

5 ENVIRONMENTAL EXAMINATION

5-1 Environmental Examination for Cultural Properties (1/2)

Community	Nos. of cultural properties	Rating	Community	Nos. of cultural properties	Rating
ARAGATSOTN MARZ					
Akunq	9	D	Lusagyugh	10	D
Aghdzq	9	D	Tsaghkahovit	5	D
Antarut	3	D	Tsaghkashen	2	D
Ashnak	16	D	Tsilqar	6	D
Avan+Khnusik	36	D	Katnaghbyur	10	D
Avtona	13	D	Karmrashen	13	D
Aragats (Aparan district)	12	D	Kaqavadzor	9	D
Arayi	6	D	Hartavan	15	D
Arteni	1	D	Dzoraglukh	14	D
Apnagyugh	10	D	Dzoragyugh	3	D
Baysz	4	D	Meliqgyugh	3	D
Byurakan	40	D	Miraq	4	D
Garnahovit	10	D	Mulqi	2	D
Geghadir	1	D	Nigavan	9	D
Gegharot	11	D	Norashen (Aparan district)	8	D
Davtashen	5	D	Norashen (Aragats District)	2	D
Dian	4	D	Shenavan	4	D
Yeghipartush	8	D	Shgharshik	2	D
Yeghnik	10	D	Vosketas	2	D
Yernjatap	14	D	Chqnagh	6	D
Zovasar	3	D	Vardenis	14	D
Ttujur	7	D	Vardenut	5	D
Irind	6	D	Verin Sasunik	18	D
Lernapar	4	D	Tegher	2	D
Lernarot	24	D	Orgov	24	D
SHIRAK MARZ					
Alvar	3	D	Krasar	6	D
Aghvorik	2	D	Hovit	11	D
Ardenis	3	D	Dzorashen	1	D
Arpeni	6	D	Mets Sarian	3	D
Bandivan	14	D	Musaelyan	19	D
Bashgyugh	8	D	Shaghik	3	D
Garnaritch + Yeghnajur	4	D	Shirak	2	D
Kamkhut	2	D	Pemzashen	12	D
Lernakert	12	D	Jajur	4	D
Lernut	4	D	Jrarat	18	D
Tsaghkut	5	D	Sarnaghbyur	45	D
Kamo	12	D	Sarapat	2	D
Karmrakar	10	D	Sizavet	1	D
Kaqavasar	3	D	Tzogharmarg	8	D
Krashen	2	D	Poqr Sarian	2	D

Source: The Study Team (2007)

5-1 Environmental Examination for Cultural Properties (2/2)

Community	Nos. of cultural properties	Rating	Community	Nos. of cultural properties	Rating
GEGHARKUNIK MARZ					
Akunq	19	D	Tsaghkunq	8	D
Aghberg	1	D	Tsovagyugh	14	D
Ayrq	8	D	Tsovak	9	D
Astghadzor	19	D	Tsovinar	25	D
Arstvanist	33	D	Kalavan	22	D
Geghamabak	3	D	Barepat	5	D
Geghamavan	17	D	Karchaghbyur	24	D
Gegharkunik	11	D	Dzoragyugh	29	D
Geghhovit	25	D	Dzoravanq	3	D
Ddmashen	11	D	Madina	16	D
Dprabak	4	D	Maqenis	8	D
Drakhtik	3	D	Mets Masrik	11	D
Yerenos	19	D	Shatjreq	3	D
Zolaqar	30	D	Shatvan	2	D
Zovaber	11	D	Shorzha	5	D
Tazagyugh	12	D	Jaghatzadzor	12	D
Lchavan	8	D	Vaghashen	14	D
Lusakunq	4	D	Vardadzor	20	D
Khachaghbyur	7	D	Verin Getashen	14	D
Tsaghkashen	10	D	Torfavan	5	D
			Pokr Masrik	6	D
TAVUSH MARZ					
Aghavnavanq	10	D	Itsakar	8	D
Gandzaqar	33	D	Lusahovit	3	D
Getahovit	8	D	Lusadzor	5	D
Gosh	16	D	Khachardzan	12	D
Yenoqavan	35	D	Hovq	7	D
Teghut	5	D	Navur	29	D

Source: The Study Team (2007)

Ratings for Environmental Examination in accordance with JICA Guideline:

A: serious impact is expected,

B: some impact is expected,

C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progress),

D: No impact is expected. IEE/EIA is not necessary.

5- 2 Environmental Examinations on Hazard (Risk) - (1/4)

Community	Rating	Factors for Environmental Examinations on Hazard (Risk)					
		Risk	Hazard Level	Risk Level	M/ P	Scale	Impact
ARAGATSON MARTZ							
Apnagyugh	D	Landslide	III	M	c	1 site 8 ha.	No problem
Byurakan	D	Landslide	III	M	c	2 sites 37 + 79 ha = 116 ha.	No problem
Zovasar	D	Landslide	III	M	c	1 site 290 ha	No problem
Ttujur	D	Landslide	III	M	c	3 sites 30 + 31 + 60 ha = 121 ha.	No problem
Lernapar	D	Landslide	III	M	c	1 sites 2 ha.	No problem
		Community area almost flat, but there are some damaging houses. It is a possibility due to softened ground and frozen heave by water infiltrating. No					
Lusagyugh	D	Landslide	III	M	c	2 site 31 + 48 ha = 79 ha.	No problem
Meliqgyugh	D	Landslide	III	M	c	2 site 14 + 25 ha = 39 ha.	No problem
Miraq	D	Landslide	III	M	c	1 site 24 ha.	No problem
SHIRAK MARTZ							
Lernakert	D	Landslide	III	M	c	1 site 676 ha.	No problem
Lernut	D	Landslide	III	M	c	1 site 13 ha.	No problem
Kamo	D	Landslide	III	M	c	2 sites 25 + 25 ha = 50 ha.	No problem
Karmraqar	D	Landslide	III	M	c	1 site 179 ha	No problem
Mets Sarian	D	Landslide	III	M	c	2 sites 1 + 33 ha = 34 ha.	No problem
Musaelyan	D	Landslide	III	M	c	1 site 1 ha.	No problem
Jajur	D	Landslide	II	M	c	1 site 13 ha.	No problem
Jrarat	D	Landslide	III	M	c	1 site 1 ha.	No problem

Source: JICA 2006: Study on Landslide Disaster Management in the Republic of Armenia.
Table format was modified by the Study Team (2004)

5- 2 Environmental Examinations on Hazard (Risk) - (2/4)

Community	Rating	Factors for Environmental Examinations on Hazard (Risk)					
		Risk	Hazard Level	Risk Level	M/ P	Scale	Impact
GEGHARKUNIK MARTZ							
Aygut	C	Landslide	I	M	b	1 site 43 ha.	Probable impact by infiltrating water.
Antaramej	D	Landslide	III	M	c	1 site 4 ha.	No problem
Astghadzor	D	Landslide	III	M	c	1 site 76 ha.	No problem
Geghamavan	D	Landslide	III	M	c	6 sites, 5 + 23 + 25 + 36 + 51 + 52 = 192 ha.	No problem
Geghhovit	D	Landslide	III	M	C	2 sites, 59 + 87 = 146 ha.	No problem
Ddmashen	D	Landslide	III	M	c	2 sites, 6 + 19 = 25 ha.	No problem
Dprabak	C	Landslide	I	M	b	1 sites 338 ha.	Probable impact by infiltrating water.
Yerenos	D	Landslide	II	M	c	1 sites 93 ha.	No problem
		Landslide	III	M	c	6 sites, 6 + 7 + 7 + 7 + 7 + 42 = 76 ha	No problem
Tazagyugh	D	Landslide	III	M	c	1 site 13 ha.	No problem
Lchavan	D	Landslide	III	M	c	1 site 8 ha	No problem
Tsovagyugh	D	Landslide	III	M	c	1 site 1 ha.	No problem
Tsovak	D	Landslide	III	M	c	1 site 13 ha.	No problem
Kalavan	D	Landslide	II	M	c	1 site 63 ha.	No problem
Dzoravanq	C	Landslide	II	H	b	1 site 18 ha	No problem
Madina	D	Landslide	III	M	c	1 site 12 ha.	No problem
Jaghatzadzor	D	Landslide	II	M	c	7 site, 1 + 8 + 33 + 39 + 59 + 90 + 99 = 329 ha.	No problem
Vardadzor	D	Landslide	III	H	c	2 sites 13 + 41 = 54 ha.	No problem

Source: JICA 2006: Study on Landslide Disaster Management in the Republic of Armenia.
Table format was modified by the Study Team (2004)

5- 2 Environmental Examinations on Hazard (Risk) -(3/4)

