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# **ADVANCED SCIENCE & PARTNERSHIPS FOR INTEGRATED RESOURCE DEVELOPMENT PROJECT**

**QUARTERLY REPORT**

**April - June 2019**

July 2019

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# Advanced Science & Partnerships for Integrated Resource Development

## QUARTERLY REPORT THIRD QUARTER FY 2019

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## List of Acronyms

AHGW	Arc Hydro Groundwater
ASPIRED	Advanced Science and Partnerships for Integrated Resource Development
ATTC	Aquaculture Technology Transfer Center
AAB	Ararat Artesian Basin
AAF	Hayastan All-Armenian Foundation
BMO	Basin Management Organization
BMP	Basin Management Plan
CADI	Computer Assisted Development, Inc.
CARD	Center for Agribusiness and Rural Development Foundation
CJSC	Closed Joint Stock Company
CoP	Chief of Party
COR	Contracts Officer's Representative
DO	Development objective
DSS	Decision Support System
EA	Environmental Assessment
EC	European Commission
EE/RE	Energy Efficiency/Renewable Energy
EGO	Economic Growth Office
EIA	Environmental Impact Assessments
EIMC	Environmental Impact Monitoring Center
EMIC	Environmental Monitoring and Information Center SNCO
EMMP	Environmental Mitigation and Monitoring Plan
ERGIS	Environmental Research and Geographic Information Systems
EU	European Union
FAO	Food and Agriculture Organization
FAR	Fund for Armenian Relief
F2F	Farmer to Farmer Project
GMS	Groundwater Modeling System
GIS	Geographic Information System
GOA	Government of Armenia
HMC	Hydrogeological Monitoring Center
ICARE	International Center for Agribusiness Research and Education
INPRM	Inspectorate for Nature Protection and Mineral Resources
IPCC	Intergovernmental Panel on Climate Change
IR	Intermediate Result
ITF	Interagency Task Force
LOP	Life of project
ME&A	ME&A, Inc.
ME	Ministry of Environment
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
PIRS	Performance Indicator Reference Sheet
PMP	Performance Management Plan
PPR	Performance Plan and Report
PURE-Water	Participatory Utilization and Resource Efficiency of Water
SCADA	Supervisory Control and Data Acquisition
SEDF	Sustainable Energy Development Fund
SEIS	Shared Environment Information System
SCWS	State Committee on Water Systems
SOW	Scope of Work
STTA	Short-Term Technical Assistance
SWCIS	State Water Cadaster Information System
3D	Three-dimensional
TO	Task Order
USAID	United States Agency for International Development
USGS	United States Geological Survey
WRMA	Water Resources Management Agency
WUA	Water user association
WUP	Water use permit

## 1. Executive Summary

This report describes the programmatic activities implemented by the Advanced Science and Partnerships for Integrated Resource Development (ASPIRED) Project during the third quarter of Year 4 of the project, from April 1 through June 30, 2019. The report reviews progress and achievements under each of the four project components during the reporting period, as well as describes planned activities for the next quarter. The report also highlights challenges and actions taken to address these challenges.

### 1.2 ASPIRED Project Summary

On September 29, 2015, the United States Agency for International Development (USAID) awarded ME&A, Inc. (ME&A) a contract to implement the ASPIRED Project under the Water and Development IDIQ. 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

The ASPIRED Project places a strong emphasis on building partnerships with the public and private sectors, 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 Main Highlights from the Reporting Period

- Data component:
  - Finalized and integrated the actual water use database into the SWCIS Data Warehouse, including programming of the built-in annual reports on actual water use, testing and debugging of the programmed database;
  - Completed customization of the re-programmed Ecological Flow component of the Water Supply-and-Demand Balance of the Decision Support System (DSS) with the data from the rivers of the Ararat Valley catchment. This component is one of the most important components of the DSS to support the daily activities of the Water Resources Management Agency (WRMA) in water use permitting;
  - Completed re-programming of the Water Supply and Demand Balance component of the DSS Ararat Valley;
  - Designed and conducted the GIS training course for the staff of the WRMA, based on

- the WRMA's request;
- The ASPIRED Project's local sub-contractor completed installation of flow meters and data loggers to monitor actual volumes of groundwater use in the fishery from 4 wells at Max Fish fishery.
  - Technology component:
    - Completion of the water improvement project in Aratashen village;
    - Installation of a booster pump in Sipanik to increase the water flow for irrigation needs.
  - Legal component:
    - On June 27, the Armenian Government approved the draft package of laws that entail amendments to the Water Code and the Code of Administrative Violations of Armenia and includes the requirements of water resources reservation in recreational zones of Armenia. The package is pending submission for the Parliamentary hearings scheduled in September 2019.
  - Communication and Donor Coordination component:
    - Signing of the Cooperation Agreement with Hayastan All-Armenian Fund (AAF) and Armenia Foundation;
    - June 24 community event marking completion of the water reuse project in Aratashen.

## 2. Summary of Performance Indicators

Summary of performance indicators for the third quarter of FY 2019 (Year 4 of the project) is presented in the table below. ASPIRED reports annual data under the IR 2 indicators by the end of each fiscal year.

	Indicator	Year 4 Target/Actual	Actual Quarter 3 of Year 4	LOP Target/Actual	Notes: Descriptions/Comments/Assumptions
<b>IR 1: Establish a comprehensive, user-friendly, open data system that is accessible to all stakeholders.</b>					
<b>Sub-IR 1.1: Ararat Valley Geocoded, real-time, publicly accessible data system that incorporates water resource, groundwater, and hydrological datasets from multiple stakeholders built and shared with the GOA</b>					
<b>Indicators</b>					
1.1.1	Percent (of total) of datasets for the Ararat Valley publicly accessible	20/0	0	80/43	This indicator refers to the datasets related to the water resources in the Ararat Valley which will be accessible for the general public. By the end of the project life cycle, ASPIRED will make 80% of all datasets available on Ararat Valley public, which accounts for 100% of all the data that can be available to the public according to the Armenian legislation.
1.1.2	Percent (of total) wells mapped in the Ararat Valley.	N/A	N/A	100/100%	This indicator corresponds to the inventory of the wells, natural springs and fish farms in Ararat Valley, which the project team successfully completed during Year 1. Therefore, collecting data for this indicator has been completed for the project.
1.1.3	Number of stakeholders engaged in the data collection activities	1/4	4	16/16 <sup>1</sup>	This indicator refers to the number of stakeholders engaged in the groundwater-related data collection activities in the Ararat Valley from different sectors – government, private, and public. ASPIRED completed installation of the flow-meters and data loggers in a fishery owned by Max Fish. State Hydromet Service and Center of Zoology and Hydroecology, and Water Committee provide data to Data and Legal components.

