

**No.18 Getap**

# Information on Existing Water Sources (Aragatsotn)

Study for Improvement of  
Rural Water Supply and  
Sewage Systems in RA

No.18 Community Getap  
District Talin  
Marz Aragatsotn

No.18 Community Getap  
District Talin  
Marz Aragatsotn  
Sampling date 14/Sep/2007

No	Water source	Latitude			Longitude			Atitude	Yeild(L/sec)		
		deg	min	sec	deg	min	sec	(m)	Min	Max	At site
1	Chlkanneri main	40	22	37.8	43	41	19.1	1,432	-	-	-
2	Borehole	40	23	11.4	43	36	56.6	1,387	-	-	-
3											
4											
5											
6											
7											
8											
9											
10											

<i>Notes:</i>	
<i>Latitude, Longitude, Atitude:</i>	<i>Measured at site</i>
<i>Yield (Min, Max):</i>	<i>Interviewed to the Community</i>
<i>Yield (at site):</i>	<i>Measured / estimated at site in summer of 2007</i>

Users Acceptnce for water quality	Not acceptable
Notes	Currently no water is supplied to Getap from this water main. The borehole is not operating and is used for non-drinking. The community takes water for drinking and household purposes from irrigation system. Water quality is very bad.
Alternative sources if any	No alternative water sources are available

	Parameters analysed	Units	No.1	Guidelines	
				WHO	Armenia
<i>a</i>	pH		7.8	6.5-8	6.0 - 9.0
<i>b</i>	Temperature	Deg.C	22.1		
<i>c</i>	TDS	Mg/L	123	1000	1000
1	Al:Aluminum	Mg/L	n.d	0.10	0.50
2	B:Boron	Mg/L	n.d	0.70	0.50
3	Cl:Chloride	Mg/L	13	250	350
4	Cr:Chrome	Mg/L	0.01	0.05	0.05
5	Cu:Copper	Mg/L	n.d	2	1
6	F:Fluoride	Mg/L	0.02	1.50	
7	Hardness	Mg/L	245	500	700
8	Fe:Iron	Mg/L	n.d	0.30	0.30
9	Mn:Manganese	Mg/L	n.d	0.40	0.10
10	Mo:Molibdenum	Mg/L	0.040	0.070	0.250
11	Ni:Nickel	Mg/L	n.d	0.020	0.100
12	Nitrate(NO3+)	Mg/L	1.8	50.0	45.0
13	SO4:Sulfate	Mg/L	33.0	250.0	500.0
14	Zn:Zink	Mg/L	n.d	3.0	5.0
15	As:Arsenic	Mg/L	n.d	0.0	0.1
16	Ba:Barium	Mg/L	<0.01	0.70	0.10
17	Be:Berillium	Mg/L	0.00005	NA	0.00020
18	Cd:Cadmium	Mg/L	n.d	0.0030	0.0010
19	Pb:Lead	Mg/L	<0.001	0.010	0.030
20	Hg:Mercury	Mg/L	<0.0002	0.00100	0.00050
21	Se:Selenium	Mg/L	<0.001	0.010	0.010
22	Sr:Strontium	Mg/L	<0.7	NA	7.0
23	CN:Cyanide	Mg/L	n.d	0.070	0.035
24	Coli form bacteria	bacteria per 100 ml		-	0
25	Thermo-tolerant coli form bacteria	bacteria per 100 ml		0	0
26	Total bacteria	bacteria per 1 ml		-	50



No. 18 Marz Aragatsotn Community Getap**1. ACCESSIBILITY TO THE SITE**

No.	Structures	Access by vehicle	Machine construction	Remarks
1	Intake	Difficult	Difficult	
2	Transmission pipeline	Difficult	Difficult	Pipeline is mostly far from the road
3	Reservoir			No reservoir

**2. INTAKE STRUCTURE**

No.	Water source	N	E	El. (m)	Year	Material	Volume (l/s)	Rehabilitation Necessity (Y/N)
1	Water main	40°22'37.8"	43°41'19.1"	1,432	1972	Steel	0	Yes
2	Groundwater	40°23'11.4"	43°36'56.6"	1,387	1985-1996	Steel	0	Yes

**3. TRANSMISSION PIPELINE**

No.	Pipeline length (m)	Pipe diameter	Material	Flow rate (l/s)	Year	Leakage	Rehabilitation Necessity (Y/N)
1	300	80	Steel	0	1972	Medium	Yes
	4,200	150	Steel			Medium	Yes
	1,800	150	Ductile Iron			Medium	Yes

**4. RESERVOIR**

No.	N	E	El. (m)	Material	Shape	Dimension (m)	Volume (m3)	Rehabilitation Necessity (Y/N)
1	No							

**5. CHLORINATION**

No.	Existence (Y/N)	Location	Chlorine type	Chlorine duration
1	Yes	Break pressure	Powder	Twice per month

**6. DISTRIBUTION PIPELINE**

No.	Pipeline length (m)	Pipe diameter	Material	Year	Leakage	Rehabilitation Necessity (Y/N)
1	50	50	Steel	1998	no	No
2	300	100	Steel	1989	Little	Yes
3	500	100	Steel	1998	Medium	Yes
4	1,050	150	Ductile Iron	1972	Little	Yes

**7. PUMP STATION**

Existence (Y/N)	Power source	Type	Capacity (l/s)	Pump head (m)	Tank cap. (m3)	House size (m)	Rehabilitation Necessity (Y/N)
Yes (1nos)	Commercial	Centrifugal	-	-	-	-	No

**8. PUBLIC TAPS**

No. of taps	Old one (year)	New one (year)	Valves (Y/N)	Valve rate (%)	Rehabilitation Necessity (Y/N)
6	1972	1998	No	0	Yes

**9. DRAINAGE SYSTEM**

Existence (Y/N)	Rehabilitation Necessity (Y/N)	Remarks
No	Yes	

## Questionnaire on Existing Water Supply Conditions by Socio-Economic Survey

<b>Marz</b>	<b>Aragatsotn</b>
<b>Number and Name of Community</b>	<b>No.18 Getap</b>
<b>District</b>	<b>Talin</b>

