
2.4.1	Number of technologies to permanently close illegal or	0	0	0	Annually	This target is 0 for Y 1.

¹ About 3,318 groundwater wells existed in the Ararat Valley in 2014, out of which 1,096 wells were operational and used for various purposes according to WUP data as presented in the Draft Ararat Valley Management Plan. About 250 wells used by fish farms were monitored by HMC in 2014-2015 (based on contracts), 44 wells used by water supply companies for drinking purposes were monitored, 3 groundwater wells used in fish farms were monitored using automated online monitoring system (with EU funding). Ten more wells in selected fish farms will be monitored with ASPIRED funding by the end of the project. It is also expected that the percent of groundwater extraction monitored will increase gradually as a result of improved regulations on compliance and enforcement and strengthened capacities of the SEI and BMOs

	abandoned wells <u>piloted</u>					
3.1.1	Number of trainings for building capacity of MNP including BMO in groundwater monitoring	0	0	1	Quarterly	No training has been conducted during the last quarter.
3.1.2	Number of ministry staff (and other agencies) trained in sustainable water resource management, including environmental compliance.	0	0	0	Quarterly	The indicator refers to the trainings on enhanced up-to-date SWCIS and MIS for the Ararat Valley and on enhanced transparent water use permitting, control and oversight systems. The indicator will be disaggregated by gender.
3.2.1	Number of workshops and consultations with stakeholders to discuss water fee levels	4	3	4	Quarterly	Three ITF meetings were organized during the reporting period. This activity will be continued till September 2016.
3.3.1	Package of recommendations to address water permitting monitoring and enforcement measures provided to GoA	0	0	0	Annually	The targets set in the PMP refer to the package of recommendations, drafted by ASPIRED and submitted to the Government. The target is set 0 for Year 1.
4.1.1	Number of international and local organizations participating in the system mapping activities	8	1	17	Quarterly	The system mapping report was completed and submitted to USAID in May.
4.2.1	Percent of total funding leveraged from stakeholders for water resources management activities.	0	0	0	Annually	This indicator refers to the in-kind and financial contribution to be made by implementing partners. It will be reported in the next quarter, subject to the completion of the project when the real figures on the cost share are provided by the partners.
	Percent of population living in targeted areas with improved water management	0	0	0	Annually	This figure will be estimated upon completion of projects with the community impact.
	Number of key implementation steps taken to improve water management in Ararat valley	1	0	1	Annually	The team started the inventory of groundwater wells and springs in Ararat Valley in Year 1.

3. Program Implementation

Water Resource Data

During the reporting period, the team worked on the following major tasks:

- Supervising the HMC's implementation of the inventory of wells, springs in the Ararat Valley;
- Designing of the components of the decision support system for Ararat Valley;
- Collaborating with the USGS and USAID Global Development Lab.

The ASPIRED team supervised the implementation of the inventory of the wells and springs of Ararat Valley by the HMC. The ground-truthing specialist conducted spontaneous site visits to inspect the quality and accuracy of the datasets generated by the HMC specialists. The HMC maintained adequate levels of the work and promptly addressed minor deficiencies and comments made by the team. The Inception and Interim Reports describing the process were submitted by the HMC to the ASPIRED team in the end of April and June, respectively. The preliminary GIS map for the groundwater wells in Ararat Valley was prepared based on the database compiled by the HMC with the field measurement data for 800 wells. The finalized database can be used to conduct future analysis and to generate maps for Ararat Valley.

The ASPIRED data team collaborated with the USGS team on the design of the decision support tool to be linked with the USGS's design of the hydrogeological framework for Ararat Valley. The data team completed and shared designs of the hydrological and climate change schemes with the USGS. Furthermore, the team digitized the data on the lithological structure of the groundwater wells of the Ararat Valley using fact sheets from the National Academy of Sciences. The English version database was also provided to the USGS for use in the hydrogeological framework. Hydrogeological and geological print maps were also received from the Ministry of Energy and Natural Resources for the design of their digital types, with hydrogeological map digitization completed by the ASPIRED team.

The team communicates with the Global Development Lab and its GeoCenter for the acquisition of high-resolution multi-band satellite images for the Ararat Valley's priority area, covering the territory of Armenia and Turkey. The request to the GeoCenter was submitted on June 22.

Two project deliverables of the data component were submitted to USAID last quarter: the proceedings of the training program on the inventory of groundwater wells and data collection protocols delivered by USGS, as well as [the Data Availability and Gap Analysis Report](#), submitted in April and May, respectively.

Additional Support to MNP/WRMA:

The Southern Basin Management Plan was approved by the government on May 26. To support the adoption, the team provided clarifications to the Deputy Minister on approaches and methods used for estimating the volumes of ecological flow in the rivers, national and strategic water reserve, cost-estimates for selected technical measures and sources of the funding. The Deputy Minister utilized this information for his presentation at the Ministers Advisors Committee session on May 12. The team also worked with the specialists of the WRMA on incorporating the Ministers Advisor Committee's comments in the Southern BMP.