Community	Rating	Factors for Environmental Examinations on Hazard (Risk)					
		Risk	Hazard Level	Risk Level	M/ P	Scale	Impact
TAVUSH MARZ							
Gandzaqar	C	Landslide	I	M	b	1 site 56 ha	probable impact by infiltrating water.
		Landslide	III	M	c	7 sites, 4 + 9 + 9 + 14 + 149+163 + 210 = 558 ha,	No problem
Getahovit	C	Landslide	II	H	b	2 sites 4 ha + 5 ha = 9 ha	probable impact by infiltrating water.
		Landslide	III	M	c	6 sites 4 + 5 + 23 + 39 + 51 + 61 ha = 183 ha	No problem
Gosh	C	Landslide	I	H	a	1 site 42 ha.	Probable impact by infiltrating water.
		Landslide	III	M	c	2 sites 57 + 78 ha = 135 ha,	No problem
Yenoqavan	C	Landslide	II	H	b	1 site 31 ha	probable impact by infiltrating water.
		Landslide	III	M	c	7 sites, 1 + 15 + 36 + 43 + 60 + 226 + 662 = 1043 ha,	No problem
Teghut	D	Landslide	III	M	c	7 sites, 1 + 1 + 10 + 11 + 14 + 23 + 25 = 85 ha.	No problem
Lusahovit	D	Landslide	III	M	c	3 sites, 1 + 20 + 127 = 148 ha.	No problem
Lusadzor	D	Landslide	II	M	c	1 site 1 ha.	No problem
Khachardzan	C	Landslide	I	M	b	1 site 113 ha.	Probable impact by infiltrating water.
Hovq	C	Landslide	I	H	a	1 site 628 ha.	Probable impact by infiltrating water.
Navur	C	Landslide	II	H	b	1 site 10 ha.	Probable impact by infiltrating water.
		Landslide	II	M	c	1 site 6 ha.	No problem

Source: JICA 2006: Study on Landslide Disaster Management in the Republic of Armenia.
Table format was modified by the Study Team (2004)

5-2 Environmental Examinations on Hazard (Risk) –(4/4)

Codes for Evaluation of Hazard (Risks)

Hazard Level Code																	
I	Damages are progressing																
II	Damages were reported or recognized in the past and effective countermeasures have not performed																
III	Landslide configuration are recognized, bad damages have not reported/recognized																
Risk Level Code (Risk Object & Environmental/Economical Impact Level)																	
H	Many houses, public facilities, or important infrastructure are exist as risk objects Landslide is causing serious environment impact																
M	Some houses, public facilities, or infrastructure are exist as risk objects. Landslide is causing serious environment impact																
L	Landslide is little relation with human activity																
Risk Management Priority Code																	
	<table border="1"> <thead> <tr> <th>Hazard Level</th> <th>I</th> <th>II</th> <th>III</th> </tr> </thead> <tbody> <tr> <td>Risk Level H</td> <td>a</td> <td>b</td> <td>c</td> </tr> <tr> <td>Risk Level M</td> <td>b</td> <td>c</td> <td>c</td> </tr> <tr> <td>Risk Level L</td> <td>c</td> <td>c</td> <td>d</td> </tr> </tbody> </table>	Hazard Level	I	II	III	Risk Level H	a	b	c	Risk Level M	b	c	c	Risk Level L	c	c	d
Hazard Level	I	II	III														
Risk Level H	a	b	c														
Risk Level M	b	c	c														
Risk Level L	c	c	d														

Source: JICA 2006: Study on Landslide Disaster Management in the Republic of Armenia.

Ratings for Environmental Examination in Accordance with JICA Guideline

Ratings:

- A: serious impact is expected,
- B: some impact is expected,
- C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progress),
- D: No impact is expected. IEE/EIA is not necessary.

(JICA Guideline)

**6 EXISTENCE OF DRINKING WATER USE PERMITS
 IN RURAL COMMUNITIES**

Aragatsotn Marz

No.	Community	District	Existence of Drinking Water Use Permit (yes/no)
1	Akunj	Talin	WUP No. 1157, expires on 31.07.09
2	Aghdzq	Ashtarak	No WUP
3	Antarut	Ashtarak	No WUP
4	Ashnak	Talin	WUP No. 1048, expires on 28.03.09
5	Avan+Kh nusik	Ashtarak	No WUP
6	Avtona	Talin	No WUP
7	Avshen	Aragats	WUP No. 1168, expires on 09.08.09
8	Aragats	Aparan	No WUP
9	Aragats	Talin	No WUP
10	Ara	Aparan	No WUP
11	Arteni	Talin	No WUP
12	Apnagyugh	Aparan	Application submitted in June 2008 in the process of review
13	Baysz	Talin	WUP No. 1220, expires on 02.11.09
14	Byuravan	Ashtarak	WUP No. 0441, expires on 16.08.07, extended until 2010
15	Garnahovit	Talin	No WUP
16	Geghadir	Aragats	No WUP
17	Gegharot	Aragats	No WUP
18	Getap	Talin	No WUP
19	Davtashen	Talin	No WUP
20	Derek	Aragats	No WUP
21	Dian	Talin	WUP No. 1219, expires on 02.11.09
22	Yeghipatrush	Aparan	No WUP
23	Yeghnik	Talin	WUP No. 0075, expires on 18.12.09
24	Yernjatap	Aparan	No WUP
25	Nor Yedesia	Ashtarak	No WUP
26	Zovasar	Talin	No WUP
27	Ttujur	Aparan	WUP No. 1431, expires on 18.06.10
28	Tlik	Talin	No WUP
29	Irind	Talin	No WUP
30	Lernapar	Aragats	No WUP
31	Lernarot	Ashtarak	WUP No. 0743, expires on 14.06.08
32	Lusagyugh	Aparan	No WUP
33	Lusakn	Talin	No WUP
34	Tsaghkahovit	Aragats	WUP No. 0853, expires on 07.09.08
35	Taghkashen	Aparan	WUP No. 0693, expires on 12.04.08 in the process of extension
36	Tsilqar	Aragats	WUP No. 0818, expires on 25.08.08
37	Katnaghbyur	Talin	WUP No. 1309
38	Karmarashen	Talin	WUP No. 1125, 1126, expires on 07.07.09
39	Kaqavadzor	Talin	WUP No. 1218, expires on 02.11.09
40	Hartavan	Aparan	WUP No. 1223, expires on 09.11.09
41	Dzoraglukh	Aparan	No WUP
42	Dzoragyugh	Talin	No WUP
43	Meliqgyugh	Aragats	No WUP
44	Mirag	Aragats	No WUP
45	Mulqi	Aparan	No WUP
46	Nigavan	Aparan	No WUP

No.	Community	District	Existence of Drinking Water Use Permit (yes/no)
47	Norashen	Aparan	No WUP
48	Norashen	Aragats	No WUP
49	Shenavan	Aparan	WUP No. 0748, expires on 15.06.08, in the process of extension
50	Shgharshik	Talin	No WUP
51	Vosketas	Talin	No WUP
52	Chqnagh	Aparan	WUP No. 1364, expires on 06.04.10
53	Jamshlu	Aragats	No WUP
54	Saralanj	Aparan	No WUP
55	Sipan	Aragats	WUP No. 1313, expires on 23.01.10
56	Vardenis	Aparan	No WUP
57	Vardenut	Aparan	No WUP
58	Verin Sasunik	Ashtarak	WUP No. 1383, expires on 26.04.10
59	Tegher	Ashtarak	No WUP
60	Orgov	Ashtarak	WUP No. 1329, expires on 19.02.10
61	Ortachya	Aragats	No WUP

Shirak Marz

No.	Community	District	Existence of Drinking Water Use Permit (yes/no)
1	Alvar	Amasia	WUP No. 1401, expires on 07.05.10
2	Aghvorik	Amasia	WUP No. 1014, expires on 13.02.09
3	Ardenis	Amasia	WUP No. 1020, expires on 13.02.09
4	Arpeni	Ashotsk	WUP No. 1396, expires on 07.05.10
5	Bandivan	Ashotsk	WUP No. 1051, expires on 29.03.09
6	Bashgyugh	Ashotsk	WUP No. 1325, expires on 13.02.10
7	Garnarich+Yeghnajur	Amasia	WUP No. 1025, expires on 13.02.09
8	Kamkhut	Amasia	WUP No. 1400, expires on 07.05.10
9	Zarishat	Amasia	WUP No. 1019, expires on 13.02.09
10	Zorakert+Darik	Amasia	WUP No. 1071, expires on 03.05.09
11	Lernakert	Artik	WUP No. 1107, expires on 29.06.09
12	Lernut	Akhuryan	WUP No. 1326, expires on 13.02.10
13	Tsaghkut	Amasia	WUP No. 1027, expires on 13.02.09
14	Kamo	Akhuryan	WUP No. 1024, expires on 13.02.09
15	Karmraqr	Akhuryan	WUP No. 1080, expires on 06.05.09
16	Kaqavasar	Ashotsk	WUP No. 1321, expires on 13.02.10
17	Krashen	Akhuryan	WUP No. 1398, expires on 07.05.10
18	Krasar	Ashotsk	WUP No. 1322, expires on 13.02.10
19	Mayisyan Kayarani	Akhuryan	No WUP
20	Hovit	Akhuryan	WUP No. 1397, expires on 07.05.10
21	Dzorashen	Ashotsk	WUP No. 1323, expires on 13.02.10
22	Akhuryan Kayaran	Akhuryan	No WUP
23	Mets Sarian	Ashotsk	WUP No. 0758, expires on 23.06.08, in the process of extension
24	Musayelyan	Akhuryan	WUP No. 1395, expires on 07.05.10
25	Shaghik	Amasia	WUP No. 1124, expires 01.02.10
26	Shirak	Akhuryan	WUP No. 1074, expires on 03.05.09
27	Pemzashen	Artik	WUP No. 0146, expires on 22.03.07, extended until 2010
28	Jajur	Akhuryan	No WUP
29	Jajur Kayaran	Ashotsk	WUP No. 1022, expires on 13.02.09
30	Jrarat	Akhuryan	WUP No. 1016, expires on 13.02.09
31	Sarnaghbyur	Artik	WUP No. 1023, expires on 13.02.09
32	Sarapat	Ashotsk	WUP No. 1324, expires on 13.02.10
33	Sizavet	Ashotsk	No WUP
34	Tzoghamarg	Ashotsk	WUP No. 1028, expires on 13.02.09
35	Poqr Sarian	Ashotsk	WUP No. 1073, expires on 03.05.09