No.	Question	Answer
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### A: Baseline Data

A1	Actual population in 2001	257
A2	Actual population in 2007	175
A3	Number of households	75
A4.1	Elderly people	17
A4.2	Population in labor force (age from 16 to 62)	100
A4.3	Children	58
A5.1	Pensioners	18
A5.2	Unemployed	0
A5.3	Receiving benefits	1
A6	Average monthly income of household (AMD)	20,000
A7	Number of medical ambulance staion/first and health post	absent
A8	Number of beds in each medical ambulance staion	0
A9	Number of school	1
A10	Number of pupils	35

### B: Budget

B1	Annual Budget of the community 2004, in thousand AMD	1,850
	Annual Budget of the community 2005, in thousand AMD	2,270
	Annual Budget of the community 2006, in thousand AMD	2,280
	Annual Budget of the community 2007, in thousand AMD	1,800
	Annual Budget of the community 2008, in thousand AMD	is not planned.
B2	Amount spent in drinking water sector 2004, in thousand AMD	0
	Amount spent in drinking water sector 2005, in thousand AMD	675
	Amount spent in drinking water sector 2006, in thousand AMD	675
	Amount spent in drinking water sector 2007, in thousand AMD	0
	Amount spent in drinking water sector 2008, in thousand AMD	is not planned.

### C: Socio-Economic Survey

C1	Major industries of the community:	dairy, meat, fruit
C2	Is there any community activities carrying out by women? 1-Yes, 2-No	no

### D: Water Usage and Water Demand Survey

D1	Does the community hold water use permit? 1-Yes, 2-No	no
D2	Water use permit number	-
D3	Date of expiry of water use permit	-
D4	Planned date of obtaining water use permit	is not planned
D5	Present condition of the water supply volume of Domestic use	insufficient
D6	Present condition of the water supply volume of Irrigation water	insufficient
D7	Number of house connection to drinking water system	70
D8	How many house connection household set the water meter	0
D9	Number of public taps	4
D10.1	How is the regime of water supply in your community in the dry season?	regularly 4 hrs
D10.2	How is the regime of water supply in your community in the wet season?	regularly 7 hrs
D11	What time of day water is given?	13-17; 8-11; 17-20
D12	Are you pleased with duration of domestic water supply?	mainly displeased
D13	Are hours of water supply convenient?	mainly convenient
D14.1	How long the taps are open to provide the domestic water (cooking, washing, foodstuffs, dishes, Landry, bathing, etc) of each household a day?	-

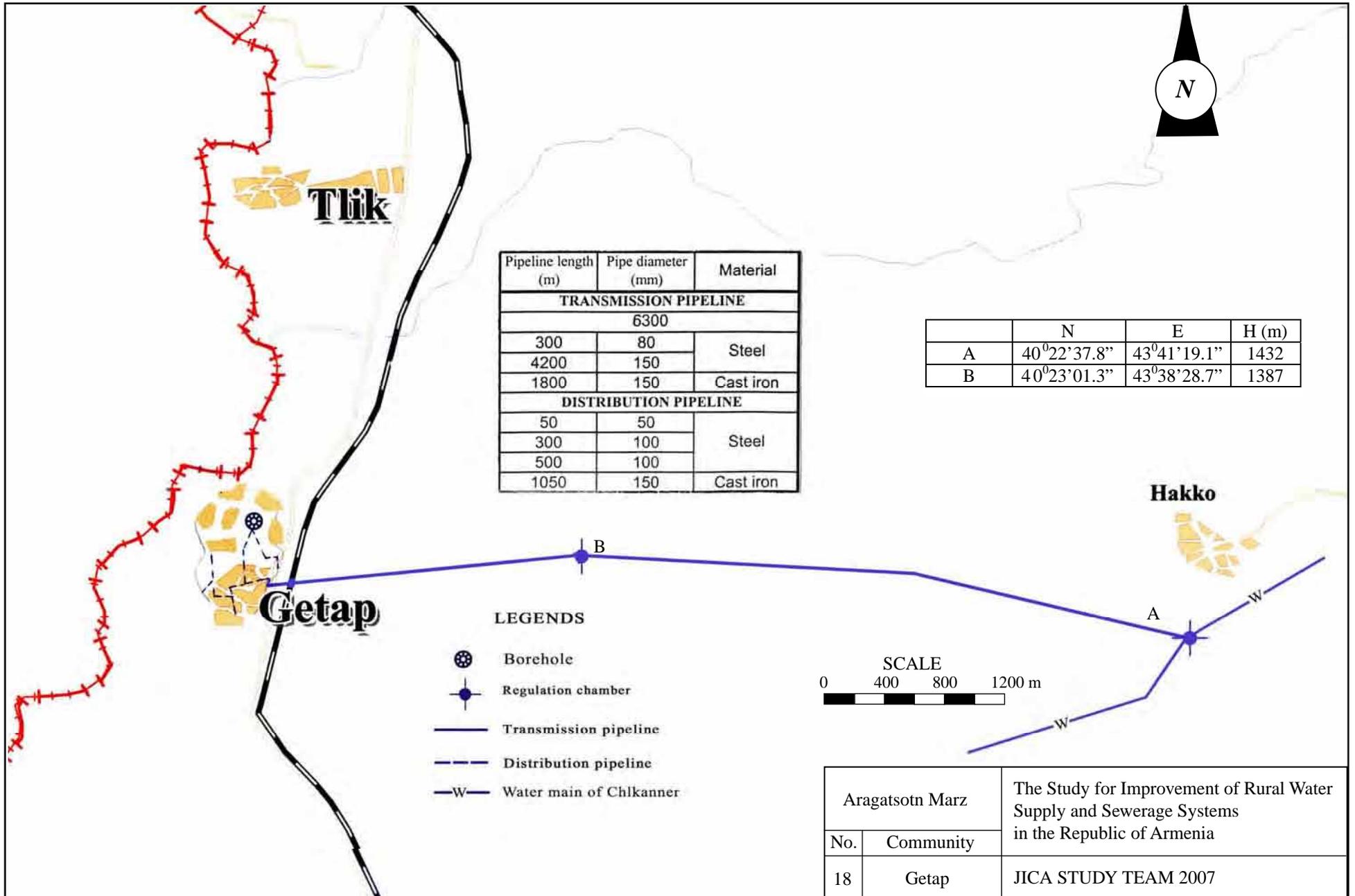
No.	Question	Answer
D14.2	Estimate quantity of domestic water use of each household (litter per day)	100
D15.1	How long the taps are open to provide the each household for filling	-
D15.2	Estimate quantity of water for filling containers of each household (litter per	300
D16	Drinking water monthly water fee per household	1000drams
D17	How often do you usually pay water fees?	each month
D18	Water fee structure 1Flat rate, 2 Having water tariff	flat rate
D19	Where do you acquire the irrigation water?	WUA
D20	Are you satisfied with irrigation water supply volume?	is not sufficient