Low Cost and Water Efficiency Technologies

In April, the ASPIRED team submitted the concept paper for the reuse of water from the fish farm for irrigation purposes in Hayanist community to USAID for approval. The project will be implemented in collaboration with ERGIS NGO with its funding from the UNDP Small Grants Program. Coca-Cola HBC will join the effort after signing a Memorandum of Cooperation with USAID. On June 17, the respective commitment letter was signed by ASPIRED, ERGIS NGO, Hayanist community and the fish farm to ensure parties' commitments to the obligations for the project. Thus far, Communnakhagits LLC was subcontracted to draw the irrigation network scheme under the supervision of the engineering team.

The ASPIRED team also worked on the concept paper on the Aquaculture Technology Transfer Center (ATTC) project in collaboration with the Acopian Center for Environment of the American University of Armenia. Estimates were made for different types of technologies to be introduced at the demonstration fish farm. The full concept paper will be submitted to USAID in October 2016.

The Report titled [Assessment of Opportunities for Application of Advanced Technologies in Armenia in the Aquaculture Sector](#) was revised based on the comments from the COR and the Global Lab expert Jim Alleman. Based on these comments, the sections related to the aquaponics were expanded and the final report was submitted to USAID in May.

Water Regulation and Enforcement

Over the reporting period, three meetings of the Interagency Task Force (ITF) were conducted with representatives from the government agencies, Parliament, President's office and NGOs. The ASPIRED team presented the final results of the survey among fish farms of Ararat and Armavir provinces, the economic analysis of the fish farming sector, and the analysis of the optimal groundwater fee rate which also included the block scheme of the resource fee.

The ASPIRED team received participating government agencies' written feedback on the proposed mechanisms of fee formation, particularly the applicability of the block scheme and its associated risks. The ITF members also presented their feedback on the proposed mechanisms during the 4th meeting held in June. A series of working meetings and consultations with representatives of the Ministry of Nature Protection/WRMA, the Ministry of Agriculture, the President's office, individual fish farmers as well as fish farmers' associations were organized before and after the ITF meetings.

The fish farm owners overall are highly critical on the likely increase of the groundwater resource fees, stating this would further escalate their economic difficulties and force many enterprises to close. They suggested that businesses should be given sufficient time to prepare themselves for the increase of resource fees. Some fish farm owners raised comments that increasing resource fees would not solve water conservation issues, but instead lead to the imbalance between the sector players - i.e. those who can afford paying more and those who cannot. An alternative solution is to set more realistic quotes, reduce the allowed levels for water extraction by the fisheries, and strengthen monitoring and compliance mechanisms on the part of the regulatory agencies.

Due to the high sensitivity and complexity of the issue, it has been decided to postpone the submission of the final report on the groundwater use fee to USAID till December 2016. The ASPIRED team plans to proceed with stakeholder consultations at all levels to solicit more feedback and provide a possible solution that takes into consideration opinions and interests of all concerned parties. This decision has been endorsed by USAID.

The ITF provides a platform for opinion sharing both for the decision and policy makers and groundwater users, i.e. fish farms. The draft raw version of the report will be submitted to USAID in early August, after which stakeholder consultations will be conducted to solicit more feedback. The ASPIRED team also plans to organize a high-level presentation of the report in September at the policy-makers level. At the presentation, the resource fee recommended approach will be presented by the ASPIRED experts. The conclusions will be then shared with the ITF members during the 5th meeting and followed by the presentation of the recommendations to the larger public. The final report with recommendations will be submitted to USAID in December 2016, followed by a final report submission to the Government of Armenia.

Donor Coordination and Communications

During the reporting period, the ASPIRED team submitted the [Stakeholders' Mapping Report](#) to USAID. The document provides information on existing and potential stakeholders and partners at the local and international levels, covering the government, research, private, public sectors as well as the donor community. The mapping was made by organizations/sectors based on their focus areas in Ararat Valley. In May, the team addressed the COR's comments on the report and re-submitted the updated document to USAID.

Over this reporting period, various meetings were held with different stakeholders to discuss various project-related issues and potential applicants of the USAID's PURE grant. The future grant recipient will be one of the key partners of the project. The ASPIRED team has effectively collaborated with the USAID Global Development Lab and USGS under the Data component as well as AUA Acopian Center for Environment, ERGIS, UNDP Small Grants Program under the Technology component. The commitment letter was signed between the Project, ERGIS NGO, the community and the fish farm for the implementation of the Hayanist irrigation project. It is also anticipated that USAID would sign a Memorandum of Cooperation with Coca-Cola HBC in July to provide funding to the ASPIRED project activities.