1. Ministry of Environment (ME) with its 2 subdivisions, PEER grantee, Institute of Water Problems, USGS, EU Water Initiatives Project, Ministry of Agriculture, State Hydromet Service, Scientific Center of Zoology and Hydro ecology, Metsamor power plant which are/were involved in the data collection process, fisheries: Alex Grig, Interaqua, Golden Fish, Max Fish, State Hydromet Service, the Center of Zoology and Hydroecology, Water Committee.

<b>Sub-IR 1.2: An online tool for hydrogeological modelling and decision-support for the Ararat Valley that incorporates hydrologic, economic, energy, social equity and environmental data generated</b>					
<b>Indicators</b>					
1.2.1	GIS-based decision support tools for Ararat Valley developed	1/0	0	2/1	This indicator refers to the GIS-based water resource management tools to be developed by the ASPIRED Project on the Ararat Valley. ASPIRED completed the Hydrological Model of the DSS for the Ararat Valley during Quarter 4 of Year 3. The project anticipates completion of the Groundwater Flow Model for the Ararat Valley by the end of Year 4.
<b>Sub-IR 1.3: A publicly accessible system that maximizes the use of open source technology and produces reports based on high-quality, real-time monitoring data created</b>					
<b>Indicators</b>					
1.3.1	Number of fisheries with automatic data system installed	1/1	1	6/4 <sup>2</sup>	By the recommendation of the M ME ASPIRED installed the remaining set of flow meters and data loggers in a fishery owned by Max Fish during Quarter 2.
<b>Sub-IR 1.4: Plan for decentralized, sustainable data collection methods to monitor groundwater resources and strengthened implementation capacities of partners developed in partnership with the Government of Armenia (GOA) and local stakeholders</b>					
<b>Indicators</b>					
1.4.1	Percent (of total) coverage of the groundwater extraction points monitored	1.7/1.2	1.2	10/6.5	This indicator measures the percentage of the groundwater extraction wells monitored with the use of the online automated system installed by the ASPIRED Project versus the total number of the operational groundwater wells available in the fisheries <sup>3</sup> . The results refer to the systems installed by the ASPIRED Project on 19 groundwater wells, plus three systems installed under the Water Initiative + Project.
<b>IR 2: Introduce locally appropriate, cost effective technologies to improve water resource management</b>					
<b>Sub-IR 2.1: Technologies developed, piloted, and evaluated at different-sized fish farms with the objective of improving water resources management</b>					
<b>Indicators</b>					
2.1.1	Number of groundwater extraction reduction technologies piloted and evaluated	4/1	1	7/4 <sup>4</sup>	This indicator refers to technologies introduced at fish farms or other water use points that contribute to the reduction of the groundwater extraction by users. This indicator also provides information on annual water saved, measured in cubic meters. The result for Q3 refers to Aratashen drinking-water Project.

<sup>2</sup> The ASPIRED team installed online groundwater use monitoring systems in the Alex Grig, Interaqua, and Golden Fish fisheries during Year 3 and Max Fish during Year 4.

<sup>3</sup> During the latest inventory of the groundwater wells, natural springs and fish farms of the Ararat Valley, ASPIRED inventoried a total of 2807 wells in the Ararat Valley, of which 1795 were found to be operational. Out of 1795 functioning wells, 336 are reportedly located in the fisheries of Ararat and Armavir marzes.

<sup>4</sup> The data refers to the Water Reuse Project in Hayanist and the Well Sealing and Well Optimization Projects in Sipanik village



2.1.2	Thousands of cubic meters of water saved annually in Ararat Valley	8,777/557	557	9200 <sup>5</sup> /8,942 <sup>6</sup>	This indicator measures the amount of water savings from the demonstration of innovative water saving technologies by the ASPIRED Project at fish farms and other water use points, as well as the implementation of water rehabilitation projects in the communities of the Ararat Artesian Basin (AAB) affected by the shortage of groundwater resource (in collaboration with PURE-Water Project). The annual data for Year 4 counts also recurrent savings provided by completed water projects (Hayanist 1.1 mln, Sipanik well sealing 1.9 mln, Sayat-Nova 1.92mln and Sipanik well optimization 465,000), which will be reported during the last quarter of Year 4 upon completion of the program year. The result for Q3 refers to the completed drinking-water project in Aratashen.
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**Sub-IR 2.2: Technologies with the objective of increasing energy efficiency and/or renewable energy generation of water users developed, piloted, and evaluated**

**Indicators**

2.2.1	Number of energy efficiency and/or renewable energy (EE/RE) technologies piloted and evaluated	3/0	0	4/0	This indicator refers to water-use related EE/RE technologies to be piloted during project implementation. ASPIRED will install renewable technologies at the Aquaculture Technology Transfer Center (ATTC) and Vedi Urban Irrigation Project. Data for this indication will be available after completion of the ATTC Project and Vedi Urban Irrigation Project.
2.2.2	Megawatt hour of energy saved annually	453/204	204	500/252 <sup>7</sup>	This indicator refers to the kilowatt-hour energy savings generated due to more efficient use of energy. Recurrent savings generated by completed projects are counted in the subsequent years and will be reported on an annual basis upon completion of the programmatic year. The result for Q3 refers to energy savings from pumping in Aratashen.
2.2.3	Clean energy generated annually, MWh	82/0	0	82/0	This indicator refers to the clean energy generation capacity resulting from the introduction of RE technologies aimed at minimizing extraction of the groundwater. The data of this indicator depends on the implementation of EE/RE technologies, tracked under Indicator 2.2.1
2.2.4	Gains in the reduction of GHG emissions as a result of USG assistance, in metric tons	1,414 <sup>8</sup> /96	96	1440/568.4 <sup>9</sup>	GHG emission reduction quantities are estimated based on the kilowatt hour of savings resulting from application of energy saving technologies in metric tons/year. Since the 4 <sup>th</sup> quarter of Year 3, ASPIRED, in concurrence with USAID, started counting the CO2 reductions resulting from irrigated farmlands of the implemented projects. Data is reported on an annual basis. Q3 result refers to Aratashen project impact.

<sup>5</sup>Refers to water savings to be achieved by the ASPIRED Project by Year 5.

<sup>6</sup> This includes total amount of savings generated from ASPIRED pilot projects over 5 years.

<sup>7</sup> LOP data refers to 2 years of operation of Hayanist project (24 MWh/year).

<sup>8</sup> Year 4 data refers to Hayanist & Sayat-Nova projects (along with the GHG emissions from farmlands, solar installations at Masis-Dzuk, Vedi, ATTC, as well as GHG reductions from Yeghegnut and Aratashen savings).

<sup>9</sup> Data refers to Hayanist, Sayat-Nova, and Sipanik projects starting from the date of their completion to date.