### E: Present Operation and Maintenance Works

E1	Name of responsible for water supply	Yeghoyan Mushegh
E2	Position	water distributor
E3	Telephone	with the help of administration head
E4	Quantity and present condition of the water supply facilities: spring/ intake	absent
E5	Quantity and present condition of the water supply facilities:	2 deteriorated
E6	Quantity and present condition of the water supply facilities: DRR(Daily Regulatory Reservoir)	absent
E7	Quantity and present condition of the water supply facilities: net/distribution pipes	partially repaired
E8	Quantity and present condition of the water supply facilities: public tap	partially repaired
E9	Quantity and present condition of the water supply facilities: pump	1 deteriorated
E10	Who is the owner of the water supply facilities?	community
E11	Who is engaged in the water supply facilities repairing works?	residents
E12	How do you repair the water supply facilities?	partially repaired
E13	Who is in charge of the repair work in the community?	administration head
E14	How you prepare O&M costs?	community budget
E15	Please indicate the O&M cost breakdown per year for water supply	
	Electricity (AMD)	0
	Labor cost (AMD)	50,000
	Repair cost(AMD)	625,000
	Others(AMD)	0
	Total (AMD)	675,000
E16	Do the residents participate in the O&M works?	earthwork,
E17	What kind of OM method is preferable to you?	resident participation

### F: Initial Environmental Examination (IEE)

F1	Are any of the following areas located inside or around the project site?	
F1.1	National park, protected area designated by the government (coast line, water lands, reserved are for ethnic or indigenous people, cultural heritage), and areas being considered for national parks or proposed areas.	absent
F1.2	Virgin forests, tropical forests	absent
F1.3	Ecological improvement habits areas (coral reef, mangrove wetland, tidal	absent
F1.4	Habit of valuable species protected by domestic laws or international treaties	absent
F1.5	Likely salts cumulus or soil erosion areas on a massive scale	absent
F1.6	Remarkable desertification trend areas	absent
F1.7	Archaeological historical or cultural valuable areas	absent
F1.8	Living areas of ethic, indigenous people or nomads who have a traditional lifestyle or special socially valuable areas	yes



Pipeline length (m)	Pipe diameter (mm)	Material
<b>TRANSMISSION PIPELINE</b>		
6300		
300	80	Steel
4200	150	
1800	150	Cast iron
<b>DISTRIBUTION PIPELINE</b>		
50	50	Steel
300	100	
500	100	
1050	150	Cast iron

	N	E	H (m)
A	40°22'37.8"	43°41'19.1"	1432
B	40°23'01.3"	43°38'28.7"	1387

**LEGENDS**

-  Borehole
-  Regulation chamber
-  Transmission pipeline
-  Distribution pipeline
-  Water main of Chlkanner