Gegharkunik Marz

No.	Community	District	Existence of Drinking Water Use Permit (yes/no)
1	Akunq	Vardenis	No WUP
2	Aghberg	Krasnoselsk	No WUP
3	Aygut	Krasnoselsk	No WUP
4	Ayrq	Vardenis	No WUP
5	Antaramej	Krasnoselsk	No WUP
6	Astghadzor	Martuni	WUP No. 0839, expires on 02.09.08 WUP No. 1191, expires on 18.09.09 WUP No. 1340, expires on 09.03.10
7	Artsvanist	Martuni	WUP No. 0028, expires on 08.08.06
8	Geghamabak	Vardenis	No WUP
9	Geghamavan	Sevan	No WUP
10	Gegharkunik	Kamo	No WUP
11	Geghhovit	Martuni	WUP No. 0646, expires on 24.02.08
12	Ddmashen	Sevan	No WUP
13	Dprabak	Krasnoselsk	No WUP
14	Drakhtik	Krasnoselsk	No WUP
15	Yeranos	Martuni	No WUP
16	Zolaqar	Martuni	WUP No. 0005, expires on 23.06.06
17	Zovaber	Sevan	No WUP
18	Tazagyugh	Martuni	WUP No. 1097, expires on 16.06.09
19	Lchavan	Vardenis	Application submitted in June 2008
20	Lusakunq	Vardenis	No WUP
21	Khachaghbyur	Vardenis	No WUP
22	Tsaghkashen	Kamo	WUP No. 0014, expires on 07.07.06
23	Tsaghkunq	Sevan	WUP No. 1041, expires 03.06.10
24	Tsovaghyugh	Sevan	No WUP
25	Tsovak	Vardenis	No WUP
26	Tsovinar	Martuni	WUP No. 0006, expires on 23.06.06
27	Kalavan	Krasnoselsk	No WUP
28	Barepat	Krasnoselsk	No WUP
29	Karchaghbyur	Vardenis	No WUP
30	Dzoragyugh	Martuni	WUP No. 0961, expires on 13.12.08
31	Dzoravanq	Krasnoselsk	No WUP
32	Madina	Martuni	No WUP
33	Megenis	Vardenis	No WUP
34	Mets Masrik	Vardenis	No WUP
35	Norakert	Vardenis	No WUP
36	Shatjreq	Vardenis	No WUP
37	Shatvan	Vardenis	No WUP
38	Shorzha	Krasnoselsk	No WUP
39	Jaghatzadzor	Vardenis	No WUP
40	Semyonovka	Sevan	No WUP
41	Vaghashen	Martuni	WUP No. 1258, expires on 07.12.09
42	Vardadzor	Martuni	WUP No. 1362, expires on 04.04.10
43	Verin Getashen	Martuni	WUP No. 0629, expires on 12.01.10 WUP No. 1170, expires on 17.08.09
44	Torfavan	Vardenis	No WUP
45	Poqr Masrik	Vardenis	No WUP

Tavush Marz

No.	Community	District	Existence of Drinking Water Use Permit (yes/no)
1	Aghavnavanq	Ijevan	No WUP
2	Gandzaqar	Ijevan	No WUP
3	Getahovit	Ijevan	No WUP
4	Gosh	Ijevan	No WUP
5	Yenoqavan	Ijevan	No WUP
6	Teghut	Ijevan	No WUP
7	Itsaqar	Tavush	No WUP
8	Lusahovit	Ijevan	No WUP
9	Lusadzor	Ijevan	WUP No. 1628, expires 11.01.10
10	Khachardzan	Ijevan	WUP No. 0041, expires on 01.10.09
11	Hovq	Ijevan	No WUP
12	Navur	Tavush	No WUP

7 OPERATION AND MAINTENANCE MANUAL

**JAPAN INTERNATIONAL COOPERATION AGENCY
STATE COMMITTEE ON WATER SYSTEMS**

**THE STUDY
FOR
IMPROVEMENT OF RURAL WATER SUPPLY
AND SEWAGE SYSTEMS
IN
THE REPUBLIC OF ARMENIA**

OPERATION AND MAINTENANCE MANUAL

(for Apnagyugh Pilot Project)

SEPTEMBER 2008

NIPPON KOEI CO., LTD

Composition of Operation and Management Manual

CHAPTER 1 GUIDELINE FOR COMMUNITY FIELD OFFICER (CFO)

**CHAPTER 2 ARTICLES OF O&M ORGANIZATION ON WATER SUPPLY
SYSTEM**

CHAPTER 3 MANAGEMENT PLAN OF O&M ADMINISTRATION

CHAPTER 4 OPERATION AND MAINTENANCE

CHAPTER 5 FINANCIAL MANAGEMENT

ATTACHMENT : O&M FORMAT FOR PILOT PROJECT

CHAPTER 1 GUIDELINE FOR COMMUNITY FIELD OFFICER (CFO)

1. Objectives

The objective of community operation and maintenance plan is to facilitate and support communities and institutions with the establishment of sustainable water supply system operation and maintenance arrangements. It is essential to consider the specific sustainability issues for the proposed investments and to ensure that long-term sustainability issues receive appropriate attention in all phases of Project implementation.

The following chapter is structured broadly as follows:

- Proposed management arrangements & sustainability considerations
- Community management approach & establishment of the local management organization
- Implementation plan
- Operation and Management (O&M) arrangements

2. Proposed Management Arrangements and Sustainability Considerations

The primary responsibility for O&M based on discussions with:

- Rural communities and community leaders;
- SCWS/ Ministration of Territorial Administration/Marz

Based on sustainability considerations there are one option for operation & maintenance of the proposed water supply systems.

- Operation & Maintenance by communities themselves through a specially constituted community organization;

A simple gravity system fed by a spring and serving a limited number of households is best managed by the community, as the skills required for O&M are available within the community and the costs will be low.

Further, community management of pumped systems will generally have a higher sustainability risk than simple gravity system because of the limited skills and experience within village communities to arrange and implement essential repairs.

The Project will respond to these risks through:

- Appropriate training of O&M personnel,
- Implementation of monitoring and evaluation arrangements to monitor O&M performance during the initial of operation.

3. Community Management Approach

(1) Background to the Community Participation

Participatory demand-responsive approaches for water supply facilities means community participation in decision-making and management of key aspects of planning, implementation, financing, and operation & maintenance of water supply systems.

(2) Characteristics and Constraints of Approach

Community management is a form of community participation in which the community takes the decision on all important aspects of an activity. In the case of water supply, this could include the planning, implementation and operation & maintenance of the proposed water supply system.

The community is responsible for

- maintenance and repair
 - local management organization
 - water use regulation
 - financing
- Communities can decide on local management arrangements within the overall constraint of the operation & maintenance arrangement
 - They must agree to participate in the Project on this basis.

(3) Special Considerations for Approach

Intensive counseling and motivational activities for the community members should be incorporated in the community awareness and training activities. For example if a community water supply system is based on pumping then it is important that the community understand the implications of electricity costs for pump operation and budget accordingly to ensure financial sustainability.

During implementation the pilot project should investigate sanitation improvements in order to ensure maximum health benefits are obtained from the pilot project.

(4) Existing Community Organizations

Existing community organizations in the targeted communities have been analyzed. These are established mainly through the government structures and/or or religions organizations. They do not have the appropriate skills or experience for management of rural water supply.

There are frequently key persons with significant potential to contribute to a local management organization within the community. In order to ensure the selection of a strong a local management organization Community Field Officer (CFO) needs to critically observe existing rural community structures and identify strong potential candidates.

(5) Establishment of O&M Organization

Community management require the establishment of an elected or appointed person to undertaken the management tasks on behalf of the community. It is important that the O&M organization particularly, both to represent the broad interests of consumers and also to ensure that there are appropriate skills represented within the community to enable it to undertake its role.