2.2.5	Number of people receiving improved service quality from an existing basic or safely managed water service as a result of USG assistance.	9814/3200	3200	12000/4186 <sup>10</sup>	This indicator tracks qualitative improvements <sup>11</sup> of the water resource resulting from the infrastructure projects implemented by ASPIRED <sup>12</sup> . The term “water users” refers to households, local farmers, and other groups benefitting from these improvements. (Gender disaggregated whenever possible). Q3 result refers to the completed drinking water project in Aratashen village.
	Men		1280	1766	
	Women		1920	2420	
2.2.6	Number of water users experiencing improved efficiency of water resources	7/1	1	13/6 <sup>13</sup>	This indicator tracks improved efficient use of water resulting from the pilot projects implemented under the ASPIRED Project. Examples of such projects can potentially reduce water abstraction by fish farms due to new technologies installed. Q3 result refers to Aratashen drinking-water Project.
<b>Sub-IR 2.3: Based on the pilot process and available research, recommendations developed for successful water and energy technologies for policy-makers and stakeholders shared</b>					
<b>Indicators</b>					
2.3.1	Number of successful technologies recommended and shared with the stakeholders and policy-makers	6/1	1	11/6 <sup>14</sup>	ASPIRED will pilot at least six technologies by the end of the project as well as conduct an evaluation and provide recommendations during Year 5 of the project.
<b>Sub-IR 2.4: Technology or method to permanently close illegal and/or abandoned wells, developed, piloted, and evaluated</b>					
<b>Indicators</b>					
2.4.1	Number of piloted technologies to permanently close illegal or abandoned wells	1/0	0	3/2	ASPIRED initially planned to pilot at least two well optimization/sealing projects during Year 3. During Year 3 Quarter 4, the ASPIRED team completed the well optimization project in Sipanik village.
<b>IR 3: Introduce new policies and regulations to improve integrated water resource management.</b>					
<b>Sub-IR 3.1: Trainings to build groundwater monitoring capabilities, capacity strengthening, and knowledge of how to use equipment; and follow-up assessments to test knowledge on groundwater monitoring and analysis of the basin management organizations (BMOs) and relevant water management agency officials to improve enforcement.</b>					
<b>Indicators</b>					

<sup>10</sup> The LOP data refers to the beneficiaries of the two water reuse projects in Hayanist and Sayat-Nova, as well as the well optimization project in Sipanik.

<sup>11</sup> ASPIRED will conduct pre- and post-implementation water tests to detect the qualitative changes in water.

<sup>12</sup> Initially, this indicator referred only to the drinking water supply projects. Following the recommendation of USAID, ASPIRED will collect data from all water supply projects (both potable and irrigation water supply) which resulted in the improved service quality for the beneficiaries.

<sup>13</sup> The results refer to Sipanik community, water reuse projects in Hayanist and Sayat-Nova communities, including communities and the fish-farm owners. Based on the results of Hayanist and Sayat-Nova projects (a) two communities avoided drilling of wells for irrigation needs; (b) two fisheries, Samvel Lablajyan’s fish farm and Masis Dzuk fishery, became more efficient water users.

<sup>14</sup> Aeration technology piloted Masis Dzuk fish-farm; Hayanist water reuse project; Sayat-Nova irrigation; Sipanik well sealing project; and Sipanik well optimization project, drinking water project in Aratashen.

3.1.1	Number of trainings for building capacity of ME in groundwater monitoring	1/1	1	6/5	This indicator refers to trainings on the enhanced up-to-date State Water Cadaster Information System (SWCIS) and Management Information System (MIS) for the Ararat Valley and on enhanced transparent water use permitting, control, oversight systems and decision support tools. Q3 result refers to the GIS training in April 15-19, 2019.
3.1.2	Number of people educated on tools, approaches, and/or methods for water security, integrated water resource management, water source protection and sustainable water use as a result of USG assistance.	25/26	10 <sup>15</sup>	126/118	This indicator refers to trainings on enhanced up-to-date SWCIS and MIS for the Ararat Valley; enhanced transparent water use permitting, control, and oversight systems; and environmental compliance procedures and efficient water use trainings for the beneficiaries of the communities. This indicator is not cumulative and is reported on a quarterly basis. Q3 result refers to the GIS training and water service management training in Aratashen in April and June 2019, respectively.
	Women	10	3	27	
	Men	16	7	91	
<b>Sub-IR 3.2: Rigorous, evidence-based analysis of optimal water fee levels completed, shared with engaged stakeholders and recommendations provided to the GOA</b>					
<b>Indicators</b>					
3.2.1	Number of workshops and consultations with stakeholders to discuss water fee levels	N/A	N/A	9/9	The target for this indicator was met during Year 2 /Quarter 2; therefore, ASPIRED has completed data collection under this indicator for the project.
<b>Sub-IR 3.3: Water permitting monitoring and enforcement measures assessed and publicly available and recommendations, including development of regulations, provided to the GOA.</b>					
<b>Indicators</b>					
3.3.1	Package of recommendations to address water permitting monitoring and enforcement measures provided to GoA.	2/1	0	4/3 <sup>16</sup>	This indicator refers to the package of recommendations that the ASPIRED Project drafted and submitted to the GOA.
<b>IR: Ensure communications and coordination with stakeholders to avoid duplication of efforts</b>					
<b>Sub-IR: 4.1 Systems-mapping to gain and apply knowledge of points of influence, incentives, and resources of stakeholders in water and the water-energy nexus completed and shared</b>					
<b>Indicators</b>					
4.1.1	Number of international and local organizations participating in the system mapping activities	1/1	0	26/25	This indicator refers to newly identified stakeholders and points of influence in water and water-energy nexus for the ASPIRED Project. The ASPIRED team identified AAF as a donor of energy and water saving projects.

<sup>15</sup> The training on the ecological flow calculation method in January 2019, the GIS training and water service management training in Aratashen.

<sup>16</sup> The expert opinion on (1) program of measures in national Water code to USAID; (2) the Strategy for Policy and Regulatory Improvements and a Road Map for Improved Participatory Management of Water Resources developed under the USAID's PURE Project; (3) the draft Government decree on establishment of the requirements for the protection of water resources in the recreational zones submitted to the ME.

4.1.2	Number of partnerships made by ASPIRED with other organizations	3/5 <sup>17</sup>	1	16/18	This indicator refers to partnerships, collaboration with other public and private sector organizations, donor projects for the implementation of joint projects and/or other initiatives contributing to the accomplishment of ASPIRED objectives. Quarter 3 data refers to the partnership with the AAF
<b>Sub-IR 4.2: A transformative partnerships model to respond to needs for research, pilots, analysis and other coordinated efforts that is demand-driven, flexible, and has a plan for financial sustainability created</b>					
<b>Indicators</b>					
4.2.1	Percent of total funding leveraged from stakeholders for water resources management activities.	35/42	42	35/26 <sup>18</sup>	This indicator refers to the total in-kind and financial contribution by ASPIRED partners versus the total contribution of the ASPIRED Project for a given year. Targets are not cumulative and refer to a specific year of the project cycle. The figures on current projects will be reported after their completion and adjustment of the cost share figures.
<b>1. Portfolio-level indicators</b>					
5.1	Percent of population living in targeted areas with improved water management	4/8.2	5.4	52/13.6 <sup>19</sup>	The geographical target area is the Ararat Artesian Basin (AAB), a territory of 13,075 hectares with a population of 58,373 people (28,392 men; 30,345 women).
	Women	4.2	3.2	7.4	
	Men	4	2.2	6.2	
5.2	Number of key implementation steps taken to improve water management in the Ararat Valley	2/2	0	10/8 <sup>20</sup>	This indicator refers to policy, analysis, and other activities targeted towards improvement of water data-related activities, including training and pilot projects. The result refers to the 3D model of the Ararat Valley groundwater basin, developed by the ASPIRED Project and the training and consultations in Ecological Flow calculation for the WRMA, BMOs of the ME.

