

No.16 Geghadir

Information on Existing Water Sources (Aragatsotn)

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

No.16 Community Geghadir
District Aragats
Marz Aragatsotn

No.16 Community Geghadir
District Aragats
Marz Aragatsotn
Sampling date 16/Jul/2007

No	Water source	Latitude			Longitude			Atitude (m)	Yield(L/sec)		
		deg	min	sec	deg	min	sec		Min	Max	At site
1	Water main	40	36	18.2	44	10	10.9	2,383	50	100	100.0
2	River	40	36	14.3	44	10	12.3	2,385	30	100	3.0
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	Not acceptable
Notes	(I) From the water main (coordinates age taken here), 5 other Communitys take water. In total, 3l/sec of water reaches Geghadir community. In the internal network area there is 30% estimated leakage. (II) Only 3l/sec flow is taken from the small river.
Alternative sources if any	The small river can serve as water resource for the community, if treated.

	Parameters analysed	Units	No.1	Guidelines	
				WHO	Armenia
a	pH		6.8	6.5-8	6.0 - 9.0
b	Temperature	Deg.C	10.2		
c	TDS	Mg/L	26	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	4	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	0.03	1.50	
7	Hardness	Mg/L	40	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	n.d	0.070	0.250
11	Ni: Nickel	Mg/L	0.013	0.020	0.100
12	Nitrate(NO3+)	Mg/L	0.9	50.0	45.0
13	SO4: Sulfate	Mg/L	2.5	250.0	500.0
14	Zn: Zink	Mg/L	0.0	3.0	5.0
15	As: Arsenic	Mg/L	n.d	0.0	0.1
16	Ba: Barium	Mg/L	n.d	0.70	0.10
17	Be: Berillium	Mg/L	n.d	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	n.d	0.00100	0.00050
21	Se: Selenium	Mg/L	n.d	0.010	0.010
22	Sr: Strontium	Mg/L	n.d	NA	7.0
23	CN: Cyanide	Mg/L	n.d	0.070	0.035
24	Coli form bacteria	bacteria per 100 ml	>2380	-	0
25	Thermo-tolerant coli form bacteria	bacteria per 100 ml	n.d	0	0
26	Total bacteria	bacteria per 1 ml		-	50

No. 16 Marz Aragatsotn Community Geghadir**1. ACCESSIBILITY TO THE SITE**

No.	Structures	Access by vehicle	Machine construction	Remarks
1	Intake	Difficult	Difficult	
2	Transmission pipeline	Difficult	Difficult	Difficult to find the pipeline route
3	Reservoir	Possible	Possible	

2. INTAKE STRUCTURE

No.	Water source	N	E	El. (m)	Year	Material	Volume (l/s)	Rehabilitation Necessity (Y/N)
1	Water main	40°36'18.2"	44°10'10.9"	2,383	1975	Concrete	100.0	Yes
2	River/stream	40°36'14.3"	44°10'12.3"	2,385	1975	ground	3.0	Yes

3. TRANSMISSION PIPELINE

No.	Pipeline length (m)	Pipe diameter	Material	Flow rate (l/s)	Year	Leakage	Rehabilitation Necessity (Y/N)
1	60	250	Galvanized Steel	3.0	1975	Huge	Yes
	1,300	200	AsbestosCement			Huge	Yes
	1,000	150	AsbestosCement			Huge	Yes
	150	250	Steel			Huge	Yes
	8,000	150	Steel			Huge	Yes

4. RESERVOIR

No.	N	E	El. (m)	Material	Shape	Dimension (m)	Volume (m3)	Rehabilitation Necessity (Y/N)
1	40°39'24.4"	44°06'37.8"	2,096	reinforced concrete	Circle	h=4m,d=6m	2×100	Yes

5. CHLORINATION EQUIPMENT

No.	Existence (Y/N)	Location	Chlorine type	Chlorine duration
1	Yes	Break pressure		Irregular

6. DISTRIBUTION PIPELINE

No.	Pipeline length (m)	Pipe diameter	Material	Year	Leakage	Rehabilitation Necessity (Y/N)
1	4,500	100	Steel	1975	Medium	Yes
2	500	50	Steel		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)
4	1975		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

Marz	Aragatsotn
Number and Name of Community	No.16 Geghadir
District	Aragats

No.	Question	Answer
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A: Baseline Data

A1	Actual population in 2001	640
A2	Actual population in 2007	800
A3	Number of households	200
A4.1	Elderly people	100
A4.2	Population in labor force (age from 16 to 62)	535
A4.3	Children	165
A5.1	Pensioners	110
A5.2	Unemployed	20
A5.3	Receiving benefits	35
A6	Average monthly income of household (AMD)	5,000
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	120