1) Structure and Formation

The O&M organization will comprise rural community representatives selected by residents of the rural community. The O&M organization will be formed before construction stage. The O&M organization structure will include a project manager, account, chief technician, technical inspector(s), pump operator(s). Training will be provided covering, organization, leadership, financial administrative and technical matters.

The O&M organization will open an account at Bank with at least 2 representatives including the account to be designated as signatories to the account on behalf of the O&M organization.

The structure of the O&M organization and its key responsibilities are summarized in the following Table.

WUA/WUG Structure & Responsibilities

Item	O&M Administration
Members of Management office	<ul style="list-style-type: none"> ▪ Project manager (1) ▪ Account (1) ▪ Chief technician (1) ▪ Technical inspector(s) ▪ Pump Operator(s)
Main Roles	<ul style="list-style-type: none"> ▪ Effectively manage assets of the water supply to deliver water supply services to consumers. ▪ Establish regulations for water management and use of assets including penalties. ▪ Hold regular meetings to consider appropriate matters related to water supply management. ▪ Keep record of meetings. ▪ Resolve problems identified by constituents and/or members. ▪ Ensure constituents are regularly informed about relevant water issues. ▪ Establish water tariff. ▪ Collect water fee from consumers ▪ Establish and maintain bank accounts and financial records. ▪ Carry out periodical monitoring of systems and their performance. ▪

(6) Community Management

The following table summarizes the key outcomes of the Community management approach.

Community Management Objectives

Parameters	Objectives
Role of community management	Community has overall responsibility for management of system commencing with participation in planning and decision-making through to operation and maintenance.
Role of O&M organization	Fully responsible for all aspects of system operation and maintenance including setting and collection of tariffs, water use regulation, management of customer base, and physical system operation & maintenance.
Administration & Finance	Community through O&M organization is responsible for financial planning, tariff setting, billing collection, financing of operation & maintenance as well as general management and administration.
Technical management	Responsibility of O&M organization.

(7) Facilitator of Community Management

A Community Field Officer (CFO) will be appointed by the JICA study team to work in each village to introduce community management approaches into the communities. The CFO’s responsibilities will include assistance to communities with needs assessments, consultation to create awareness, facilitating community planning, facilitating O&M organization members, providing on the job training,

and so on. CFOs will be the key link between the pilot project and the rural community. It is proposed that the CFOs will continue their involvement to assist with monitoring and evaluation.

In addition, the JICA expert will undertake periodic monitoring and evaluation visits during study period.

4. Implementation Plan

(1) Process of Implementation Plan

The implementation plan is based on implementation in line with a demand-based community management approach. The implementation plan is roughly divided into four steps;

- (i) Step 1: Preparation of manuals and guidelines (during basic design)
- (ii) Step 2: Supporting O&M organization (during basic design, and construction stage)
- (iv) Step 3: Monitoring and evaluation through participatory approach (after the construction for at least 3 months)

Process of Implementation

Steps	Activities
Step-1:	<ul style="list-style-type: none"> ▪ Explanation of the project (scope, implementation schedule, funding etc.) ▪ Preparation of manual and guidelines ▪ Proposed management arrangements, community responsibilities, costs
Step-2: Supporting O&M organization	<ul style="list-style-type: none"> ▪ Consideration/establishment of O&M organization (Consideration/ establishment of organizational and representational requirements, election of members, initial training of members, establish bank account) ▪ O&M training for O&M organization members ▪ Preparation of O&M organization regulations
Step-3: Monitoring and evaluation	<ul style="list-style-type: none"> ▪ Operation and maintenance of water supply facilities ▪ Monitoring and evaluation

(2) Organizations

Community members will be facilitated and provided training and technical assistance by the CFOs for each community. Training will be given to several specific categories of people will an appropriate focus and intensity to suit their particular roles.

5. Operation and Maintenance Arrangements

The proposed operation and maintenance arrangements are set out in Table of Summary of Activities.

Summary of Activities (Step 2 and Step 3)

Step	Items	Comment	Time	Responsibility	Participants
Step 2	1.Establishment of O&M organization				
	▪ Election of O&M Administration	<ul style="list-style-type: none"> ▪ Expert for community members ▪ Election of member of management office of O&M organization 	(1 week)	CFO Community head	Community head and residents (customers)
	▪ Initial training of O&M organization members	O&M organization meeting methods, community management approach, and health and hygiene survey.		CFO	O&M organization members
	▪ Preparation of regulations	Define the responsibilities and roles for O&M organization		CFO	O&M organization members
	▪ Establishment of O&M organization	<ul style="list-style-type: none"> ▪ Approval of community council ▪ Establish O&M organization's bank account 	(1 week)	CFO	O&M organization members
	2. Motivation and community empowerment	Personal skills and self-confidence training for members		CFO O&M organization members	Community members
	3. Construction	Cooperation of construction work Providing free labour		Expert O&M organization members	Community members
	4. O&M training	<ul style="list-style-type: none"> ▪ Administration, problem solving, regular meeting, minutes recording, ▪ Finance: Water fee, record-keeping, accountability ▪ Technical: adequate skills for monitoring, operation, and maintenance, 		Expert CFO	O&M organization members
Step 3	1. Monitoring:	<ul style="list-style-type: none"> ▪ Participatory monitoring and evaluation methods ▪ Regular supervision 	(1 week) Each month	Expert CFO	O&M organization members
	5. Follow up:	<ul style="list-style-type: none"> ▪ Technical problems ▪ Maintenance and operation of facilities and O&M organization 	(1 week)	Expert CFO	O&M organization members Community

Appendix 1

Present Condition of Health and Hygiene in Pilot project Area

No.	Community	Marz	Population	date	Main diseases related water	%	Water use in house	
							Boil water before drinking %	Wash hands after defecating %
1	Apnagyugh			Before Pilot Project	Skin, Diarrhea			
2				After Pilot Project				
3	Lchavan			Before Pilot Project	ARI, Diarrhea			
4				After Pilot Project				

Notes: Skin: skin disease. ARI: acute respiratory infection. Eye: eye infection. Gast.: gastroenteritis.

Appendix 2

O&M administration problems and response from experience of previous projects

Issue	Description
<p>Common problems experienced on previous projects</p>	<ol style="list-style-type: none"> 1. Forceful personalities often dominate the O&M administration. 2. Conflict between the decision-making role of the O&M administration and the authority of the traditional leaders. The Project imposes another leadership structure which existing leaders may not support. 3. Internal friction or conflict may occur among community people. 4. The handling of funds can be a focus for conflict. The treasurer position tends to drop out most often. 5. O&M administration fulfil their responsibilities during the construction phase but fail to continue their work after commissioning. O&M administration members tend to break up shortly after their formation due to lack of regular activity. 6. O&M administration only become active when there is a breakdown or some problems. Otherwise beneficiaries feel there is no need to meet or even collect fees. 7. Water users fees have been set but not collected.
<p>Important responses for the Project</p>	<ul style="list-style-type: none"> ▪ Full community participation and agreement in the setting up of O&M administration and drafting of their regulations. ▪ All participants must agree and understand their tasks and responsibilities as water users and as O&M administration members and any system of penalties for infringement of regulations. ▪ O&M administration members' selection in particularly project manager and accountant to be reviewed and confirmed quarterly during the construction stage based on critical observation/review by CFO. ▪ Early technical guidance required for communities regarding viable options. ▪ The Project needs to gain support of existing power structures in the villages: civil, traditional and religious. ▪ CFO roles and responsibilities need to be appropriately designed. CFO capacity in problem solving, communication, and counselling is critical.

CHAPTER 2 ARTICLES OF O&M ORGANIZATION ON WATER SUPPLY SYSTEM

Article 1 : Objectives and Tasks

- a) The O&M organization has a task to manage and maintain water utilization in the community of Apnagyugh.
- b) The O&M organization is assigned to maintain the water sources and pipe lines, reservoir, water meter, water taps etc.
- c) The community decides to start the O&M organization with approval of the community council (Avagani)

Article 2 : Name of O&M organization

The name of this O&M organization is the Apnagyugh O&M organization on Water Supply System.

Article 3 : Address of O&M organization

The O&M organization has its own office in the Apnagyugh community office.

Article 4 : Structure of O&M organization

The structure of O&M organization is composed of:

- a) The management office of O&M organization, which is assigned to represent the O&M organization in community under the community head.
- c) The community council (Avagani), which is composed of all representatives of beneficiaries of water supply, and the highest decision making organization of O&M organization.

Article 5 : Management office of O&M organization

(1) Members of Management Office of O&M organization

The management office of O&M organization is composed of :

Three (3) community members, namely, project manager, accountant, and chief technician, who are elected from the community leaders, office staffs and members. The community head also can serve as project manager. They are elected for two (2) years with renewable possibility.

The staffs employed, namely technical inspectors (meter reader and billing / inspection for reservoir, water intake, and pipeline/ O&M chlorine dosage). They are selected for one (1) year with renewable possibility from

community members.