<sup>17</sup> The indicator refers to partnerships with the communities of Aratashen, Hovtashat, Vedi and F2F. Yeghegnut dropped from reporting in Quarter 2, because of the failure on the village part to comply with its commitments.

<sup>18</sup> This figure represents the actual cost-share of partners versus the total cost of the projects. Since the ASPIRED Project has different share in different projects, the total percentage of the leveraged funding may be lower than that for a particular year.

<sup>19</sup> The results refer to the population size of Sipanik, Hayanist, and Sayat-Nova communities versus the total size of the population in the AAB.

<sup>20</sup> This figure refers to (1) ASPIRED completed the inventory of groundwater wells, and springs in September 2016. (2) USAID presented two reports to the GOA - Achieving Sustainable Groundwater Use in the Ararat Valley: the Role of the Fisheries Sector and the Final Report on the Inventory of Groundwater Wells, Natural Springs, and Fisheries of the Ararat Valley; (3) ASPIRED was involved into the Interagency Task Force (ITF) established by the Prime-Minister's assignment in January-February 2017. In May 2017, the Armenian Prime-Minister Karen Karapetyan approved the Program of Measures for Efficient Management of the Groundwater Resources of Ararat Valley. Developed with the expertise and data support of the ASPIRED Project, the Program envisages an array of regulatory, legislative, institutional and technical measures for a more rational use of water in the Ararat Valley for different purposes such as fish farming, irrigation, drinking, and drainage system; (4) ASPIRED implements pilot projects aimed at improving water management on by the communities, fish-farmers. (5) Installation of the automated online groundwater use monitoring system in the fisheries of the Ararat Valley; and (6) hydrological model of the decision support system (DSS); (7) 3D model of the Ararat Valley groundwater basin, (8) Capacity building activities.

5.3	Number of private sector firms that have improved management practices or technologies as a result of USG assistance	2/1	0	9/7 <sup>21</sup>	This indicator refers to (a) the number of fisheries with automated groundwater use monitoring systems installed; and (b) fisheries which have adopted innovative water or energy efficiency (including renewable) technologies.
5.4	Number of innovations supported through USG assistance.	1/2	1	5/5 <sup>22</sup>	Innovative technologies, management/monitoring tools or practices introduced by the ASPIRED team in fish farms, at water use points and/or communities of Ararat Valley which contribute to the reduction of the groundwater use.
5.5	Number of innovations supported through USG assistance with demonstrated uptake by private and/or public sector firms	1/1	1	4/3 <sup>23</sup>	This indicator refers to the uptake/replication by the public and/or private sectors of projects, technologies, innovations and/or practices introduced by the ASPIRED Project at fish farms, water use points, and/or communities of the Ararat Valley. The Q3 result refers to the secondary use of the outlet water of Masis Dzuk fishery by another fish farmer.

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21 The LOE result includes six fisheries with improved water management practices: four have been equipped with online monitoring systems and three fish-farms participate in the infrastructure projects – ATTC and water reuse for irrigation (Lablajyan and Masis Dzuk).

22 The data refers to the (1) practice of the secondary use of outlet water from fisheries for irrigation purposes, which has never been practiced at a community scale; (2) well sealing/optimization activities; (3) installation of the online monitoring system in the fisheries; (4) use of inverter pumping technology in Aratashen; (5) decision support tools developed by the ASPIRED Project

23 Replication of the water reuse project in Hovtashat community (with assistance from ERGIS NGO) and Sayat-Nova community, secondary use of Masid Dzuk outlet water for fish-breeding.

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## 3. Program Implementation

### 3.1 Water Resource Data

#### **SWCIS Enhancement**

During this quarter, the ASPIRED team continued collaborating with the specialists of the Inspectorate for Nature Protection and Mineral Resources (INPMR), WRMA, and Information and Analytical Center of the Environmental Monitoring and Information Center (EMIC) of the Ministry of Environment (ME) on enhancing the actual water use database and integrating it into the SWCIS Data Warehouse. The ASPIRED Project recommended a new format of the database on actual water use, based on the specifics of its integration into the newly programmed Data Warehouse. After receiving stakeholders' consent, the ASPIRED specialist programmed the new database on actual water use. The ASPIRED team discussed with the Inspectorate and the WRMA the newly programmed database and next steps to transfer the data on actual water use into the Data Warehouse. In addition, the ASPIRED team worked with EMIC's Information Analytical Center on providing the Inspectorate with access to ME's server to allow the Inspectorate to transfer the data to the SWCIS Data Warehouse.

The ASPIRED Project completed the integration of the database in May, including programming of the built-in annual reports on actual water use, testing and debugging of the programmed database. ASPIRED linked the database to the Water Use Permitting (WUP) database through the WUP number, which allows users to compare the volumes of actual and permitted water use. However, according to the current regulations, the database on actual water use is being populated with data only once per year. Thus, INPMR will input the 2019 actual water use data into the new database between February and March 2020, when the Inspectorate's marz offices will submit annual reports from the entrepreneurs to the central office's Water Control Division.

The ASPIRED team met with Vigen Avetisyan, the newly appointed head of INPMR, to discuss the ASPIRED Project's assistance to the Inspectorate on programming the actual water use database. The Head of the Inspectorate provided several recommendations to the ASPIRED team in the future when the relevant divisions of the Inspectorate input the actual data into the database.

ASPIRED collaborated with the European Union-funded (EU) project on establishment of the Shared Environment Information System (SEIS) in Armenia. The ASPIRED team presented project support to the ME in enhancing the SWCIS Data warehouse to the team on national and international experts of the EU project in April. During the discussion following the presentation, the EU Project Coordinator confirmed that the team would integrate the SWCIS Data Warehouse into the SEIS as a separate component. Design of other components of the SEIS is still underway.

In addition, the ASPIRED team participated in a two-day workshop facilitated by the SEIS Project. The workshop provided an overview of the development of a water eco-portal of Armenia. The Eco-portal will be designed till the end of calendar year to host water-related information on water policy, water

issues, water-related projects, as well as to demonstrate the analysis of selected water quality indicators from the SWCIS. The portal will contain links to the SWCIS Data Warehouse that will ensure dynamic updating of the water quantity and quality information.