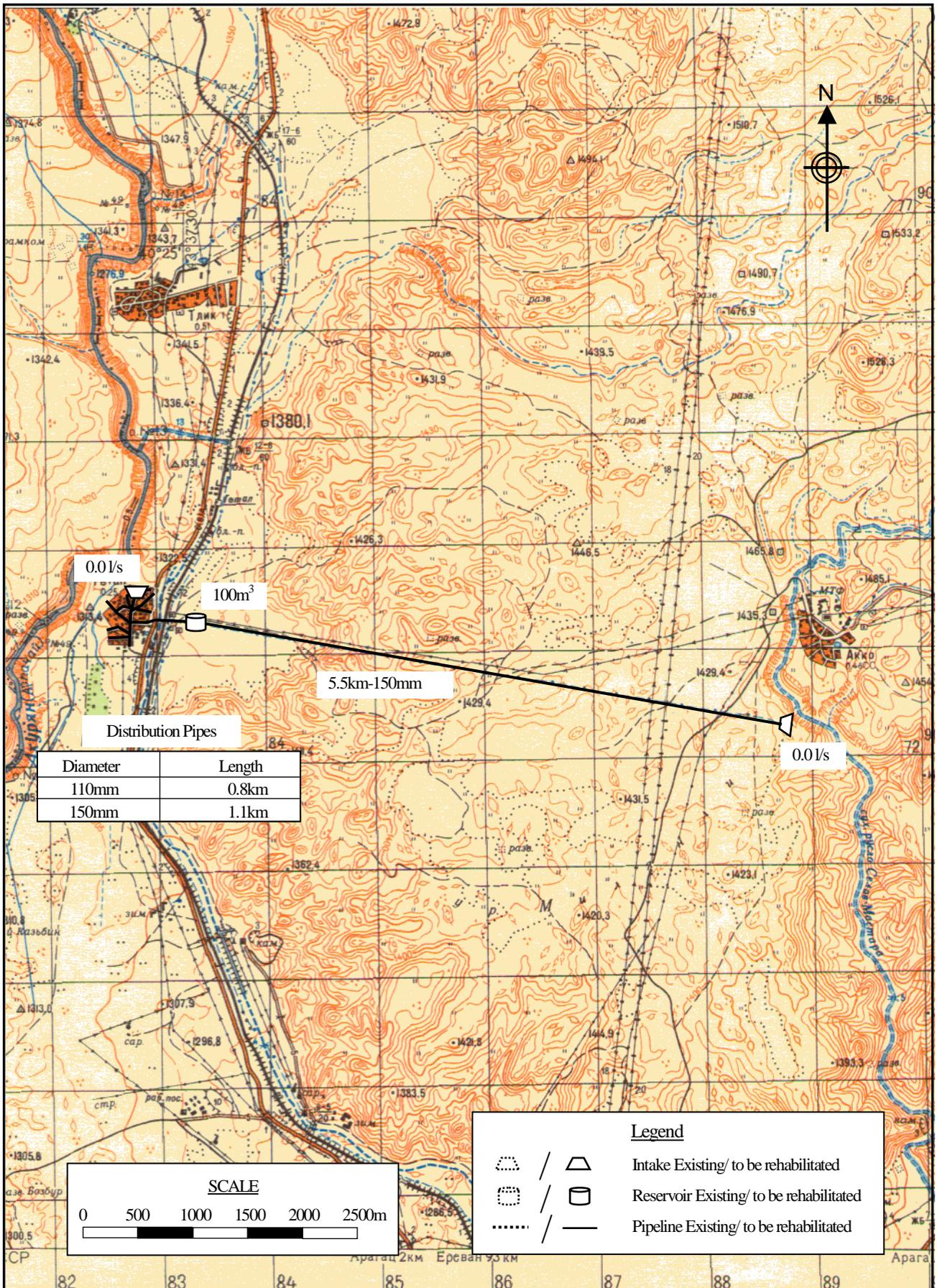


Aragatsotn Marz		The Study for Improvement of Rural Water Supply and Sewerage Systems in the Republic of Armenia
No.	Community	
18	Getap	JICA STUDY TEAM 2007

Marz : **Aragatsotn**  
Name : **Getap**

No.18

No.	Item	Quantity	Unit	Water demand (m3/d)
<b>A. WATER DEMAND</b>				
1	Population	175	persons	17.5
2	Factory	-	nos	0.0
3	School (pupils)	35	pupils	0.4
4	Medical Ambulance Station	-	nos	-
5	Policlinic	-	nos	-
6	Livestocks (87lit/household)	75	household	6.5
	Sub-total			24.4
	Unaccounted for water (20%)			4.9
1	Average Daily Water Demand		18.8	29.3 m3/day
2	Maximum Daily Water Demand			35.1 m3/day
3	Maximum Hourly Water Demand			8.6 m3/hr
<b>B. WATER SUPPLY PLAN</b>				
1	Water source type	Nr.	Total vol.	
a	Existing pipeline	1	0.0	lit/sec
b	groundwater	1	0.0	
	Total			0.0 m3/day
2	Additional water source			
2	Required reservoir volume			103 m3
<b>C. WATER SUPPLY FACILITIES REHABILITATION PLAN</b>				
No	Item	Quantity	Unit	
1	Intake			
	1m3	2	nos	
	2m3		nos	
	3m3		nos	
	4m3		nos	
2	Transmission pipe			
	50mm diameter		m	
	75mm diameter		m	
	90mm diameter		m	
	110mm diameter		m	
	150mm diameter	5,500	m	
	200mm diameter		m	
	250mm diameter		m	
3	Reservoir			
	100m3 capacity	1	nos	
4	Distribution pipe			
	50mm diameter		m	
	75mm diameter		m	
	90mm diameter		m	
	110mm diameter	800	m	
	150mm diameter	1,100	m	
	200mm diameter		m	
	250mm diameter		m	
5	House connection	5	nos	
6	Water meter installation	75	nos	
7	Public tap	1	nos	
8	Chlorination	1	nos	
9	Pumps	-	nos	



Water Supply Facilities Rehabilitation Plan		The Study for Improvement of Rural Water Supply and Sewerage Systems in the Republic of Armenia
Marz	Aragatsotn	
No. 18	Getap	JICA STUDY TEAM

STUDY FOR IMPROVEMENT OF  
RURAL WATER SUPPLY AND  
SEWAGE SYSTEMS IN RA

Marz : **Aragatsotn**  
No. : **18**  
Name : **Getap**

No	Item	Specification	Quantity	Unit	Unit Price	Total
1	Intake	1m3	2	nos	367,700	735,400
		2m3		nos	545,000	
		3m3		nos	669,100	
		4m3		nos	805,100	
	Sub-total					735,400
2	Transmission Pipe	50mm		m	5,520	
		75mm		m	7,160	
		90mm		m	8,040	
		110mm		m	9,680	
		150mm	5,500	m	13,140	72,270,000
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					72,270,000
3	Reservoir	50m3		nos	8,363,900	
		100m3	1	nos	12,968,300	12,968,300
		150m3		nos	18,804,500	
		200m3		nos	22,524,600	
		250m3		nos	25,952,800	
		300m3		nos	29,630,400	
		350m3		nos	33,528,700	
		400m3		nos	36,388,000	
		450m3		nos	39,392,500	
		500m3		nos	42,520,900	
	Sub-total					12,968,300
4	Distribution Pipe	50mm		m	5,520	
		75mm		m	7,160	
		90mm		m	8,040	
		110mm	800	m	9,680	7,744,000
		150mm	1,100	m	13,140	14,454,000
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					22,198,000
5	House Connection		5	nos	74,000	370,000
6	Water Meter Installation		75	nos	80,000	6,000,000
7	Public Tap		1	nos	90,000	90,000
8	Chlorilation Equipment		1	nos	500,000	500,000
9	Pump Replacement			nos	10,000,000	
10	Drainage and Sewerage concrete surfa		760	m	3,600	2,736,000
<b>Total</b>					<b>AMD</b>	<b>117,867,700</b>
					Equivalent to USD	385,794
					Equivalent to JPY	40,701,238
					<b>AMD</b>	<b>USD</b>
	Investment Cost per household		75	HH	1,571,569	5,144
	Investment Cost per person		175	persons	673,530	2,205





**No.19 Davtashen**

# Information on Existing Water Sources (Aragatsotn)

Study for Improvement of  
Rural Water Supply and  
Sewage Systems in RA

No.19 Community Davtashen  
District Talin  
Marz Aragatsotn

No.19 Community Davtashen  
District Talin  
Marz Aragatsotn  
Sampling date 21/Aug/2007