(2) Attribution of O&M organization Members and Staffs

O&M organization members elected without salary

- a) Project manager; who is the representative and has responsibility for all daily activities of the O&M organization
- b) Accountant; who is advisor of project manager, and plays a role of accountant of the O&M organization. The financial/accountant also prepares and submits all accounting documents of the O&M organization for auditing to the community council (Avagani). The financial/accountant receives, sends and files all documents of the O&M organization, and takes record of meetings.
- c) Chief technician; who is advisor of project manager, and plays a role of technical matters of the O&M organization.

Staffs employed with salary

- a) Technical inspector; who has responsibilities to reading water meter and billing of water fee monthly. Technical inspector, who has responsibilities to inspect the reservoir, water intake and pipeline monthly. Inspector operates and maintains the chlorine dosage of water supply system in community.

(3) Regular Meeting of management office of O&M organization

Regular meeting of management office of O&M organization is invited once a month and is chaired by the project manager of the O&M organization.

(4) Annual Report

The management office of O&M organization shall prepare annual report, which includes: (a) conducted activities, (b) account documents which have been audited by auditors, (c) action plan, (d) financial plan. The management office of O&M organization shall submit the annual report to the community council (Avagani) for approval, also, shall submit it to the community for reporting after the approval by the community council (Avagani).

Article 6 : Audit

The community council (Avagani) selects two (2) auditors from the member of the community council (Avagani) to audit account of O&M organization. The auditors shall audit the account one time per year before the regular the community council (Avagani), and shall report the result to the community council (Avagani) .

Article 7: Water Fee

The income source of this O&M organization is payment for water by water users. The water fee is 20 AMD per m3. To decide the water fee, the O&M organization shall propose the water fee to the community council (Avagani), and the community council (Avagani) shall approve it.

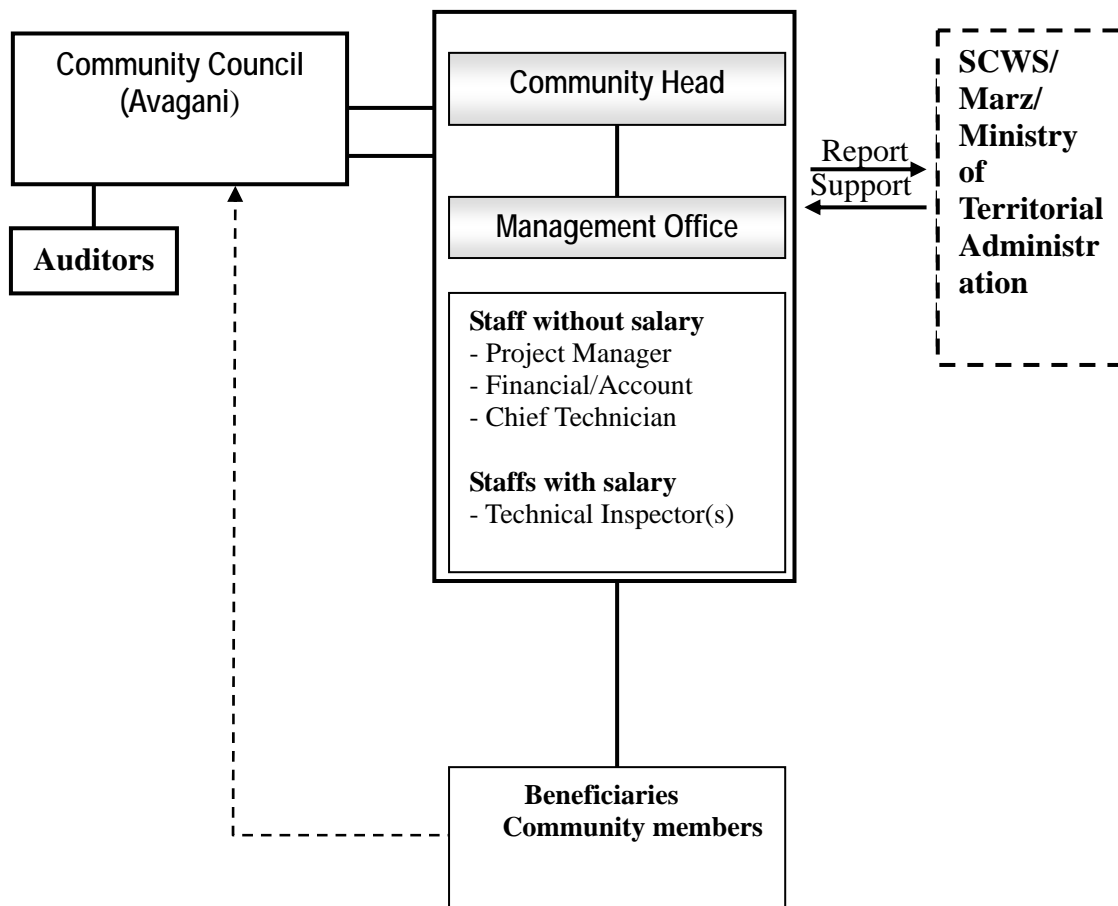
Article 8 : Support by SCWS/ Marz/ Ministry of Territorial Administration

The O&M organization can request to the SCWS/ Marz/ Ministry of Territorial Administration for the support, in the case which a problem rises, and the O&M organization can not solve it.

Article 9 : Detail Regulation

The management office of O&M organization can propose detail regulation of the O&M organization to the community council (Avagani) , and the community council (Avagani) decides the detail regulation.

Organization Chart of O&M organization on Water Supply System



CHAPTER 3 MANAGEMENT PLAN OF O&M ORGANIZATION

1 Scope of Management Plan

The scope of management plan for O&M Administration is shown in following table. The overall goal of O&M Administration is to supply clean water to local peoples with less-expensive and continuous. The Management Plan described in this manual may be effective tool for O&M Administration to achieve the overall goal.

Overall Goal	Constant supply water to beneficiaries
Annual Target	Keep good operation and maintenance of water supply system
Activity	Operation and maintenance by O&M Administration
Management Plan	Annual Action Plan for O&M Administration
	Financial plan

2 Annual Action Plan for Operation and Maintenance

2.1 Contents of Annual Action plan

The annual action plan shall be prepared by the management office and the draft shall be submitted in the community council for approval. The annual action plan consists of the followings;

- 1) Annual targets of O&M administration
- 2) Annual target and contents of activities of staffs
 - a) Chief Technician
 - b) Accountant
 - c) Technical Inspector(s)
 - d) Pump Operator(s)
- 3) Annual Financial Plan
- 4) Work Schedule
- 5) Members and staffs

2.2 Details of Annual Action Plan

(1) Annual target of O&M administration

The annual target is a principle or principles of the year for the activity of O&M administration

, and shall be decided by the **Project Manger** with considering the results of management of last fiscal year and surrounding conditions. The examples are as follows;

- **Supply clean water**
- **Increase the hour of water supply**
- **Good service, good management**
- **Good solution with a day**

(2) Annual target for staffs

The annual target of staffs is a practical target of the year for the activity of each staff of management office, and shall be **decided by each staff** with considering the Annual Target.

1) Accountant

The examples of annual target for the accountant are as follows;

- **To keep transparency of account work.**
- **To check income and outgo per day and week.**
- **To keep an account book and report the monthly income and outgo by monthly meeting.**

2) Chief Technician

The Chief Technician is a responsible of operation and maintenance of water supply facilities and Chief Technician is also the representative of Technical Inspector(s), and Pump Operator (s)

Therefore, the examples are as follows;

- **To keep good maintenance at all the time less than 2 accidents per month.**

3) Technical Inspector(s)

The examples of annual target for the technical inspectors are as follows;

- **To check all pipelines once a month and inform chief technician immediately if we find an anomaly.**
- **To take rapid measure with chief technician within a day when the accident has happened.**

4) Pump Operator(s)

The examples of annual target for the pump technician are as follows;

- **To operate the pump on time and clean up pump house once a week.**

2.3 Annual Activity of the management office of O&M Administration and staffs

The activity of the management office of O&M Administration and staffs are classified as the followings,

- 1) Item of Activity; meeting, reporting, accounting, operating, maintaining, monitoring, etc.
- 2) Term of Activity; daily, weekly, monthly, annually, etc.