## **Decision Support Tools**

### **DSS**

In the quarter reported, the ASPIRED team completed customization of the re-programmed Ecological Flow component of the DSS's Water Supply-and-Demand Balance with the data from the rivers of the Ararat Valley catchment. As one of the most important components of the DSS to support WRMA's daily activities in water use permitting, the Ecological Flow component calculates values of ecological flow in any selected point of a river (i.e. potential water abstraction point) using new ecological flow calculation methodology adopted by the GOA in 2018 with USAID assistance.

On June 20-21, the ASPIRED Project participated in EU Water Initiative Plus Project's workshop on assessment of ecological flow in the rivers of Akhuryan River basin. The ASPIRED Project hydrologist provided the expert opinion on the ecological flow calculation methodology and the work done by the ASPIRED Project team in this area, particularly in customizing the DSS' Ecological Flow component for the advanced users and decision makers.

In June, the ASPIRED team finished re-programming the Water Supply and Demand Balance component of the DSS for Ararat Valley. The team used the 2016 datasets on surface water use according to the water use permits, as well as data on actual groundwater use of the 2016 inventory to customize the Water Supply and Demand Balance component for the Ararat Valley. ASPIRED will complete testing and debugging of this newly programmed component in July.

During the reporting period, the ASPIRED team calibrated the Climate Change Model of the DSS with data from the Ararat Valley and its catchment area for conducting trend analysis of climatic and hydrological parameters in the Ararat Valley for the periods 1991-2016 against the baseline period of 1961-1990. The Armenian State Hydro-Meteorological Service provided the required datasets for this task. After completing the calibration process, the ASPIRED team assessed the climate change impact on the surface natural flow in the Ararat Valley, using RCP 6.0 and RCP 8.5 scenarios under the CCSM4 and METRAS Models. The team also prepared the report on Climate Change Analysis for the Ararat Valley, which incorporates both trends analysis and projections on deviations of the natural surface flow in the Ararat Valley catchment area for 2040, 2070 and 2100 under different Intergovernmental Panel on Climate Change (IPCC) scenarios and models.

In April, the ASPIRED team met with Diana Harutyunyan, UNDP Climate Change Program Coordinator, and Gohar Hovhannisyan, National Adaptation Planning (NAP) Project Coordinator, to discuss details of the climate change projections scenarios that the ASPIRED team will use in the DSS. The ASPIRED team briefed the Climate Change team on the results of trends analysis conducted using

the DSS, and approach for analyzing the climate change projections for the Ararat Valley. The UNDP team proposed reviewing the ASPIRED Project's modeling results for the Ararat Valley to incorporate the results into the NAP for Armenia. The ASPIRED and UNDP teams will further collaborate on this during the next reporting period.

### **Groundwater modeling tools**

During the reporting period, the ASPIRED team continued designing the numeric groundwater flow model for the Ararat Valley groundwater basin using Groundwater Modeling System (GMS) software and MODFLOW tools. In April, the ASPIRED team worked on the initial step of constructing a simplified groundwater flow model in MODFLOW - modeling the Ararat groundwater basin as one water bearing unit. The ASPIRED team built this model using data from wells inventory, surface water and groundwater inflow and outflow data generated in GMS using the calculated values of water balance for year 2016. ASPIRED consulted with EMIC's Hydrogeologists team on selecting appropriate infiltration rates for the main hydrogeologic units. Based on these consultations, ASPIRED prepared and submitted technical questions to AQUAVEO, a US-based company, on coaching services in early July.

In June, the ASPIRED team presented the preliminary results of the customized decision support tools for the Ararat Valley to Mark Anderson, a retired USGS ground water specialist, who has been providing short-term technical assistance to the Armenian government on ground water management in the Ararat Valley. The Project team attended Mark Anderson's presentations on the Ararat Valley groundwater management issues for the students and stakeholders at the American Corner and for the decision-makers in the ME.

### **Introduction of the automated online system for groundwater use monitoring**

In April, the representatives from the ASPIRED Project and its local subcontractor, Hybrid Telematica, monitored the quality of the protective casings built by Max Fish's owner to ensure the casing's suitability for installation of the flow meters during the rainy days. In May, Hybrid Telematica completed installation of flow meters and data loggers to monitor actual volumes of groundwater use in the fishery from four wells. The WRMA started receiving data on online groundwater use monitoring from Max Fish through the cloud-based temporary supervisory control and the data acquisition (SCADA) system provided by Hybrid Telematica.

During the reporting period, the ASPIRED team and representatives of Hybrid Telematica and EMIC visited the Alex Grig Fishery to conduct control measurements of water discharge from wells that are equipped with electronic flow meters, following the request of the fishery owner. EMIC representatives conducted measurements with the FLEXIM portable flow meter, while fishery representatives conducted measures from the same wells using buckets. Results of measurements by FLEXIM and electronic flow meters were nearly similar with less than 1% difference. When comparing the readings from the flow meters and measurements by the bucket, the ASPIRED team indicated the same results. The fishery owner agreed with the results of the control measurements and requested for the WRMA



to seal the electronic flow meters.

If requested, ASPIRED will conduct similar control measurements in the Interaqua, Golden Fish, and Max Fish fisheries, before handing-over of the installed flow meters and data loggers to the ME during the next quarter.

### **Temporary Closure of Unused Groundwater Wells**

In May, ASPIRED received WRMA's written request to assist the ME with the temporary closure (conservation) of 21 selected unused and self-emitting groundwater wells in the Ararat Valley –. Water discharge from these wells ranges between 1 and 68 liters per second. According to the WRMA, all 21 wells are subject to temporary closure according to the legislation.

In June, the ASPIRED team and the WRMA representative visited 11 groundwater wells with reported water discharge of 20 liters per second or more, to conduct the preliminary technical and financial feasibility assessment for the temporary closure. All wells were previously used by fish farmers, located on the lands owned by these entities. Some of the wells were equipped with regulating valves and are free from discharge, while others had free flow. The WRMA representative informed that several fish farmers submitted water use permit renewal applications to the WRMA with an intention to continue fish farming business.

ASPIRED informed the WRMA that the temporarily closure of surveyed 11 groundwater wells is feasible, given that the fishery owners provide their written agreement to the ME/WRMA on this regard. ASPIRED informed the WRMA that will start projects on temporary sealing of the wells after the WRMA provides the ASPIRED Project with written non-objection agreements from the owners of fisheries confirming their consent to sealing the groundwater wells located on their properties.