The ASPIRED project responded to USAID's request to participate in the Water Ideathon event. On May 24, the team held the presentation on water issues for the potential applicants of the Ideathon. The Ideathon was later cancelled due to insufficient number of applications received. The Ideathon may be organized next year with the joint efforts of the USAID, the ASPIRED, the Ministry of Nature Protection and the upcoming PURE grantee.

The ASPIRED team also continued communications activities by preparing and disseminating information on new developments and project events. The vehicles for information dissemination are the project web site, Facebook page and USAID resources. A success story highlighting the Armenian Government approval of the Southern Basin Plan was prepared. All project deliverables are also uploaded on the project webpage library.

4. General Administrative Issues

In addition to financial reporting and accounting, other administrative tasks referred to the following:

- Logistical support was provided in the organization of the ITF meetings in Aghveran.
- The contract was signed with Communnakhagits LLC for the design works on the Hayanist project.
- USAID approved the appointment of the short-term groundtruthing/data specialist.
- The ASPIRED team hired a new administrative assistant.
- The RFA for additional LOEs for the TCN STTA Benoit Laplante and CCN Khosrov Harutyunyan was submitted to USAID for approval on June 17.

5. Environmental Compliance

The environmental documentation for the Hayanist project – including the Environmental Review Checklist, Environmental Mitigation and Monitoring Plan, and Certification of No Adverse or Significant Effects on the Environment – was prepared and enclosed to the package of documents submitted for USAID approval. Measures were also taken to ensure the irrigation water discharged from the fish farm is free from hazardous elements, such as hormones or antibiotics, or their concentration is not harmful. The owner of the fish farm assured that no antibiotics or hormones have been ever used and presented the samples of fish feed, the composition of which was carefully examined by the Project's Environmental Specialist.

6. Planned Activities for the Next Quarter

6.1 Data

- Continue regular technical meetings with the HMC, subcontractor for the inventory of groundwater wells and fish farms in the Ararat Valley, as well as field supervision of inventory data collection. Advise HMC on finalization of the deliverables as it is envisioned in the Subcontract, as well as filling the inventory gaps.
- Initiate the process of identifying fish farms in the Ararat Valley for installing the groundwater use online monitoring system (SCADA). This work must be conducted in close cooperation with the WRMA, its Akhuryan, Hrazdan and Ararat BMOs, and other stakeholders. Design and conduct a presentation on the automated online monitoring system to the stakeholders.
- Start designing the steps for improving the State Water Cadaster information system, including integration of the field inventory and other datasets.
- Continue developing GIS layers using the ASPIRED Project's available datasets and new datasets provided by the stakeholder agencies. GIS development will involve geo-referencing and digitizing paper maps on geology and hydrogeology of the Ararat Valley that were provided by the Hydrogeological Fund of the Ministry of Energy and Natural Resources.
- Continue cooperation with the USGS team on preparing the hydrogeological framework of the Ararat Valley and linking it with the DSS for the Ararat Valley water resources.

- Finalize and submit to USAID a Project report on the conceptual scheme of the DSS for the Ararat Valley.
- Continue working with the USAID Global Development Lab's Geocenter on acquiring the high resolution satellite images for the Ararat Valley for the summer of 2016 or 2015.

6.2 Pilot technologies

- Start the construction phase of Hayanist project based on the approved budget and design.
- Complete the process of selection of a site of ATTC project and finalize the first draft of the respective project concept and environmental documentation.
- Depending on the available budget calculated based on the actual costs on Hayanist project and the approved budget for the ATTC project, start the process of selecting potential sites for the project implementation in the next year.

6.3. Legal and Policy Issues

- Upon peer review, submission of the first draft Report on the Groundwater Fee Analysis to USAID – deadline August 12.
- Stakeholder meetings to discuss recommendations contained in the draft report and to make improvements based on the stakeholders' suggestions
- The presentation of the draft report at the policy-makers level. Participation of the Deputy Prime-Minister Vache Gabrielian is anticipated.

6.4 Performance Management, Communication and Donor Coordination

- Develop outreach information (i.e. success stories, news posts) to reflect ongoing activities of the project.
- Update the project communications resources - web site and Facebook pages
- Attend/facilitate communication with stakeholders.
- Follow-up on the PMP updates and prepare weekly highlights, monthly reports and quarterly reports.

6.5 Environmental Compliance

- Design and conduct environmental and safety training program for the Subcontractor, Hayanist community and other implementing partners before initiation of the rehabilitation works in the Hayanist community. The training is expected to be conducted in September.
- Start implementation of the compliance monitoring of the Hayanist project activities with the approved EMMP.

6.6 Project Management

- Prepare Project Year 2 Work plan and Submit to USAID for approval by August 15, 2016.