(1) Meetings

Monthly meeting for the management office of O&M Administration

The proposed contents of monthly meeting are as follows:

Contents of Monthly Meeting (Example)

I. Report of activity in last month

- Operation and maintenance report from Chief Technician
- Financial report from Accountant (See Attachment 3.4)
- Problems and solutions
- Comment from President / Vice-President

II. Discussion

(2) Job Description of Project Manager

Main Tasks and Responsibility
<ul style="list-style-type: none"> - Overall responsible for the Water Scheme - Provide administrative and management services - Analyze financial reports - Analyze operation and maintenance reports - Authorize payments and procurements - Planning and budgeting - Procure goods and services as per budget allocation - Supervise the staff - Preparation of reports and submit to the community council

Monthly Task
<ul style="list-style-type: none"> - Hold and chair monthly meeting - Checking balances of account
Annually Task
<ul style="list-style-type: none"> - Arrange annual report together with staffs of management office (See Attachment 3.3) - Arrange annual plan together with staffs of management office(See Attachment 3.1) <p>Hold and chair monthly management</p>
Emergency Task
<ul style="list-style-type: none"> - Get information from Chief technicians - Inform the anomalies and damages to other staffs of management office (Shearing information) - Instruct Chief engineer to take measure immediately. - Arbitrate if troubles are happened

(3) Job Description of Accountant

Main Tasks and Responsibility
<ul style="list-style-type: none"> - Preparation and processing of all statutory payments - Preparations of financial reports - Submission of monthly financial reports. - Implementation of accounting control systems - Preparation of budgets, monitoring of actual expenditure against budget and reporting any variances. Custodian of all accountable documents

- Preparation of the Payroll for staffs
- Administration of cash and bank transactions
- Preparation of monthly water supply overall performance indicators. (Attachment 2(4))

Daily Task
<ul style="list-style-type: none"> - Check revenue and expenditure - Carry out secretary work (e.g. write/receive letters)
Weekly Task
<ul style="list-style-type: none"> - Make and check weekly balance
Monthly Task
<ul style="list-style-type: none"> - Collect water fee from All the beneficiaries - Make monthly balance sheet and submit to monthly meeting - Report the balance in monthly meeting (See Attachment 2-3) - Deposit water fee to the bank account - Withdraw and pay salaries to all the staffs - Make record of meeting
Annually Task
<ul style="list-style-type: none"> - Make annual statement of account and submit to community council - Participate community council - Make annual financial report - Submit all the records and documents to the Auditor - Make record of meeting
Emergency Task
<ul style="list-style-type: none"> - Providing cash for measure(s) taken by Technician(s)

(4) Job Description of Chief Technician

Main Tasks and Responsibility
<ul style="list-style-type: none"> - Know the condition of water supply facilities by inspecting or corresponding with technical inspector and pump operators - Support technical inspectors and pump operators - Manage the day-to-day operations of the water supply and emergency operation and repairing works

Daily Task

<ul style="list-style-type: none"> - Contact to other technicians if necessary (e.g. to monitor their work and/or workability)
<p>Monthly Task</p>
<ul style="list-style-type: none"> - Make monthly report and submit to monthly meeting - Report the general/ particular conditions of water supply facility in monthly meeting
<p>Annually Task</p>
<ul style="list-style-type: none"> - Make annual report and submit to community council - Participate community council - Report the general/ particular conditions of water supply facility in community council
<p>Emergency Task</p>
<ul style="list-style-type: none"> - Inform the anomalies and damages and plan of measure(s) to project manager - Carry out measure(s) with other technicians after the approval of the project manager

(5) Job Description of Technical Inspector

<p>Main Tasks and Responsibility</p>
<ul style="list-style-type: none"> - Meter reading and billing - Treat water in conformity with the required guidelines or standards - Conduct the dosing work - Technical patrol of facilities - Supervise any repairing works as required - Compile meter reading reports every month and submit to the Chief Technician - Ensure that all reported faults are followed up and documented

<p>Daily Task</p>
<ul style="list-style-type: none"> - Operate chlorination apparatus of distribution reservoir - Report daily work to Chief technician
<p>Monthly Task</p>
<ul style="list-style-type: none"> - Meter reading and billing - Technical Patrol of pipeline, reservoir, water intake - Make monthly report and work sheet and submit to Chief technician - Participate monthly meeting
<p>Emergency Task</p>
<ul style="list-style-type: none"> - Examine/ Confirm anomalies and damages

- | |
|--|
| <ul style="list-style-type: none"> - Inform the anomalies and damages to Chief Technician - Execute measure(s) by instructions from Chief Technician |
|--|

(6) Job Description of Pump Operator

- | |
|--|
| Main Tasks and Responsibility |
| <ul style="list-style-type: none"> - Operate pumps, - Maintain pump, control panel and pump house - Record pump operation |

- | |
|---|
| Daily Task |
| <ul style="list-style-type: none"> - Switching on and off pump - Inspection of pump - Write a daily record of operations |

- | |
|--|
| Weekly Task |
| <ul style="list-style-type: none"> - Report weekly work to Chief technician |

- | |
|--|
| Monthly Task |
| <ul style="list-style-type: none"> - Make monthly report and work sheet and submit to Chief technician - Participate monthly meeting |

- | |
|--|
| Emergency Task |
| <ul style="list-style-type: none"> - Examine/ Confirm anomalies and damages - Inform the anomalies and damages to Chief Technician - Execute measure(s) by instructions from Chief Technician |

3 Financial Plan

3.1 Basic Concept of Financial Plan for O&M Administration

Financial plan is fundamental issue for management of O&M Administration. Imagine if you are the staff of management office, you want to get good salary. While if you are one of beneficiary of water supply, you want that the water fee is low. The purpose of financial plan is to give satisfactory both management office and beneficiaries by estimating, executing, examining and modifying the amount of income and expense. IF both sides, even one side, are not satisfied, O&M Administration and water supply system are ruined and spoiled.

3.2 Procedure of Making Financial Plan

Procedure of making financial plan is as follows;

- 1) Calculate the cost of operation and maintenance (per month)
- 2) Estimate the salary of staffs in management office, (per month)
- 3) Estimate the amount of water to be used by beneficiaries (per month)
- 4) Calculate necessary cost per household (per month)
- 5) Consider the above necessary cost as water fee
- 6) If necessary cost is NOT applicable as water fee, reduce the salary of staffs again and recalculate.
- 7) When necessary cost is applicable as water fee, set water fee and make balance sheet
- 8) If necessary cost is still NOT applicable, reduce the staff and/or discuss other solution together with sector/district officials (e.g. subsidy from the government)

If water supply system is already exist and water fee is already set, you have to take existing condition (O&M Administration, water fee, etc.) into account.

Procedure for Financial Planning for O&M Administration

1	START	
2	Calculation of operation cost	Dozing powder
		Electric fee for pump
3	Calculation of maintenance cost	Maintenance cost for pipes
		Maintenance cost for pump
4	Estimation of salary for staffs	Salary for staffs in management office
5	Total cost is estimated	
6	Estimation of water amount to be supplied	Estimate the number of beneficiaries of water supply system
		Calculation the amount of water to be used by beneficiaries
7	Necessary cost per household is estimated	No
		Yes
8	Adoption of water fee	
9	Making Balance Sheet	

3.3 Operation Cost

Operation cost for water supply facility consists as follows;

- 1) Salary of staffs
- 2) Cost for purchasing chlorine for disinfection
- 3) Electric fee
- 4) Miscellaneous, as papers, stationary, and cost for office equipment

Items for estimating Operation cost

Items	Cost Estimation Example		Remarks
	Unit	Unit Price (AMD)	
2) Cost for Purchasing Chlorine (Calcium-hypochloride 65%)	1 drum (xx kgs)		1 drum can disinfect x,000L of water (Excluding transportation fee)
3) Electric Fee for Pump	Kw/h		
5) Miscellaneous	Month	3000 - 5,000	Photocopy paper, Stationary etc.

Note: these costs are only estimation and you have to use actual cost of last year

3.4 Maintenance Cost

Maintenance cost for water supply facility consists as follows;

- 2) Maintenance Cost for Water Supply Facilities
 - 2-1) Cost for Reservoir and Pipeline
 - 2-2) Cost for Pump

Items for estimating maintenance cost

Items	Cost Estimation Example		Remarks
	Unit	Unit Price (AMD)	
2-1) Cost for Reservoir tank, Pipeline	Pipeline meter / month		Example: 10m of pipeline,/month shall be allocated
2-2) Cost for Pump(s)	AMD/kW/year	10,000	Example: 3.3 kW pumps, shall be allocated

Note: these costs are only estimation and you have to use actual cost of last year

3.5 Salary for Staffs

Salary for staffs consists as follows;

- 1) Accountant
- 2) Chief Technician
- 3) Technical Inspector(s)
- 4) Pump Operator(s)

Items for estimating maintenance cost (for piped systems)

Items	Cost Estimation Example		Remarks
	Unit	Unit Price (AMD)	
1) Accountant	Month	10,000 – 30,000	full-time/ part time employee
2) Chief Technician	Month	10,000 – 30,000	full-time/part time employee
3) Technical Inspector(s)	Month	10,000 – 30,000	Full-time employee
4) Pump Operator(s)	Month	10,000 – 30,000	full-time/part time employee

Note: these costs are only estimation and you have to use actual cost of last year

3.6 Estimation of water to be supplied

Water fee is a main income of O&M Administration, therefore estimation of beneficiaries is equal to estimate real income of O&M Administration. The Estimation shall be based on the income of last year, but if it is difficult or no actual experience, it is assumed that one beneficiary use 100L per day (100L/day/person). Water amounts are estimation and you have to use actual amount of last year.