No	Water source	Latitude			Longitude			Atitude (m)	Yield(L/sec)		
		deg	min	sec	deg	min	sec		Min	Max	At site
1	Dzoni spring	40	22	37.3	43	57	46.1	1,718	3.5	8.0	5.0
2	Golov spring	40	23	58.8	44	0	24.4	2,050	6.0	10.0	7.0
3											
4											
5											
6											
7											
8											
9											
10											
<i>Notes:</i>											
<i>Latitude, Longitude, Atitude:</i>		<i>Measured at site</i>									
<i>Yield (Min, Max):</i>		<i>Interviewed to the Community</i>									
<i>Yield (at site):</i>		<i>Measured / estimated at site in summer of 2007</i>									

Users Acceptnce for water quality	Acceptable
Notes	
Alternative sources if any	In Golov spring area there is a prospective spring with 12l/sec discharge.

	Parameters analysed	Units	No.1 Dzori aghbyur	No.2 Golov Mkhov	Guidelines	
					WHO	Armenia
a	pH		7.2	8.6	6.5-8	6.0 - 9.0
b	Temperature	Deg.C	10.3	12.1		
c	TDS	Mg/L	82	51	1000	1000
1	Al:Aluminum	Mg/L	n.d	n.d	0.10	0.50
2	B:Boron	Mg/L	n.d	n.d	0.70	0.50
3	Cl:Chloride	Mg/L	5	4	250	350
4	Cr:Chrome	Mg/L	<0.01	n.d	0.05	0.05
5	Cu:Copper	Mg/L	n.d	n.d	2	1
6	F:Fluoride	Mg/L	0.02	0.02	1.50	
7	Hardness	Mg/L	185	110	500	700
8	Fe:Iron	Mg/L	n.d	n.d	0.30	0.30
9	Mn:Manganese	Mg/L	n.d	n.d	0.40	0.10
10	Mo:Molibdenum	Mg/L	n.d	<0.02	0.070	0.250
11	Ni:Nickel	Mg/L	n.d	0.004	0.020	0.100
12	Nitrate(NO3+)	Mg/L	3.1	2.7	50.0	45.0
13	SO4:Sulfate	Mg/L	8.0	4.0	250.0	500.0
14	Zn:Zink	Mg/L	n.d	n.d	3.0	5.0
15	As:Arsenic	Mg/L	n.d	n.d	0.0	0.1
16	Ba:Barium	Mg/L	<0.01	<0.01	0.70	0.10
17	Be:Berillium	Mg/L	n.d	n.d	NA	0.00020
18	Cd:Cadmium	Mg/L	0.0001	n.d	0.0030	0.0010
19	Pb:Lead	Mg/L	<0.001	0.009	0.010	0.030
20	Hg:Mercury	Mg/L	n.d	n.d	0.00100	0.00050
21	Se:Selenium	Mg/L	0.001	<0.001	0.010	0.010
22	Sr:Strontium	Mg/L	<0.7	<0.7	NA	7.0
23	CN:Cyanide	Mg/L	n.d	n.d	0.070	0.035
24	Coli form bacteria	bacteria per 100 ml	n.d		-	0
25	Thermo-tolerant coli form bacteria	bacteria per 100 ml	n.d		0	0
26	Total bacteria	bacteria per 1 ml	n.d		-	50



No. 19 Marz Aragatsotn Community Davtashen**1. ACCESSIBILITY TO THE SITE**

No.	Structures	Access by vehicle	Machine construction	Remarks
1	Intake	Fair	Possible	
2	Intake	Possible	Possible	
3	Transmission pipeline	Possible	Possible	Pipeline is mostly far from the road
4	Reservoir	Fair	Possible	

**2. INTAKE STRUCTURE**

No.	Water main	N	E	El. (m)	Year	Material	Volume (l/s)	Rehabilitation Necessity (Y/N)
1	Spring	40°22'37.3"	43°57'46.1"	1,718	1957	reinforced concrete	5.0	Yes
2	Spring	40°23'58.8"	44°00'24.4"	2,050	2002	Masonry	7.0	Yes

**3. TRANSMISSION PIPELINE**

No.	Pipeline length (m)	Pipe diameter	Material	Flow rate (l/s)	Year	Leakage	Rehabilitation Necessity (Y/N)
1	1,400	150	Steel	3.6	1976	Little	Yes
2	2,870	100	Steel	6.3	2002	Little	No
	2,300	80	Steel		1976	Little	Yes

**4. RESERVOIR**

No.	N	E	El. (m)	Material	Shape	Dimension (m)	Volume (m3)	Rehabilitation Necessity (Y/N)
1	40°21'52.7"	43°57'31.8"	1,700	reinforced concrete	Rectangular	14x7x4	300	Yes

**5. CHLORINATION EQUIPMENT**

No.	Existence (Y/N)	Location	Chlorine type	Chlorine duration
1	No			

**6. DISTRIBUTION PIPELINE**

No.	Pipeline length (m)	Pipe diameter	Material	Year	Leakage	Rehabilitation Necessity (Y/N)
1	2,900	80	Steel	1976	Medium	Yes
2	1,650	100	Steel	1976	Medium	Yes
3	1,800	150	Steel	1976	Medium	Yes

**7. PUMP STATION**

Existence (Y/N)	Power source	Type	Capacity (l/s)	Pump head (m)	Tank cap. (m3)	House size (m)	Rehabilitation Necessity (Y/N)
No							

**8. PUBLIC TAPS**

No. of taps	Old one (year)	New one (year)	Valves (Y/N)	Valve rate (%)	Rehabilitation Necessity (Y/N)
3		2004	Yes	100	No

**9. DRAINAGE SYSTEM**

Existence (Y/N)	Rehabilitation Necessity (Y/N)	Remarks
No	Yes	

## Questionnaire on Existing Water Supply Conditions by Socio-Economic Survey

<b>Marz</b>	<b>Aragatsotn</b>
<b>Number and Name of Community</b>	<b>No.19 Davtashen</b>
<b>District</b>	<b>Talin</b>