B: Budget

B1	Annual Budget of the community 2004, in thousand AMD	5,700
	Annual Budget of the community 2005, in thousand AMD	5,900
	Annual Budget of the community 2006, in thousand AMD	6,200
	Annual Budget of the community 2007, in thousand AMD	3,500
	Annual Budget of the community 2008, in thousand AMD	is not planned.
B2	Amount spent in drinking water sector 2004, in thousand AMD	20
	Amount spent in drinking water sector 2005, in thousand AMD	30
	Amount spent in drinking water sector 2006, in thousand AMD	50
	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:	meat, dairy, vegetables
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	absent
D7	Number of house connection to drinking water system	30
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 (public tap)
D10.2	How is the regime of water supply in your community in the wet season?	24 hrs (public tap)
D11	What time of day water is given?	-
D12	Are you pleased with duration of domestic water supply?	-
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?	-

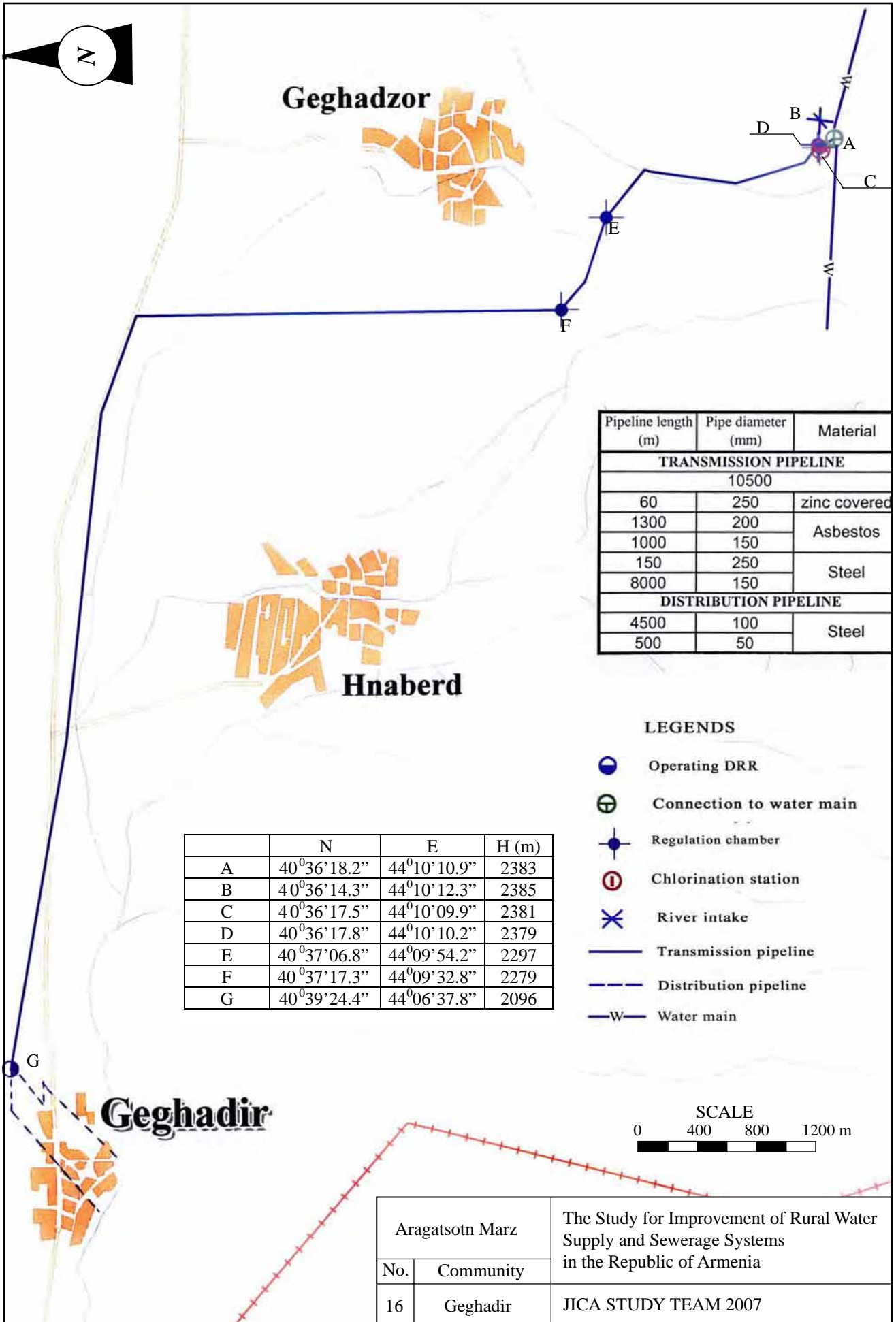
No.	Question	Answer
D14.2	Estimate quantity of domestic water use of each household (litter per day)	300
D15.1	How long the taps are open to provide the each household for filling	-
D15.2	Estimate quantity of water for filling containers of each household (litter per	300
D16	Drinking water monthly water fee per household	50/per capita
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?	absent
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	nobody
E2	Position	-
E3	Telephone	-
E4	Quantity and present condition of the water supply facilities: spring/ intake	1 partially repaired
E5	Quantity and present condition of the water supply facilities:	1 deteriorated
E6	Quantity and present condition of the water supply facilities: DRR(Daily Regulatory Reservoir)	1 deteriorated
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
E12	How do you repair the water supply facilities?	by ourselves
E13	Who is in charge of the repair work in the community?	specialist from community
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)	0
	Repair cost(AMD)	200,000
	Others(AMD)	0
	Total (AMD)	200,000
E16	Do the residents participate in the O&M works?	manpower
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	absent



