

Initial Environmental Examination

January 2012

ARM: Water Supply and Sanitation Sector Project – Subproject Sevan Town

Prepared by Armenian Water and Sewerage Company for the Republic of Armenia and the Asian Development Bank.

**ASIAN DEVELOPMENT BANK FUNDED
WATER SUPPLY AND SANITATION SECTOR PROJECT**

**WATER SUPPLY AND SANITATION SYSTEM IMPROVEMENT
IN THE SETTLEMENTS OF THE REPUBLIC OF ARMENIA**

INITIAL ENVIRONMENTAL EXAMINATION

Subproject SEVAN TOWN



1.1 Scope of work

The purpose of this sub-component of the project is by-passing of the water main appeared under water in the segment of “Akhtamar-Mashtotsner-Tsamaqaberd” that will allow to limit the uncontrolled water use by the resort zones located on the way to “Harsnaqar” hotel complex, including all kiosks and food bars located along the highway and to improve drinking water supply to some districts of town Sevan,

For this purpose, the following is planned to be implemented:

- Construction of de 250-de225 polyethylene water main with 9062.0m length,
- Construction of pressure reducing chamber at 2069.0 m altitude of Dzknaget-Sevan water main. Replacement of the existing DN250-DN200 valves and steel pipes with new ones
- Repair of reinforced concrete structures of the distribution node.

Town Sevan is constructed with 1-2 storey individual houses and multi-apartment blocks.

Total number of customers here is 6107.

As a result of the project implementation, it is planned to construct about 9km long water main and supply some districts of town Sevan with drinking quality water and to improve the water distribution and metering systems.

1.2 Description of the present water supply and sewerage systems of Sevan town

It was planned that town Sevan would be fed also from Dzknaget springs. However, the steel water main from Dzknaget springs joins Arevik-Sevan water main on the Tsovaghyugh-Sevan-Krasnoselsk crossroad and feeds the resort zones located on the way to “Harsnaqar” hotel complex, including all kiosks and food bars located along the highway. From the Tsovaghyugh-Sevan-Krasnoselsk crossroad’s connection node also complexes “Motel”, “2nd resort house”, “Kaputak Sevan” and a number of public properties in the opposite direction are fed through Arevik-Sevan water main. Depending on seasonal fluctuations, the springs’ flow is different, therefore during summer even resort zones lack water supply and town Sevan does not receive water at all.

During recent years, because of the Lake level increase, some resort zones have appeared under water. The segment “Akhtamar-Harsnaqar” of Arevik-Sevan water main has had the same destiny. The mentioned segment passes along Dilijan-Sevan present highway.

The uncontrolled water use by the resort zones infringes normal water supply to town Sevan.

1.3 The geographical location and climate of the residential area

Town Sevan is situated in Geghanqunik Marz, in the north-western part of Lake Sevan. These residential areas are located 60-80km far from Yerevan.

The mentioned zone stretches along Dilijan-Sevan highway and covers the area located from Tsaghkunq village upstream Dzoraget River until Hrazdan River Bridge (near Harsnaqar complex). The region has moderate climate with short cool summers and long, cold winters.

Absolute maximum air temperature is 33⁰C: Absolute minimum air temperature is -32⁰C: Annual precipitation is 588mm, north and north-eastern winds of 3.2m/sec velocity predominate here. During 20 years winds of 27m/sec velocity are possible. Snow cover thickness reaches 163cm, the pressure is 150kg/m².

Maximum land freezing depth is 114cm:(lake Sevan level).

The number of total population of town Sevan as of 01.01.2010 is 21800 and that of the resort zone - 23300.

Residential area is in the range of 1920-1995m altitudes.

1.4 Biodiversity and sensitive nature areas

From geomorphologic point of view the area is located within the boundaries of volcanic plateau, eroded-weathered slopes, Lake Sevan riparian lacustrine- sedimentary, partially river valleys.

Town Sevan is located in the region of volcanic plateau, eroded-weathered slopes, lacustrine-sedimentary, river valley.