No.	Question	Answer
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### A: Baseline Data

A1	Actual population in 2001	800
A2	Actual population in 2007	870
A3	Number of households	244
A4.1	Elderly people	104
A4.2	Population in labor force (age from 16 to 62)	504
A4.3	Children	165
A5.1	Pensioners	139
A5.2	Unemployed	0
A5.3	Receiving benefits	20
A6	Average monthly income of household (AMD)	30,000
A7	Number of medical ambulance station/first and health post	absent
A8	Number of beds in each medical ambulance station	0
A9	Number of school	1
A10	Number of pupils	180

### B: Budget

B1	Annual Budget of the community 2004, in thousand AMD	730
	Annual Budget of the community 2005, in thousand AMD	715
	Annual Budget of the community 2006, in thousand AMD	750
	Annual Budget of the community 2007, in thousand AMD	470
	Annual Budget of the community 2008, in thousand AMD	is not planned.
B2	Amount spent in drinking water sector 2004, in thousand AMD	0
	Amount spent in drinking water sector 2005, in thousand AMD	0
	Amount spent in drinking water sector 2006, in thousand AMD	0
	Amount spent in drinking water sector 2007, in thousand AMD	0
	Amount spent in drinking water sector 2008, in thousand AMD	is not planned.

### C: Socio-Economic Survey

C1	Major industries of the community:	dairy, meat, cereals, fruit
C2	Is there any community activities carrying out by women? 1-Yes, 2-No	no

### D: Water Usage and Water Demand Survey

D1	Does the community hold water use permit? 1-Yes, 2-No	no
D2	Water use permit number	-
D3	Date of expiry of water use permit	-
D4	Planned date of obtaining water use permit	is not planned
D5	Present condition of the water supply volume of Domestic use	insufficient
D6	Present condition of the water supply volume of Irrigation water	insufficient
D7	Number of house connection to drinking water system	184
D8	How many house connection household set the water meter	0
D9	Number of public taps	3
D10.1	How is the regime of water supply in your community in the dry season?	24 hrs, internal district- 3 hrs
D10.2	How is the regime of water supply in your community in the wet season?	24 hrs, internal district- 3 hrs
D11	What time of day water is given?	irregularly
D12	Are you pleased with duration of domestic water supply?	mainly displeased
D13	Are hours of water supply convenient?	-
D14.1	How long the taps are open to provide the domestic water (cooking, washing, foodstuffs, dishes, Landry, bathing, etc) of each household a day?	-

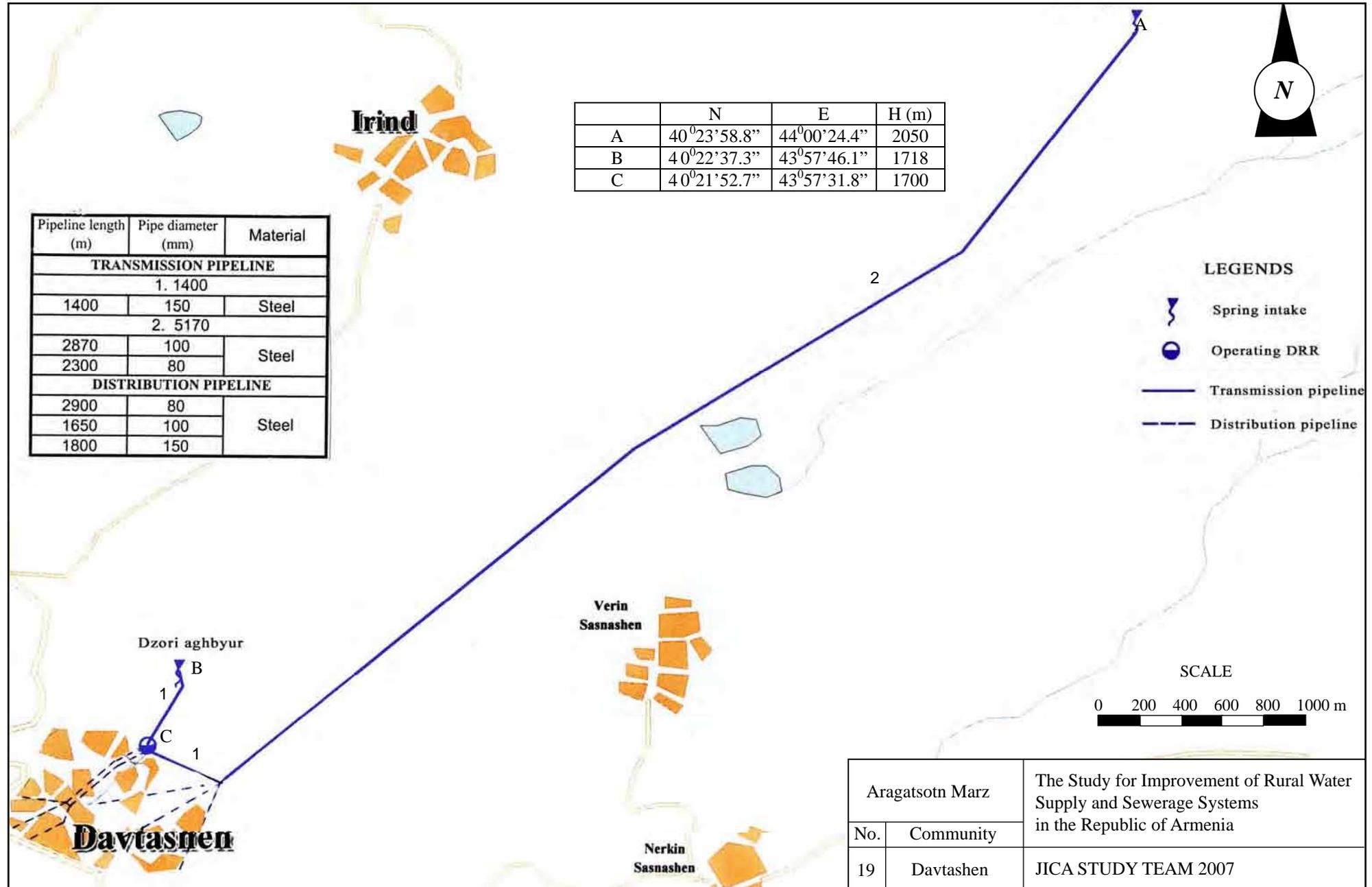
No.	Question	Answer
D14.2	Estimate quantity of domestic water use of each household (litter per day)	500
D15.1	How long the taps are open to provide the each household for filling	-
D15.2	Estimate quantity of water for filling containers of each household (litter per	1,000
D16	Drinking water monthly water fee per household	0
D17	How often do you usually pay water fees?	-
D18	Water fee structure 1-Flat rate, 2 Having water tariff	-
D19	Where do you acquire the irrigation water?	pipeline
D20	Are you satisfied with irrigation water supply volume?	is not sufficient