Pipeline length (m)	Pipe diameter (mm)	Material
TRANSMISSION PIPELINE		
10500		
60	250	zinc covered
1300	200	Asbestos
1000	150	
150	250	Steel
8000	150	
DISTRIBUTION PIPELINE		
4500	100	Steel
500	50	

	N	E	H (m)
A	40°36'18.2"	44°10'10.9"	2383
B	40°36'14.3"	44°10'12.3"	2385
C	40°36'17.5"	44°10'09.9"	2381
D	40°36'17.8"	44°10'10.2"	2379
E	40°37'06.8"	44°09'54.2"	2297
F	40°37'17.3"	44°09'32.8"	2279
G	40°39'24.4"	44°06'37.8"	2096

LEGENDS

-  Operating DRR
-  Connection to water main
-  Regulation chamber
-  Chlorination station
-  River intake
-  Transmission pipeline
-  Distribution pipeline
-  Water main



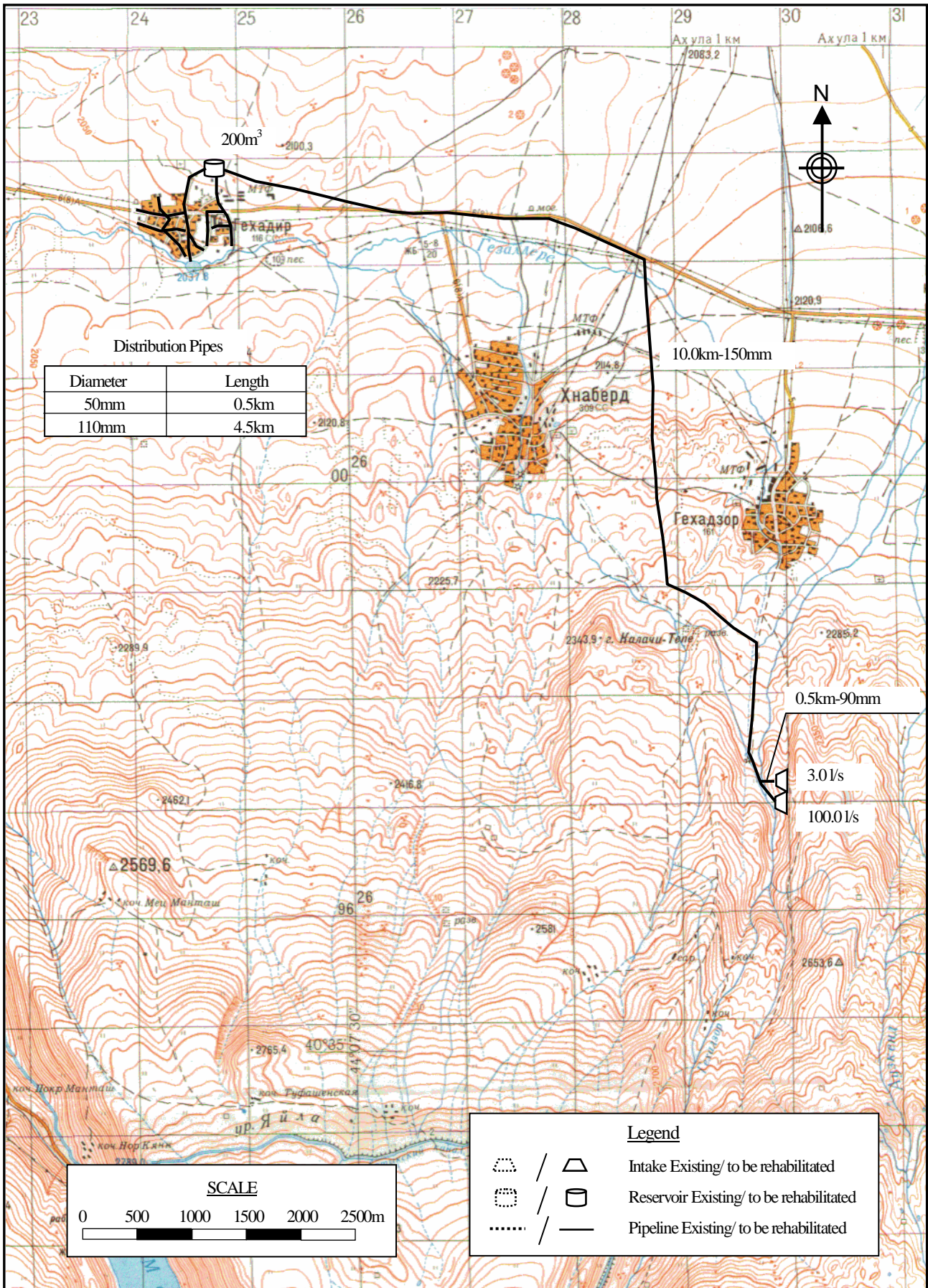
Aragatsotn Marz		The Study for Improvement of Rural Water Supply and Sewerage Systems in the Republic of Armenia
No.	Community	
16	Geghadir	JICA STUDY TEAM 2007