### **Preparing the Ararat Valley Atlas**

In April ASPIRED team met with the stakeholder agencies to discuss the draft content for the Ararat Valley Atlas, as well as the availability of data and information from the respective agencies for inclusion in the Atlas. The ASPIRED team conducted discussions with the EMIC specialists from the hydrogeologic and environmental monitoring teams. EMIC representatives will provide data on quality of surface water resources in the rivers of the Ararat Valley and its catchment area and surface water classification, groundwater quality, specifically level of mineralization, which will be summarized in the thematic maps of the Atlas. The ASPIRED technical specialists met with the Water Projects Implementation Unit (PIU) of the Armenian Water Committee, the Republican Geologic Fund of Armenia. The ASPIRED team acquired geo-spatial datasets on the water systems in the Ararat Valley from the Amelioration Closed Joint Stock Company (CJSC) of the Water Committee. The datasets include the GIS layers on main canals, collectors, drainage system, pumping stations and service areas on Water User Associations in the Ararat Valley. The datasets were integrated in the Ararat Valley geodatabase and used to construct maps of the Ararat Valley Atlas.

Based on the results of the consultations, ASPIRED finalized and sent the initial structure of the Ararat Valley Atlas to the ME for review and recommendations. In June, the ASPIRED team prepared a draft deliverable report on the geo-spatial database of the Ararat Valley and proposed format and outline of the Ararat Valley Atlas, for review by USAID. ASPIRED will follow-up with the WRMA on the process of obtaining written agreements from the fish farm owners on temporary closure of the groundwater wells within their property, before initiating any further activities.

### **Additional assistance to the ME**

**USAID assistance in creating a web-based platform for online application for water permits:** During the reporting quarter, the ASPIRED team continued collaborating with the Participatory Utilization and Resource Efficiency of Water (PURE-Water) Project in streamlining the concept and design of the web-based platform for online submission of WUP applications. Particularly, the ASPIRED Database Programmer guided the PURE-Water Project's Web Developer through the SWCIS Data Warehouse's WUP database. ASPIRED's technical team participated in technical discussions with the PURE-Water Project, as well as reviewed and provided feedback on the technical description of the platform.

**GIS training:** ASPIRED's Data Management Specialist conducted a one-week GIS training course for WRMA's staff in April. ASPIRED designed the training based on the WRMA's request and as a follow-up to another training course delivered by the ASPIRED Project. During the training course, participants learned how to use ArcGIS' ArcMap package for preparing thematic maps and labelling the maps. ASPIRED's Data Management Specialist handed the training participants with certificates of completion, and they are ready to bring-in the new skills into their daily work. A Project GIS intern also participated in the training.

The photos of the training can be found on the project Facebook page and web site <http://www.aspired.wadi-mea.com/en/2019/04/19/gis-training-for-the-wrma-specialists/>



*Flow-meters installed in Max Fish fishery.*



*Implementation of a practical mapping assignment by a trainee.*

### 3.2 Low Cost and Water Efficiency Technologies

The table below summarizes the status of the pilot projects as of December 31, 2018.

Project Name/ Technology	Status	Total cost, USD	ASPIRED cost-share, USD	Partner cost-share, USD	Partner
Hayanist irrigation rehabilitation project	Completed in April 2017	131,705	89,524	27,212	Coca Cola HBC
				11,269	ERGIS
				3,700	Hayanist community
Sipanik well sealing	Completed in August 2017	51,546	47,823	3,723	VALML LLC
Well optimization Sipanik	Completed in September 2018	27,461	24,909	2,552	Sipanik community
Sayat-Nova water reuse project	Completed in September 2018.	124,871	80,409	20,876	Partnership for Rural Prosperity Project
				14,395	Fund for Armenian Relief

Project Name/ Technology	Status	Total cost, USD	ASPIRED cost-share, USD	Partner cost-share, USD	Partner
				16,420	Sayat-Nova community
<b>Aquaculture Technology Transfer Center (ATTC)</b>	<p style="text-align: center;"><b>Ongoing</b></p> <ul style="list-style-type: none"> <li>The ASPIRED Project and the ATTC owner discussed the follow-up actions on finalization of the ATTC and population of fish points.</li> <li>While the fishery owner accepted the technical recommendations of the ASPIRED Project, he has resource limitations to proceed with the approved plan. ASPIRED Project and the ATTC owner will discuss solutions to finalize the project with existing resources during the next reporting period.</li> </ul>	178,028	114,542	63,486	Armavir Farmer LLC
<b>Yeghegnut community water supply project</b>	<p style="text-align: center;"><b>Ongoing</b></p> <ul style="list-style-type: none"> <li>The ASPIRED Project completed construction of the pumping station and chlorination station, with the subsequent handover to the village.</li> <li>Further activities of this project are on hold, pending the results of the local elections on September 29, 2019 and approval of the village budget by the new village council. For this reason, the ASPIRED Project had to extend the performance period of the contract with the selected sub-contractor, Armplast LLC, for an additional five months.</li> <li>Further explanation is provided in <a href="#">Section 6. Existing Problems or Issues</a>.</li> </ul>	120,809	79,777	41,032	Yeghegnut community
<b>Aratashen community water supply project</b>	<p style="text-align: center;"><b>Completed in June 2019</b></p> <ul style="list-style-type: none"> <li>ASPIRED completed the pilot project during the reporting period. The ASPIRED Project finalized installation of pipes and followed up with the village to complete the internal connections and installation of water meters. The village also completed the backfilling and compacting work to bring the roads into proper condition.</li> <li>The ASPIRED team equipped the village with the water service management and billing software and trained the municipality staff on its use.</li> <li>By the end of June, the data of the majority of water users have been inputted into the database.</li> </ul>	130,371	87,455	42,916	Aratashen community

Project Name/ Technology	Status	Total cost, USD	ASPIRED cost-share, USD	Partner cost-share, USD	Partner
<b>Hovtashat well optimization project</b>	<p><b>Ongoing</b></p> <ul style="list-style-type: none"> <li>In April, the sub-contractor completed the engineering design of the pilot project, based on which the ASPIRED Project announced the tender for optimization of the well and installation of the irrigation network.</li> <li>Since the cost estimate in the design was higher than the projected amount, the ASPIRED Project requested USAID approval to increasing the funding. After receiving USAID approval, the ASPIRED team announced the tender for construction activities in May. On July 15, the ASPIRED Project contracted Yereky Mek Tegh LLC for construction works of the project.</li> </ul>	43,539	28,587	14,952	Hovtashat community
<b>Vedi Urban Irrigation Project</b>	<p><b>Ongoing</b></p> <p>On April 1, ASPIRED contracted Kommunnakhagits LLC for the project design. In May, the sub-contractor submitted the design (blueprints and bill of quantities) for the project, based on which the ASPIRED team prepared the specifications and announced the tender for the construction activities on June 20. The tender will be evaluated and the winner will be selected in July.</p>	147,538	59,632	87,906	Vedi Municipality
<b>Irrigation Improvement Project in Pokr Vedi</b>	The ASPIRED Project signed the Cooperation of Agreement with AAF for this pilot project on June 18, 2019. On June 25, the Project announced the tender for the selection of the sub-contractor to prepare the design of the irrigation network, after which the procurement and installation of pipes will follow. ASPIRED will evaluate the tender and select the winner in July.	74,935	31,916	31,944	HAAF
				11,075	Artashat Water Users Association
<b>TOTAL</b>		<b>955,185</b>	<b>609,752</b>	<b>345,433</b>	

### Design of New Projects

During the reporting period, the ASPIRED and PURE-Water Project teams discussed the feasible technical solutions for implementing the irrigation project in Khachpar village. The ASPIRED engineers determined that 250 liters/second of water supplied via 500 mm pipeline will meet the irrigation demand of the village. However, the village representatives raised some concerns on the technical recommendations of the ASPIRED team, particularly that the water flow may be insufficient. Due to this concern, the village representatives opted for a larger diameter of the pipeline that would increase the budget of the project beyond the available limits.