### E: Present Operation and Maintenance Works

E1	Name of responsible for water supply	Vardavyan Grigor
E2	Position	administration head
E3	Telephone	(093)559028
E4	Quantity and present condition of the water supply facilities: spring/ intake	2 deteriorated
E5	Quantity and present condition of the water supply facilities:	2 deteriorated
E6	Quantity and present condition of the water supply facilities: DRR(Daily Regulatory Reservoir)	1 deteriorated 1partially repaired
E7	Quantity and present condition of the water supply facilities: net/distribution pipes	deteriorated
E8	Quantity and present condition of the water supply facilities: public tap	partially repaired
E9	Quantity and present condition of the water supply facilities: pump	absent
E10	Who is the owner of the water supply facilities?	community
E11	Who is engaged in the water supply facilities repairing works?	community and residents
E12	How do you repair the water supply facilities?	by ourselves
E13	Who is in charge of the repair work in the community?	volunteers from community
E14	How you prepare O&M costs?	community budget, IFAD
E15	Please indicate the O&M cost breakdown per year for water supply	
	Electricity (AMD)	0
	Labor cost (AMD)	0
	Repair cost(AMD)	0
	Others(AMD)	0
	Total (AMD)	0
E16	Do the residents participate in the O&M works?	manpower
E17	What kind of OM method is preferable to you?	water fee

### F: Initial Environmental Examination (IEE)

F1	Are any of the following areas located inside or around the project site?	
F1.1	National park, protected area designated by the government (coast line, water lands, reserved are for ethnic or indigenous people, cultural heritage), and areas being considered for national parks or proposed areas.	absent
F1.2	Virgin forests, tropical forests	absent
F1.3	Ecological improvement habits areas (coral reef, mangrove wetland, tidal	absent
F1.4	Habit of valuable species protected by domestic laws or international treaties	absent
F1.5	Likely salts cumulus or soil erosion areas on a massive scale	absent
F1.6	Remarkable desertification trend areas	absent
F1.7	Archaeological historical or cultural valuable areas	absent
F1.8	Living areas of ethnic, indigenous people or nomads who have a traditional lifestyle or special socially valuable areas	absent

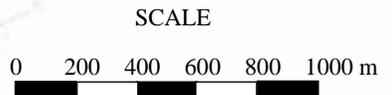


	N	E	H (m)
A	40°23'58.8"	44°00'24.4"	2050
B	40°22'37.3"	43°57'46.1"	1718
C	40°21'52.7"	43°57'31.8"	1700

Pipeline length (m)	Pipe diameter (mm)	Material
<b>TRANSMISSION PIPELINE</b>		
1. 1400		
1400	150	Steel
2. 5170		
2870	100	Steel
2300	80	
<b>DISTRIBUTION PIPELINE</b>		
2900	80	Steel
1650	100	
1800	150	

**LEGENDS**

-  Spring intake
-  Operating DRR
-  Transmission pipeline
-  Distribution pipeline



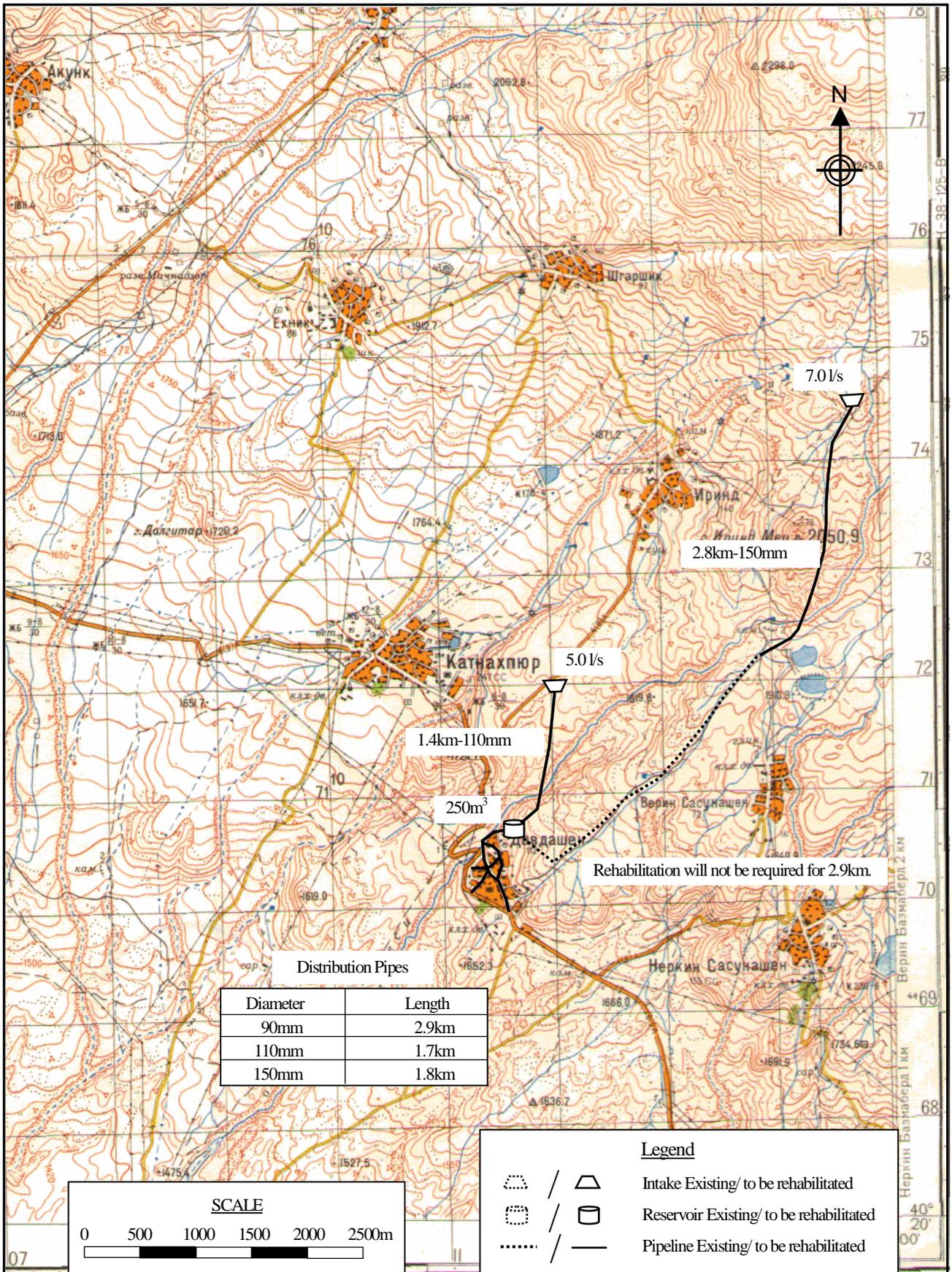
Aragatsotn Marz		The Study for Improvement of Rural Water Supply and Sewerage Systems in the Republic of Armenia
No.	Community	
19	Davtashen	JICA STUDY TEAM 2007