From relief forms here hills, eroded-weathered slopes, steppes, pits, lacustrine- sedimentary zone, river valleys, flood plains, small rivers, river beds, etc.

From hydro-geological point of view, underground waters related to fractured groups of alluvial blocks and fractured groups of volcanic blocks. Their feeding takes place in the zone of high relief forms and discharge takes place in the riparian zone of Lake Sevan, in gorges and river beds, in lower located parts of relief. The area covers a broad zone and its different parts have different hydro-geological conditions and regime.

From dangerous physical-geological phenomena there are stone falls, stone slides, flooding in riparian zone, side and bed erosion in beds. Intense shore deterioration processes take place along the whole length of Lake Sevan shore. Silty rocks are corrosive to the concrete media. Sevan basin geographical position, unique climate and variety of flora have created a suitable environment for fauna.

The marz area is located in Geghama floristic region. It includes unique and endangered and endemic species of Armenian flora. The fauna is divided into two big groups. The first group includes land animals. Aquatic animals are classified in the second group. From the animal

category, there are the following species: mammals (34 species), birds (267 species), amphibious (3 species), reptiles (17 species) and fishes (9 species).

Forty eight species of the birds in Lake Sevan basin are nesting birds. The following species are included in that category. *Fulia atra*, *Anas platyrhynchos*, *Larus arg. armenicus* But. Among birds that are registered in RA Red Book the following are recorded in that territory.

Phalacrocorax carbo, *Phalacrocorax pygmaeus*, *Egretta alba*, *Plegadis falcinellus*, *Phoenicopterus roseus*, *Cygnus cygnus*, *Tadorna tadorna*, *Ancas ctrepara* and *Himantopus himantopus*.

Among reptiles there are *L. unisexualis*, *L. nairensis*, *L. rostombekovi*, from snakes, there are *Natrix natrix*, *tesselata*, *Coronella austriaca*. Among amphibious there are *Bufo viridis*, *Rana ridibunda* and *Rana macrocnemus*.

Among fishes there are *Salmo fario*, *Salmo ischchan* Kessler with it's 4 races *Curegonus laveratus*, *Barbus goktschaicus* Kessler, *Varicorhinus capoeta* and *Carassius car L.*

In the territory of "Sevan" national park there are a range of endemic and unique plants such as *Acantholimon gabrieljanae*, *Astragalus goktschaicus*, *Isatis sevangensis*, *Sorbus luristanica*, *s. hajastanica*, *Adonis wolgensis* etc.

The sub component implementation area does not have cultural, archeological or historical-cultural heritage. The information was obtained as a result of survey with village heads.

Information was obtained on the base of the following survey form.

B1. Are any of the following areas located inside or around the village or project site?

		Yes	No	Not identified
B1.1	National park, protected area designated by the government (coast line, wetlands, reserved area for ethnic or indigenous people, cultural heritage), and areas being considered for national parks or protected areas	1	2	3
B1.2	Virgin forests, tropical forests	1	2	3
B1.3	Ecological important habitat areas (coral reef, mangrove, wetland, tidal flats)	1	2	3
B 1.4	Habitat of valuable species protected by domestic laws or international treaties	1	2	3
B 1.5	Likely salts cumulus or soil erosion areas on a massive scale	1	2	3
B 1.6	Remarkable desertification trend areas	1	2	3
B 1.7	Archaeological, historical or cultural valuable areas	1	2	3

B 1.8	Living areas of ethnic, indigenous people or nomads who have a traditional lifestyle or special socially valuable areas	1	2	3
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1.5 Environmental Impact

As it was already stated, with the same sub component, it is planned to construct about 9km water main and pressure reducing chamber, repair r/c structures of distribution node.

Environmental Initial Examination (EIE) has found out that no negative impact is expected on landscape flora and fauna in the territory of works that will be implemented for water supply improvement.

Environmental detailed examination is planned to carry out during the working design, after the approval of all the locations of constructions that are planned to be built, renovated or reconstructed. According to environmental detailed examination, the sub component will be estimated by category and in case of necessity the monitoring plan and environmental management plan will be prepared.