Marz : **Aragatsotn**
Name : **Gehgadir**

No.16

No.	Item	Quantity	Unit	Water demand (m3/d)
A. WATER DEMAND				
1	Population	800	persons	80.0
2	Factory	-	nos	0.0
3	School (pupils)	120	pupils	1.2
4	Medical Ambulance Station	-	nos	-
5	Policlinic	-	nos	-
6	Livestocks (87lit/household)	200	household	17.4
	Sub-total			98.6
	Unaccounted for water (20%)			19.7
1	Average Daily Water Demand			118.3 m3/day
2	Maximum Daily Water Demand			142.0 m3/day
3	Maximum Hourly Water Demand			16.9 m3/hr
B. WATER SUPPLY PLAN				
	1 Water source type	Nr.	Total vol.	
	a Distribution chamber	1	100.0	lit/sec
	b River	1	3.0	lit/sec
	Total			8640.0 m3/day
				259.2 m3/day
				8899.2 m3/day
	2 Required reservoir volume			203 m3

C. WATER SUPPLY FACILITIES REHABILITATION PLAN				
No	Item	Quantity	Unit	
1	Intake			
	1m3	1	nos	
	2m3		nos	
	3m3		nos	
	4m3	1	nos	
2	Transmission pipe			
	50mm diameter		m	
	75mm diameter		m	
	90mm diameter	500	m	
	110mm diameter		m	
	150mm diameter	10,000	m	
	200mm diameter		m	
	250mm diameter		m	
3	Reservoir			
	200m3 capacity	1	nos	
4	Distribution pipe			
	50mm diameter	500	m	
	75mm diameter		m	
	90mm diameter		m	
	110mm diameter	4,500	m	
	150mm diameter		m	
	200mm diameter		m	
	250mm diameter		m	
5	House connection	170	nos	
6	Water meter installation	200	nos	
7	Public tap	2	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. 16	Geghadir	JICA STUDY TEAM

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

Marz : **Aragatsotn**
No. : **16**
Name : **Gehgadir**

No	Item	Specification	Quantity	Unit	Unit Price	Total
1	Intake	1m3	1	nos	367,700	367,700
		2m3		nos	545,000	
		3m3	1	nos	669,100	669,100
		4m3		nos	805,100	
	Sub-total					1,036,800
2	Transmission Pipe	50mm		m	5,520	
		75mm		m	7,160	
		90mm	500	m	8,040	4,020,000
		110mm		m	9,680	
		150mm	10,000	m	13,140	131,400,000
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					135,420,000
3	Reservoir	50m3		nos	8,363,900	
		100m3		nos	12,968,300	
		150m3		nos	18,804,500	
		200m3	1	nos	22,524,600	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					22,524,600
4	Distribution Pipe	50mm	500	m	5,520	2,760,000
		75mm		m	7,160	
		90mm		m	8,040	
		110mm	4,500	m	9,680	43,560,000
		150mm		m	13,140	
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					46,320,000
5	House Connection		170	nos	74,000	12,580,000
6	Water Meter Installation		200	nos	80,000	16,000,000
7	Public Tap		2	nos	90,000	180,000
8	Chlorilation Equipment		1	nos	500,000	500,000
9	Pump Replacement			nos	10,000,000	
10	Drainage and Sewerage	concrete surfa	2,000	m	3,600	7,200,000
Total					AMD	241,761,400
					Equivalent to USD	791,311
					Equivalent to JPY	83,483,332
					AMD	USD
Investment Cost per household			200	HH	1,208,807	3,957
Investment Cost per person			800	persons	302,202	989

No.17 Gegharot

Information on Existing Water Sources (Aragatsotn)

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

No.17 Community Gegharot
District Aragats
Marz Aragatsotn

No.17 Community Gegharot
District Aragats
Marz Aragatsotn
Sampling date 18/Jul/2007

No	Water source	Latitude			Longitude			Atitude (m)	Yield(L/sec)		
		deg	min	sec	deg	min	sec		Min	Max	At site
1	spring	40	43	27.6	44	14	0.5	2,335	1.3	1.3	1.0
2	spring	40	43	19.4	44	14	8.3	2,212	1.2	1.2	1.2
3	borehole	40	42	14.2	44	13	0.6	2,080	-	-	-
4	spring	40	43	21.1	44	14	3.6	2,256	-	-	-
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 Acceptance for water quality	Acceptable
Notes	Currently the borehole is non-operational.
Alternative sources if any	In case of collecting water of "No.4 Daghdzi" springs' area, it is possible to add the flow with 1,2l/sec.