3.7 Consideration of Water fee

Estimated total cost and water amount to be supplied, you can calculate necessary cost per liter (L). If necessary cost is less than appropriate water fee, the financial plan may be applicable and fix the fee, and finalize financial plan to submit to the community council.

If more than appropriate water fee, you have to make an effort to reduce the cost or get some subsidence close for appropriate fee.

It is very important for O&M Administration to estimate balance preliminary to avoid miss-manage the financial plan. If the O&M Administration runs without financial plan, O&M Administration does no longer exist and water supply facility may be destroyed. It is attached sample of estimation for water supply system in Attachment 4.

4 Reporting and Evaluation of Management Plan

4.1 Annual Plan and Financial Plan

The annual plan and financial plan shall be drafted and submit to the community council for approval. The plan shall be made based on the last annual report. The forms of annual plan and financial plan are attached in the attachment.

Attachment 1(1) Annual Action Plan

Attachment 1(2) Meeting Plan

Attachment 1(3) Annual Financial Plan

4.2 Annual Report

The annual report shall be drafted and submit to the community council for approval. The forms are attached in attachment as follows;

Attachment 1(1) Annual Report

Attachment 2(2) Annual Report for Meeting

Attachment 3(3) Annual Financial Report

Attachment

- 1 Form of Management Plan**
 - (1) Form of Annual Action Plan**
 - (2) Form of Meeting Plan**
 - (3) Form of Annual Financial Plan**
- 2 Form of Annual Report**
 - (1) Form of Annual Report**
 - (2) Form of Annual Report for Meeting**
 - (3) Form of Financial Report**
- 3 Form of Monthly Financial Balance**
- 4 Example of Estimation for Piped Water Supply System**
- 5 Data Sheet**

Attachment 1(1) Form of Annual Action Plan

<p>Annual Action Plan of year <u>200</u> for <Name of Water Users Association></p>
<p>Overall Annual Target</p>
<p>- <Describe Annual target> - -</p>
<p>Annual Target of the Work</p>
<p>Accountant: - <Describe Annual target> - -</p>
<p>Chief Technician: - <Describe Annual target> - -</p>
<p>Technical Inspector: - <Describe Annual target> - -</p>
<p>Pump Operator: - <Describe Annual target> - -</p>

Attachment 1(2) Form of Meeting Plan

Meeting Plan of year <u>200</u>		
Plan of Monthly meeting for the Management office		
<Describe planned date (ex.: Friday in First Week of Every Month)>		
Members and Staffs of the Management office in this Year		
	(Name)	(Mobile Number)
Project manager		
Accountant		
Chief Technician		
Technical Inspector (1)		
Technical Inspector (2)		
Pump Operator (1)		
Pump Operator (2)		
<Other Staffs(If any)>		

Attachment 1(3) Form of Annual Financial Plan

Annual Financial Plan of year <u>200</u> for <Name of O&M Administration>			
Income per Year (AMD)		Expenditure per Year (AMD)	
WATER FEE		OPERATION COST	
Month	Amount of water fee to be collected		Amounts
		Electric fee	
		Dosing powder	
		Miscellaneous	
		Total	AMD
		MAINTENANCE COST	
		Pumps	
		Pipelines/ Facilities	
		Total	AMD
		SALARY	
		Accountant	
		Chief Technician	
		Technical Inspector	
		Technical Inspector	
		Pump Operator	
Total	AMD	Pump Operator	
OTHERS			
		Total	AMD
		OTHERS	
Total	AMD	Total	AMD
Annual income total:		Annual expenditure total:	
	AMD		AMD
Reserve fund:	AMD	<Explanation>	
Loss:	AMD	<Explanation>	
Name and branch of bank: _____ Account No.: _____			

Attachment 2(1) Form of Annual Report

<p>Annual Report of year <u>200</u> for <Name of Water Users Association></p>
<p>Achievements of Annual Target</p>
<p>- <Describe Achievements of Annual target> - -</p>
<p>Achievements of the Work</p>
<p>Accountant: - <Describe Result, Achievement and Evaluate your activity by yourself> - - -</p>
<p>Chief Technician - <Describe Result, Achievement and Evaluate your activity by yourself> - - -</p>
<p>Technical Inspector - <Describe Result, Achievement and Evaluate your activity by yourself> - - -</p>
<p>Pump Operator: - <Describe Result, Achievement and Evaluate your activity by yourself> - -</p>

Attachment 2(2) Form of Annual Report of Meeting(1/2)

Annual Report of Meeting of year <u>200</u> for <Name of O&M Administration>			
Monthly meeting for the Management office			
Date	Place	Participant	Discussed Items
Jan			
Feb			
Mar			
Apr			
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			
Others			

Attachment 2(3) Form of Annual Financial Report

Annual Financial Report of <u>200</u> for <Name of O&M Administration>			
Income per Month (AMD)		Expenditure per Month (AMD)	
WATER FEE		OPERATION COST	
Month	Amount of water fee to be collected		Amounts
		Electric fee	
		Dosing powder	
		Miscellaneous	
		Total	AMD
		MAINTENANCE COST	
		Pumps	
		Pipelines/ Facilities	
		Total	AMD
		SALARY	
		Accountant	
		Chief Technician	
		Technical Inspector	
		Technical Inspector	
		Pump Operator	
Total	AMD	Pump Operator	
OTHERS			
		Total	AMD
		OTHERS	
Total	AMD	Total	AMD
Annual income total:		Annual expenditure total:	
	AMD		AMD
From:	To:	From:	To:
Reserve fund:		<Explanation>	
	AMD		
Loss:		<Explanation>	
	AMD		

THE STUDY
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IN THE REPUBLIC OF ARMENIA

Attachment 2 (4) Water Supply Management Performance Indicators

Attachment 3 Form of Monthly Financial Balance

Financial Balance of <Month> <u>200</u> for <Name of O&M Administration>			
Income per Month (AMD)		Expenditure per Month (AMD)	
WATER FEE		OPERATION COST	
	Amount of water fee to be collected		
		Electric fee	
		Dosing powder	
		Miscellaneous	
		Total	AMD
		MAINTENANCE COST	
		Pumps	
		Pipelines/ Facilities	
		Total	AMD
		SALARY	
		Accountant	
		Chief Technician	
		Technical Inspector	
		Technical Inspector	
		Pump Operator	
Total	AMD	Pump Operator	
OTHERS			
		Total	AMD
		OTHERS	
Total	AMD	Total	AMD
Monthly income total:		Monthly expenditure total:	
	AMD		AMD
Reserve fund:	AMD	<Explanation>	
Loss:	AMD	<Explanation>	

Attachment 4 Example of Estimation for Water Supply System

Monthly Expenditure (Unit: AMD)

Operation and Maintenance Cost of Water Supply System				
Item	Amount per month	Quantity	Monthly Cost	Condition
Operation Cost				
Electric fee	35,000	1	35,000	3kw x 30days
Purchasing of dosing powder	10,000	1	10,000	5kg
Miscellaneous	5,000	1	5,000	
Maintenance cost				
Pump	10,000	1	10,000	
Pipeline	50,000	1	50,000	50m
		Total	110,000	

Salary for Management office				
Item (Salary)	Amount per month	Quantity	Monthly Cost	Condition
Project manager	0	1	0	Voluntary, No salary
Accountant	10,000	1	10,000	
Chief Technician	10,000	1	10,000	
Technical Inspector	12,000	2	24,000	2 person
Pump Operator	8,000	3	24,000	3 person
		Total	68,000	

Monthly Income				
Item	Amount	Unit	Condition	
Expected Beneficiaries	100	household		
Average water consumption	10	M3	Total 1,000m3	
Water tariff	200	AMD	Per M3	
Total	200,000	AMD		

CHAPTER 4 OPERATION AND MAINTENANCE (Without Pump)

1 Piped Water Supply System

The following facilities are major piped water supply systems;

- Water collection facilities; (Water intake/ Collecting weirs)
- Transmission pipe
- Reservoirs
- Distribution pipe
- Household connections and water taps

Gate valve is common equipment installed in water supply system. Water meters are installed for household connections.

2 Description of Facilities

2.1 Water collection facilities; (Water intake/ Collecting weirs)

(1) Functioning

- Collect spring water efficiently
- Protect water source from animals and contamination

(2) Tasks

The technical inspector is in charge of the patrol for the water collection facilities at monthly base. Through the patrol, the inspector checks the followings and the results of the inspections are recorded on **Format-3**:

- a) Contamination of water
- b) Protection of water source from live stocks and human activities
- c) Collecting facilities

(3) Maintenance at twice a year

To carefully check the general state of collecting structures

To clean the surrounding of water intake

To protect from contamination

2.2 Transmission and Distribution Pipes

(1) Functioning

- Transmit water to the Reservoir
- Distribute water to the house water taps

(2) Tasks

The technical inspector is in charge of the patrol for the pipelines at monthly base. Through the patrol, the inspector checks the followings and the results of the

inspections are recorded on **Format-3**:

- a) Leakage from the pipelines and the house water taps
- b) Illegal connection and vandalism

(3) Maintenance

After some parts of pipelines are repaired, it is necessary to clean the pipes as below:

- a) Decide the lines to clean.
- b) Confirm whether enough water is in the reservoir.
- c) Close all the gate valves off the decided line.
- d) Flushing water for the pipeline.
- e) Open all the gate valves which are closed, and resume the service.