Upon discussion with USAID, the ASPIRED and PURE-Water teams decided to order the area topography to check the elevations and verify the estimates of the ASPIRED Project engineers. PURE-Water team committed to completing this task in July.

### Follow-up of Projects

The monitoring visit to Sipanik village revealed that the water flow from the optimized well became insufficient to meet the irrigation demand. The ASPIRED team discussed the issue with the Community Mayor's office, residents, and fish farmers during March-April 2019, who indicated that the water pressure had declined in their wells. Therefore, the water reaches the remote farmlands through earthen canals, but its flow is not enough to ensure effective irrigation because of high infiltration losses. The ASPIRED Project engineers recommended installing a simple booster pump at the well to increase the water flow. With approval from USAID, the ASPIRED Project installed the booster pump and helped to increase the water speed reducing the time required for irrigation.



*Installation of household network in Aratashen*



*The booster pump installed in Sipanik.*

## **3.3 Water Regulation and Enforcement**

On June 27, the Armenian Government approved the draft package of laws that entail amendments to the Water Code and the Code of Administrative Violations of Armenia. After the approval, the package will be submitted to the Parliamentary hearings scheduled in September 2019. The package includes requirements of water resources reservation in recreational zones of Armenia.



During the reporting period, the legal component coordinated the tasks of the short-term experts and the field trips aimed at developing the method for assessment of self-purification capacity of rivers. The ASPIRED Project worked with the EMIC and the Scientific Center of Zoology and Hydroecology on the hydrological assessment task. The ASPIRED Project's technical experts held series of field visits to the selected observation points in Qasakh river basin to take water samples for hydrological analysis. As a result, EMIC provided the monthly results of water quality samples taken during May field visit. The ASPIRED Project's short-term hydro-morphologist made a follow-up field trips on June 20-22 to verify the hydro-morphological data.

Furthermore, the short-term experts summarized the rivers' self-purification capacity assessment methods applied internationally to aid in the selection of the appropriate method for Armenia. The team is currently elaborating the format of the data entry and the formula for calculating the water quality and biological indicators of self-purification capacity of Qasakh river.

### **3.4 Donor Coordination and Communications**

In the reporting quarter, the ASPIRED Project's communications team worked on two major activities: negotiating the terms and finalizing the cooperation agreement with the Hayastan All-Armenian Fund; and organizing the community event in Aratashen village including preparation of the event agenda, event logistics, coordination with the village and the PURE-Water Project teams, the scene setting, preparation of the press-releases and media participation.

On June 18, the ASPIRED Project signed the Cooperation Agreement with AAF and the Armenia Foundation marking the beginning of a joint irrigation improvement project in Pokr Vedi village. This project is part of the portfolio of community infrastructure improvement activities implemented in collaboration with USAID/Armenia's PURE-Water Project. AAF will provide the cost share in the amount of 31,944 US dollars to be used for the acquisition of pipes for the irrigation network. The third partner of the project is Artashat Water User Association. The ASPIRED Project raised these funds to match 300,000 US dollars provided by USAID for the implementation of the water infrastructure improvement projects in five communities of Armavir and Ararat regions of Armenia.

On June 24, the ASPIRED hosted a public event to celebrate completion of the drinking water project in Aratashen village. The honorary guests of the event were the USAID Mission Director Deborah Grieser, the Governor of Armavir Hambardzum Matevosyan and the mayors of local communities who participated in this event along with the local residents and attended the mini-concert by the village dance ensemble. The USAID Mission Director and the Governor of Armavir launched the pumps and afterwards visited one of the households to see the newly installed water system in use. This project helped to ensure 24-hour water supply in the community with 3200 residents, with water meeting the required sanitation norms. The media links can be found below<sup>24</sup>.

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<sup>24</sup> [https://www.lragir.am/2019/06/24/454336/?fbclid=IwAR2T8hpI1XDZhPM1-noledli8vAO33aQyw84CGyR7k5ia\\_vnl6S0W5QIsNA](https://www.lragir.am/2019/06/24/454336/?fbclid=IwAR2T8hpI1XDZhPM1-noledli8vAO33aQyw84CGyR7k5ia_vnl6S0W5QIsNA)

As part of the monitoring visits to the communities, the ASPIRED team visited the completed project sites in Sipanik, Sayat-Nova, and Hayanist to observe the performance of installed irrigation systems. The mayor of Sayat-Nova informed the ASPIRED team that the farmers received the first irrigation water and were pleased with the water flow. The team inspected the condition of the sealed well in Sipanik and met with the village mayor to discuss the need for installation of a booster pump on the well to increase the water flow for irrigation.



*USAID Mission Director Deborah Griser, mayor of Aratashen Vahram Harutyunyan (on the left), and Governor of Armavir region Hambarzum Matevosyan (on the right) launch the newly installed pump in Aratashen.*



*Left to right: Hayastan All-Armenian Fund Executive Director Haykak Arshamyan, ASPIRED Project Chief of Party Magda Avetisyan, and President of Armenia Foundation Maria Mehranian after signing of the Cooperation Agreement.*

#### 4. General Administrative Issues

During the reporting period, the ASPIRED Project released the procurement notices for the following activities:

- Construction phase of Hovtashat Irrigation Improvement Project
- Supply of materials and construction in the Vedi Urban Irrigation Project
- Design of the irrigation network in Pokr Vedi

In June, the ASPIRED team began preparation of the Year 5 Work Plan. The team discussed planned activities and the PMP indicators during the staff retreat on June 5-7 and revised the PMP based on feedback of colleagues. In July and August, the ASPIRED Project will also translate the main part of the work plan for the ME review.