	Parameters analysed	Units	No.1 Reservoir	No.2	Guidelines	
					WHO	Armenia
a	pH		7.4	5.9	6.5-8	6.0 - 9.0
b	Temperature	Deg.C	15.4	10.7		
c	TDS	Mg/L	61	128	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	4	12	250	350
4	Cr: Chrome	Mg/L	<0.01	<0.01	0.05	0.05
5	Cu: Copper	Mg/L	n.d	n.d	2	1
6	F: Fluoride	Mg/L	0.06	0.06	1.50	
7	Hardness	Mg/L	120	200	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: Molybdenum	Mg/L	n.d	n.d	0.070	0.250
11	Ni: Nickel	Mg/L	0.008	n.d	0.020	0.100
12	Nitrate(NO3+)	Mg/L	3.1	9.8	50.0	45.0
13	SO4: Sulfate	Mg/L	4.0	16.0	250.0	500.0
14	Zn: Zinc	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: Beryllium	Mg/L	n.d	n.d	NA	0.00020
18	Cd: Cadmium	Mg/L	n.d	n.d	0.0030	0.0010
19	Pb: Lead	Mg/L	<0.001	<0.001	0.010	0.030
20	Hg: Mercury	Mg/L	<0.0002	n.d	0.00100	0.00050
21	Se: Selenium	Mg/L	<0.001	<0.001	0.010	0.010
22	Sr: Strontium	Mg/L	n.d	<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			-	0
25	Thermo-tolerant coli form bacteria	bacteria per 100 ml			0	0
26	Total bacteria	bacteria per 1 ml			-	50

No. 17 Marz Aragatsotn Community Gegharot**1. ACCESSIBILITY TO THE SITE**

No.	Structures	Access by vehicle	Machine construction	Remarks
1	Intake	Difficult	Difficult	
2	Intake	Difficult	Difficult	
3	Transmission pipeline	Difficult	Difficult	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°43'27.6"	44°14'00.5"	2,335	1948	reinforced concrete	1.0	No
2	Spring	40°43'19.4"	44°14'08.3"	2,212	2001	Concrete	1.2	Yes
3	Groundwater	40°42'14.2"	44°13'00.6"	2,080	1982	Steel	0.0	Yes
4	Spring	40°43'21.1"	44°14'03.6"	2,256	1982	Steel	-	Yes

3. TRANSMISSION PIPELINE

No.	Pipeline length (m)	Pipe diameter	Material	Flow rate (l/s)	Year	Leakage	Rehabilitation Necessity (Y/N)
1	2,500	65	Steel	1.0	1948	Medium	Yes
	800	150	Steel			Little	No
	1,900	100	Steel			2001	Little
2	300	50	Steel	Little	No		

4. RESERVOIR

No.	N	E	El. (m)	Material	Shape	Dimension (m)	Volume (m ³)	Rehabilitation Necessity (Y/N)
1	40°42'38.5"	44°13'06.2"	2153	reinforced concrete	Rectangular	8x8x3.5	200	No

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	1,000	100	Steel	1950	Huge	Yes
2	1,200	50	Steel	1950	Medium	Yes
2	3,000	100	Steel	1950	Medium	Yes
4	500	65	Steel	1950		Yes

7. PUMP STATION

Existence (Y/N)	Power source	Type	Capacity (l/s)	Pump head (m)	Tank cap. (m ³)	House size (m)	Rehabilitation Necessity (Y/N)
Yes	Commercial	Centrifugal	12	75	15	2x3x2	Yes

8. PUBLIC TAPS

No. of taps	Old one (year)	New one (year)	Valves (Y/N)	Valve rate (%)	Rehabilitation Necessity (Y/N)
20	1990		No	0	Yes

9. DRAINAGE SYSTEM

Existence	Rehabilitation	Remarks
No	Yes	

Questionnaire on Existing Water Supply Conditions by Socio-Economic Survey

Marz	Aragatsotn
Number and Name of Community	No.17Gegharot
District	Aragats

No.	Question	Answer
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A: Baseline Data

A1	Actual population in 2001	40
A2	Actual population in 2007	587
A3	Number of households	115
A4.1	Elderly people	87
A4.2	Population in labor force (age from 16 to 62)	318
A4.3	Children	182
A5.1	Pensioners	105
A5.2	Unemployed	4
A5.3	Receiving benefits	25
A6	Average monthly income of household (AMD)	30,000
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	122

B: Budget

B1	Annual Budget of the community 2004, in thousand AMD	3,200
	Annual Budget of the community 2005, in thousand AMD	3,200
	Annual Budget of the community 2006, in thousand AMD	2,800
	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	900
	Amount spent in drinking water sector 2005, in thousand AMD	1,200
	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
C2	Is there any community activities carrying out by women? 1-Yes, 2-No	Aregak credit program