Marz : **Aragatsotn**  
Name : **Davtashen**

No.19

No.	Item	Quantity	Unit	Water demand (m3/d)
<b>A. WATER DEMAND</b>				
1	Population	870	persons	87.0
2	Factory	-	nos	0.0
3	School (pupils)	180	pupils	1.8
4	Medical Ambulance Station	-	nos	-
5	Policlinic	-	nos	-
6	Livestocks (87lit/household)	244	household	21.2
	Sub-total			110.0
	Unaccounted for water (20%)			22.0
1	Average Daily Water Demand			132.0 m3/day
2	Maximum Daily Water Demand			158.4 m3/day
3	Maximum Hourly Water Demand			18.9 m3/hr
<b>B. WATER SUPPLY PLAN</b>				
	1 Water source type	Nr.	Total vol.	
	a Spring	2	12.0	lit/sec
				1036.8 m3/day
	Total			1036.8 m3/day
	2 Required reservoir volume			227 m3

<b>C. WATER SUPPLY FACILITIES REHABILITATION PLAN</b>				
No	Item	Quantity	Unit	
1	Intake			
	1m3	2	nos	
	2m3		nos	
	3m3		nos	
	4m3		nos	
2	Transmission pipe			
	50mm diameter		m	
	75mm diameter		m	
	90mm diameter		m	
	110mm diameter	1,400	m	
	150mm diameter	2,800	m	
	200mm diameter		m	
	250mm diameter		m	
3	Reservoir			
	250m3 capacity	1	nos	
4	Distribution pipe			
	50mm diameter		m	
	75mm diameter		m	
	90mm diameter	2,900	m	
	110mm diameter	1,700	m	
	150mm diameter	1,800	m	
	200mm diameter		m	
	250mm diameter		m	
5	House connection	60	nos	
6	Water meter installation	244	nos	
7	Public tap	3	nos	
8	Chlorination	1	nos	
9	Pumps	-	nos	



Water Supply Facilities Rehabilitation Plan		The Study for Improvement of Rural Water Supply and Sewerage Systems in the Republic of Armenia
Marz	Aragatsotn	
No. 19	Davtashen	JICA STUDY TEAM

STUDY FOR IMPROVEMENT OF  
RURAL WATER SUPPLY AND  
SEWAGE SYSTEMS IN RA

Marz : **Aragatsotn**  
No. : **19**  
Name : **Davtashen**

No	Item	Specification	Quantity	Unit	Unit Price	Total
1	Intake	1m3	2	nos	367,700	735,400
		2m3		nos	545,000	
		3m3		nos	669,100	
		4m3		nos	805,100	
	Sub-total					735,400
2	Transmission Pipe	50mm		m	5,520	
		75mm		m	7,160	
		90mm		m	8,040	
		110mm	1,400	m	9,680	13,552,000
		150mm	2,800	m	13,140	36,792,000
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					50,344,000
3	Reservoir	50m3		nos	8,363,900	
		100m3		nos	12,968,300	
		150m3		nos	18,804,500	
		200m3		nos	22,524,600	
		250m3	1	nos	25,952,800	25,952,800
		300m3		nos	29,630,400	
		350m3		nos	33,528,700	
		400m3		nos	36,388,000	
		450m3		nos	39,392,500	
		500m3		nos	42,520,900	
	Sub-total					25,952,800
4	Distribution Pipe	50mm		m	5,520	
		75mm		m	7,160	
		90mm	2,900	m	8,040	23,316,000
		110mm	1,700	m	9,680	16,456,000
		150mm	1,800	m	13,140	23,652,000
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					63,424,000
5	House Connection		60	nos	74,000	4,440,000
6	Water Meter Installation		244	nos	80,000	19,520,000
7	Public Tap		3	nos	90,000	270,000
8	Chlorilation Equipment		1	nos	500,000	500,000
9	Pump Replacement			nos	10,000,000	
10	Drainage and Sewerage	concrete surfa	2,560	m	3,600	9,216,000
<b>Total</b>					<b>AMD</b>	<b>174,402,200</b>
					Equivalent to USD	570,837
					Equivalent to JPY	60,223,331
					<b>AMD</b>	<b>USD</b>
	Investment Cost per household		244	HH	714,763	2,339
	Investment Cost per person		870	persons	200,462	656