[https://hetq.am/hy/article/104971?fbclid=IwAR1HPxCwe4f2XOw\\_D9c\\_KkSMGunbnafxSDVnHAHn29je7yqrvITzwTdtqc0](https://hetq.am/hy/article/104971?fbclid=IwAR1HPxCwe4f2XOw_D9c_KkSMGunbnafxSDVnHAHn29je7yqrvITzwTdtqc0)  
<https://www.armradio.am/hy/16962>  
[https://www.youtube.com/watch?v=7f\\_SPyPeNOA&feature=youtu.be&fbclid=IwAR2SA4Bl2GLb78YkyG8N6UbMZMYNgR\\_olp-vAggL4RfDqV4X4IUYSw\\_PQuTw](https://www.youtube.com/watch?v=7f_SPyPeNOA&feature=youtu.be&fbclid=IwAR2SA4Bl2GLb78YkyG8N6UbMZMYNgR_olp-vAggL4RfDqV4X4IUYSw_PQuTw)  
<http://armavir.mtad.am/news/item/2019/06/24/24.06.2019/>  
[https://www.youtube.com/watch?v=knia23J7kTU&feature=youtu.be&fbclid=IwAR1X2VW579TiiAr-jlSPMBhsGBIz2UH68I9ah2bqga7E\\_hruP6wiZVjk37Q](https://www.youtube.com/watch?v=knia23J7kTU&feature=youtu.be&fbclid=IwAR1X2VW579TiiAr-jlSPMBhsGBIz2UH68I9ah2bqga7E_hruP6wiZVjk37Q)



## 5. Environmental Compliance

During the third quarter, the ASPIRED team conducted regular monitoring of the ongoing pilot projects to check the progress of works and compliance with EMMP requirements. Based on the monitoring visits, ASPIRED determined that the Subcontractors met the safety measures as defined by the project-specific EMMPs. Particularly, in Aratashen the marking and signalization was available at the excavation sites; the construction debris was removed on time and properly; trenches were backfilled and compacted properly, and the community streets were improved by gravel. Water tests conducted by the PURE-Water Project after completion of the drinking network improvement guaranteed water suitability for drinking purposes.

During the reporting period, the ASPIRED and PURE-Water Projects' Environmental Specialists prepared the environmental documentation for the Pokr Vedi project, including the EMMP which received USAID approval in April.

## 6. Existing Problems or Issues

ASPIRED suspended the pipework in Yeghegnut due to conflict between the new acting village mayor and the local council members. As a result, the community did not approve the village budget to allocate resources for the trenchwork under the water supply project, which was the community's responsibility. Since the conflict has not yet been resolved, the local council will be dissolved pending the new elections which took place on September 27. The ASPIRED team has suspended all the pipework in Yeghegnut village waiting for the election results. Meanwhile, the Project will complete the pumping station and transfer it to the community.

For the ATTC Project, the ASPIRED team has discussed with the fish farm owner how to address the financial difficulties he is facing that may affect his ability to populate the ponds with fish and crayfish. The ASPIRED Project will continue to collaborate with the ATTC owner to explore potential solutions.

## 7. Activities for the Next Quarter

### 7.1 Data

- Prepare the SWCIS Data Warehouse User Manual
- Conduct on-the-job training for the WRMA and EMIC on enhanced SWCIS operation and maintenance
- Develop recommendations on improved data sharing mechanisms via SWCIS and making the SWCIS online in collaboration with the WRMA
- Finalize the customization of the water supply and demand balance component of the DSS for the Ararat Valley, including testing and debugging of the component
- Finalize the customization of the surface water and groundwater quality assessment component

for the Ararat Valley, including testing and debugging of the component

- Complete the simulation of the groundwater steady-state model of the Ararat Valley groundwater basin, following AQUAVEO coaching and technical advice for simulating the model to calculate the groundwater storage for the year 2016 and estimate the values of recharge rate and sustainable yield.
- Discuss with ME the structure and content of the Ararat Valley Atlas
- Verify the geospatial data within the unified Ararat Valley geodatabase
- Work with Tom Sheng, an international expert working under CADI (subcontractor of the ASPIRED Project) on (a) customization of Decision Support tool for Ararat Valley, including DSS and groundwater modeling; (b) finalization of the format and outline of the Ararat Valley Atlas; and (c) finalization of technical report on the design and architecture of the SWCIS data warehouse.
- Finalize the deliverable report on the geo-spatial database of the Ararat Valley and proposed format and outline of the Ararat Valley Atlas
- Prepare the Manual on technical design and architecture of the SWCIS data warehouse
- Prepare the deliverable report on calculated values of water balance, and water supply and demand balance in the Ararat Valley using the DSS and the groundwater modeling software
- Work on construction of maps of the Ararat Valley Atlas according to the agreed structure of the Atlas.
- Hand the installed set of 19 flow meters and data loggers over to the ME.

## 7.2 Pilot Technologies

- Implement construction in Hovtashat Well Optimization Project;
- Start implementation of the construction under Vedi Urban Irrigation Project and monitor the sub-contractor's work;
- Evaluate the design tender under Pokr Vedi Irrigation Project and contract the design company.
- Prepare the tender documents for the construction phase of the Pokr Vedi Project.
- Based on the topography conclusions, prepare the concept papers for Khachpar Irrigation Project and submit to USAID for review and approval;
- Prepare the concept paper for Hovtashat Well Closure Project and submit to USAID for review and approval;
- Finalize the ATTC project based on agreed upon solutions with fish farm owner.

## 7.3. Legal and Policy Issues

- Discuss with the Ministry of Territorial Administration and Infrastructure the possibility of replacing the current representatives of the Ministry in the working group with the specialists of the Water Committee.
- Conduct the field trip to Qasakh river basin to make seasonal samplings, with involvement of the relevant specialists from EMIC and the Scientific Center of Zoology and Hydroecology who

will present the detailed procedures of seasonal sampling to the working group members from the ministries.

- Select the formula for assessment of the water quality and biological indicators for self-purification capacity of Qasakh river to be developed in MS Excel spreadsheet. Test the accuracy and efficiency of the suggested formula using the data provided by EMIC and Scientific Center of Zoology and Hydroecology.
- Brief on the regulatory activities in water sector (particularly developing the requirements for protection of water resources in recreation zones and developing the method on self-purification capacity of rivers) to the RA NA Standing Committee on Territorial Administration, Local Self-Government, Agriculture and Environment.

#### **7.4 Performance Management, Communication and Donor Coordination**

- Collaborate with the AAF on the implementation of Pokr Vedi Project.
- Plan and organize outreach events for completed projects;
- Conduct site visits to the project sites, collect photo and video materials;
- Conduct project monitoring to collect the data and the background documentation for the PMP indicators.
- Review the supporting documentation package for indicators for missing documents.

#### **7.5 Environmental Compliance**

- Regular monitoring of the ongoing projects in Metsamor (ATTTC), Hovtashat, Vedi and Pokr Vedi communities.
- Provide the environmental and social safety trainings to the representatives of the subcontractors and partner communities administration representatives.

#### **7.6 Project Management**

- Submit the ASPIRED Project's Year 5 Work Plan to USAID.
- Follow-up on the implementation of the contractual commitments by the sub-contractors
- Announce the construction tender for Pokr Vedi Project
- Complete the ongoing projects and ensure their handover to the communities/beneficiaries.