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	2007
D5	Present condition of the water supply volume of Domestic use	almost sufficient
D6	Present condition of the water supply volume of Irrigation water	sufficient
D7	Number of house connection to drinking water system	52
D8	How many house connection household set the water meter	0
D9	Number of public taps	20
D10.1	How is the regime of water supply in your community in the dry season?	24 hrs
D10.2	How is the regime of water supply in your community in the wet season?	24 hrs
D11	What time of day water is given?	-
D12	Are you pleased with duration of domestic water supply?	very pleased
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)	300
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	350
D16	Drinking water monthly water fee per household	0
D17	How often do you usually pay water fees?	-
D18	Water fee structure 1Flat rate, 2 Having water tariff	-
D19	Where do you acquire the irrigation water?	Tsilqar reservoir
D20	Are you satisfied with irrigation water supply volume?	sufficient

E: Present Operation and Maintenance Works

E1	Name of responsible for water supply	nobody
E2	Position	-
E3	Telephone	-
E4	Quantity and present condition of the water supply facilities: spring/ intake	7 partially repaired
E5	Quantity and present condition of the water supply facilities:	2 rehabilitated
E6	Quantity and present condition of the water supply facilities: DRR(Daily Regulatory Reservoir)	1 rehabilitated.
E7	Quantity and present condition of the water supply facilities: net/distribution pipes	rehabilitated.
E8	Quantity and present condition of the water supply facilities: public tap	rehabilitated
E9	Quantity and present condition of the water supply facilities: pump	lis not used
E10	Who is the owner of the water supply facilities?	community
E11	Who is engaged in the water supply facilities repairing works?	community
E12	How do you repair the water supply facilities?	by ourselves
E13	Who is in charge of the repair work in the community?	specialist in the community with fee
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)	0
	Repair cost(AMD)	900,000
	Others(AMD)	0
	Total (AMD)	900,000
E16	Do the residents participate in the O&M works?	manpower
E17	What kind of OM method is preferable to you?	resident participation

F: Initial Environmental Examination (IEE)

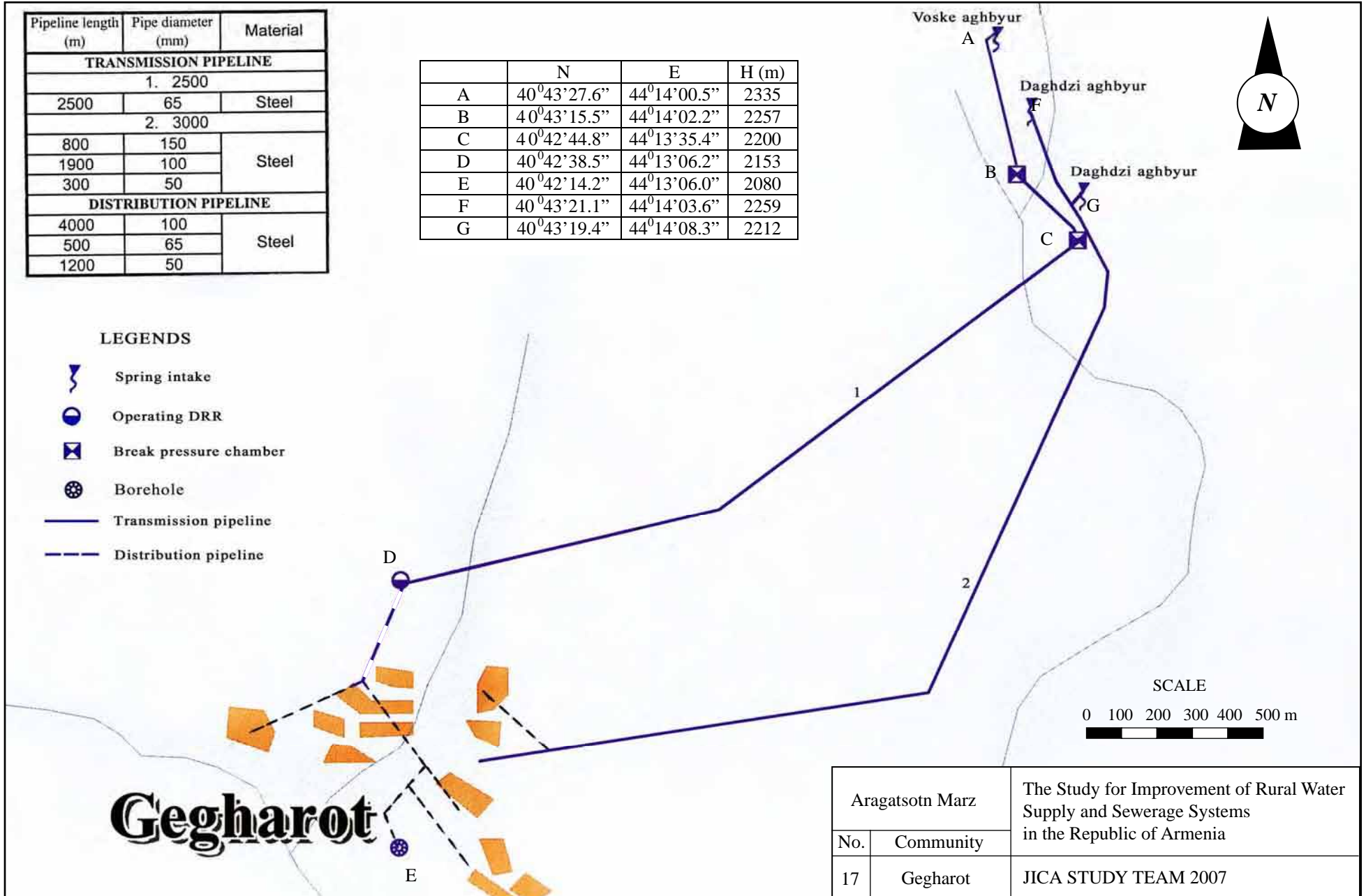
F1	Are any of the following areas located inside or around the project site?	
F1.1	National park, protected area designated by the government (coast line, water lands, reserved are for ethnic or indigenous people, cultural heritage), and areas being considered for national parks or proposed areas.	yes
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	yes
F1.8	Living areas of ethic, indigenous people or nomads who have a traditional lifestyle or special socially valuable areas	absent

Pipeline length (m)	Pipe diameter (mm)	Material
TRANSMISSION PIPELINE		
1. 2500		
2500	65	Steel
2. 3000		
800	150	Steel
1900	100	
300	50	
DISTRIBUTION PIPELINE		
4000	100	Steel
500	65	
1200	50	

	N	E	H (m)
A	40°43'27.6"	44°14'00.5"	2335
B	40°43'15.5"	44°14'02.2"	2257
C	40°42'44.8"	44°13'35.4"	2200
D	40°42'38.5"	44°13'06.2"	2153
E	40°42'14.2"	44°13'06.0"	2080
F	40°43'21.1"	44°14'03.6"	2259
G	40°43'19.4"	44°14'08.3"	2212

LEGENDS

-  Spring intake
-  Operating DRR
-  Break pressure chamber
-  Borehole
-  Transmission pipeline
-  Distribution pipeline



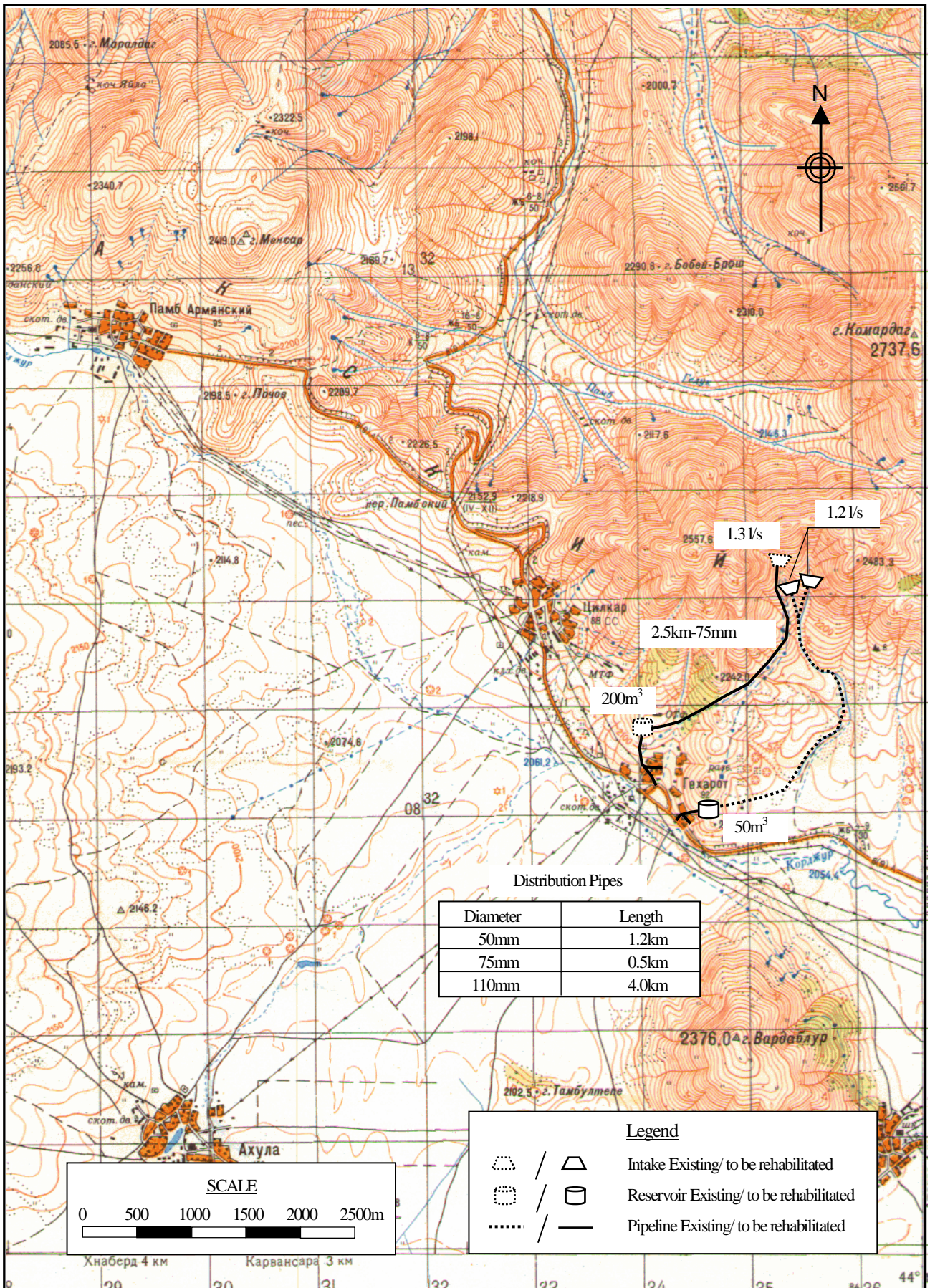
Aragatsotn Marz		The Study for Improvement of Rural Water Supply and Sewerage Systems in the Republic of Armenia
No.	Community	
17	Gegharot	JICA STUDY TEAM 2007

Marz : **Aragatsotn**
Name : **Gegharot**

No.17

No.	Item	Quantity	Unit	Water demand (m3/d)
A. WATER DEMAND				
1	Population	587	persons	58.7
2	Factory	-	nos	0.0
3	School (pupils)	122	pupils	1.2
4	Medical Ambulance Station	-	nos	-
5	Policlinic	-	nos	-
6	Livestocks (87lit/household)	115	household	10.0
	Sub-total			69.9
	Unaccounted for water (20%)			14.0
1	Average Daily Water Demand			83.9 m3/day
2	Maximum Daily Water Demand			100.7 m3/day
3	Maximum Hourly Water Demand			13.6 m3/hr
B. WATER SUPPLY PLAN				
	1 Water source type	Nr.	Total vol.	
	a Spring	2	2.5 lit/sec	216.0 m3/day
	b Borehole	1	0.0 lit/sec	0.0 m3/day
	Total			216.0 m3/day
	2 Required reservoir volume			164 m3

C. WATER SUPPLY FACILITIES REHABILITATION PLAN				
No	Item	Quantity	Unit	
1	Intake			
	1m3	2	nos	
	2m3		nos	
	3m3		nos	
	4m3		nos	
2	Transmission pipe			
	50mm diameter		m	
	75mm diameter	2,500	m	
	90mm diameter		m	
	110mm diameter		m	
	150mm diameter		m	
	200mm diameter		m	
	250mm diameter		m	
3	Reservoir			
	50m3 capacity	1	nos	
4	Distribution pipe			
	50mm diameter	1,200	m	
	75mm diameter	500	m	
	90mm diameter		m	
	110mm diameter	4,000	m	
	150mm diameter		m	
	200mm diameter		m	
	250mm diameter		m	
5	House connection	63	nos	
6	Water meter installation	115	nos	
7	Public tap	2	nos	
8	Chlorination	2	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 JICA STUDY TEAM
Marz	Aragatsotn	
No. 17	Gegharot	

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

Marz : **Aragatsotn**
No. : **17**
Name : **Gegharot**

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	2,500	m	7,160	17,900,000
		90mm		m	8,040	
		110mm		m	9,680	
		150mm		m	13,140	
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					17,900,000
3	Reservoir	50m3	1	nos	8,363,900	8,363,900
		100m3		nos	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					8,363,900
4	Distribution Pipe	50mm	1,200	m	5,520	6,624,000
		75mm	500	m	7,160	3,580,000
		90mm		m	8,040	
		110mm	4,000	m	9,680	38,720,000
		150mm		m	13,140	
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					48,924,000
5	House Connection		63	nos	74,000	4,662,000
6	Water Meter Installation		115	nos	80,000	9,200,000
7	Public Tap		2	nos	90,000	180,000
8	Chlorilation Equipment		2	nos	500,000	1,000,000
9	Pump Replacement			nos	10,000,000	
10	Drainage and Sewerage	concrete surfa	2,280	m	3,600	8,208,000
Total					AMD	99,173,300
					Equivalent to USD	324,605
					Equivalent to JPY	34,245,821
					AMD	USD
	Investment Cost per household		115	HH	862,377	2,823
	Investment Cost per person		587	persons	168,949	553