2.3 Distribution Reservoir

(1) Functioning

- To store water and send to each house water tap through the distribution pipes

(2) Method of Operation

1) Dosing Chlorination Operation

a) Chlorine mixing and dosage

Put chlorine into the tank and mix with water fully. Chlorine dosage rate shall be 1.0ppm = 1.0g/m³.

Record the dosing time, the dosing quantity and remaining quantity on **Format-2**.

(3) Tasks

The following tasks for operation and maintenance shall be done by inspector.

1) Daily Tasks

The inspector carries out putting chlorine into the tank and mixing with water. He also records the chlorine quantities consumed and stored.

2) Monthly Tasks

The inspection on monthly basis for the reservoir is only for sedimentation in the tank. The inspector climbs up the reservoir tank and check the amount of the sedimentation inside of the tank. The result of the inspection is recorded on **Format-3** and Chief Technician shall prepare Monthly Report (**Format-4**).

The patrol on monthly basis for the chlorination system is to check the condition of the mixing tank inside. Patrol results shall be recorded on **Format-3**.

(3) Maintenance

- Reservoir shall be cleaned at twice a year. However there is much sedimentation,

the tank shall be cleaned more often.

- If the outside part of distribution reservoir is always wet, it is a possibility of seepage from inside. In that case, the pipe work technician drains the water from Distribution reservoir and check wall inside. If there is anomalies, repair immediately. The method of repair is as follows;

- 1) Plaster the crack and surrounding wall (the surface shall be roughness)
- 2) Make mortar
- 3) Put the mortar to the plastered portion

2.4 Water Meter Chamber and Water Tap

(1) Functioning

- Distribute water to beneficiaries.

(2) Method of operation

- a) Check the hygiene condition surrounding the chamber and tap
- b) Open the cover and read the water meter and record it on **Format-5**.
- c) Close the cover

(3) Tasks

The following tasks are done by technical inspector;

1) Daily Task

Technical inspector record the water consumed by each household and collect water fee. The amount of water and collected fee are recorded on **Format-5**.

2) Monthly Task

Accountant count the monthly sales based on **Format-7** and submit it to the project manager.

3) Biannual Task

Technical inspector shall check the condition of water meters, water taps, and pipes.

3. In Case of Emergency

Emergency cases are:

- 1) When the chlorine dosage stops because of stacking of the pipes, and
- 2) Any other cases that the water supply service should be stopped.

When an emergency case occurs, the responsible person for the facility which has problem stops the operation and inform of the situation to the Chief Technician. The chief technician reports to the project manager and analyzes the problem and

instructs the responsible person in the measures. The results of reporting works are recorded on **Format-8**

CHAPTER 5 FINANCIAL MANAGEMENT

SECTION 1 Introduction

This document outlines the operation and maintenance for the internal financial management of water supply system. The document shall be updated or modified upon authorization of the project manager, according to their convenience in actual operation. If any discrepancy found between the community financial/accounting system and this manual, the community financial/accounting system is applied.

SECTION 2 Financial Documents for Management

The Water Supply System shall keep and use the following financial documents.

Form No.	Name	Description
Form-1	Official receipt	-used by the cashier to acknowledge payments received from the customers
Form-2	Cash count sheet	-used for recording daily reconciliation of receipts issued with cash at hand
Form-3	Petty cash vouchers	-used for authorizing petty expenses
Form-4	Cash book	-used to record all income collected and payments made at the cash office
Form-5	Bank book	-used to record bank deposits/withdrawals
Form-6	Petty cash book	-used for accounting for petty expenses
Form-7	Purchase order	-used for ordering goods and services
Form-8	Payment Vouchers	-raising payments for approval indicating the goods services received or supplied by the supplier.
Form-9	Goods received note	-used to acknowledge receipt of goods
Form-10	Stock records	-used for recording stocks of goods issues and in stock
Form-11	User registration card	-used for providing accurate record of the members and acts as control in terms of revenue collection.

The forms are attached in Attachment-I

SECTION 3 Financial documents systems

- (1) A register for financial documents should be maintained
- (2) All financial documents must be recorded in the register
- (3) Receipts and issues must be signed for
- (4) Serial numbers must be counter-checked for errors when receipted
- (5) Cancelled documents should not be destroyed but recorded and retained in the original book
- (6) The documents must be kept under lock and key
- (7) One member of staff must be responsible for the custody of financial documents

SECTION 4 Cash transactions systems

- (1) Control over cash collections
- (2) Receipt of cash must only be by the cashier or an authorized person
- (3) Evidence should be there to show receipt of cash by serially numbered receipt books.
- (4) There should be agreement of cash collections with cash and sales records
- (5) Any shortages and surpluses should be investigated

SECTION 5 Protection of cash

- (1) Cash box should be maintained

SECTION 6 Recording of transactions

- (1) All cash transaction should be recorded in the appropriate books of accounts
- (2) Cash books
- (3) Ledger A/Cs
- (4) The duties of the cashier should be limited to receiving cash if necessary
- (5) Holidays/staff leave should be arranged for those who handle securities e.g. cash at least once a year this is essential to avoid high risk of mistakes.

SECTION 7 Bank account

The management office of O&M Arrangement will maintain bank accounts:

- (1) Current account for operation

This account is used for financing recurrent expenditures for operation and maintenance

SECTION 8 Paying into bank

- (1) Money received should be banked the same or the day following the day of receipt (daily)
- (2) Comparisons of bank slips against initial receipts records and cash book must be made
- (3) Banking of funds must be intact and disbursement controlled

SECTION 9 Managing cash at hand

- (1) Cash float must be authorized and maintained or held to a certain limit daily
- (2) Only authorized persons are allowed access to the cash box
- (3) I.O.U's should be safeguarded

SECTION 10 Bank reconciliation

- (1) Bank statements should be collected on a regular basis
- (2) Bank reconciliation will be done every month to agree balances in the cash book with what is shown on the bank statement
- (3) Bank reconciliation should be checked and initiated by an independent person and senior officer.

SECTION 11 Petty cash transaction

- (1) Petty cash transaction should be in a Petty Cash Book.
- (2) Petty cash book should be kept on the imprest system
- (3) No payments should be made out of petty cash except against a receipt of petty cash voucher counter signed by someone authorized to permit expenditure.
- (4) No money of any should be paid into petty cash except the amount needed to reimburse the imprest.
- (5) Neither should the amount of the imprest be increased without proper authority

SECTION 12 Making payments

The following procedures will be followed:

- (1) Pro forma invoice or quotations must be supplied or obtained
- (2) Vouchers for payments must be prepared and authorized

SECTION 13 Procurement systems and Procedures

- (1) At least three quotations shall be sought for any selective procurement process. The purpose is to ensure efficient use of resources by selecting the cheaper source of quality goods and services.
- (2) Stores requisition should be raised when supplies in stock are down to re-order level.
- (3) Stores requisition/purchase order must be signed by the project manager. The buyer responsible for procurement checks authorization of requisition/purchase order.
- (4) The buyer should prepare the purchase order using supplier's latest price list
- (5) When goods arrive, the quantity is checked against the purchase order
- (6) Inspection of goods is carried out as to quality and quantity
- (7) The receipt of goods is recorded by raising the Goods Received Note (GRN).
- (8) If goods are short delivered, a shortage memo is raised at the same time and cross-referenced to the GRN

SECTION 14 Sales systems -Selling Water

- (1) Changes in the customer data must be verified and authorized
- (2) Revenues collected at household should be verified with meter reading records

SECTION 15 Stock system

- (1) Reception, checking and recording of goods inward by completing the GRN and signing the delivery note
- (2) Ensure the stocks are in the safe custody
- (3) Precautions must be against theft, misuse, fire, and deterioration.
- (4) Stock records should be regularly maintained
- (5) Review of condition of stock should be undertaken on regular basis, damaged and obsolete stocks established.

SECTION 16 Wages and salaries system and procedures

- (1) Wages and salaries should be authorized
- (2) Deductions should be correctly calculated and recorded: Income tax, NAPSA and other deductions.
- (3) Records must be kept in terms of details of the terms of employment and rates of pay
- (4) Payroll records should be checked against costing records
- (5) Each employee should receive a pay slip

SECTION 17 Wages paid in cash

- (1) A note analysis must be prepared for each employee, and in total.
- (2) Employees should acknowledge the receipt of their wage packet, possibly by signing or initialing a payroll list.

SECTION 18 Pay records should be maintained

- (1) Master payroll (analysis sheet)
- (2) Income tax, NAPSA and other records

SECTION 19 Accounting for water

Meter reading for amounts of water supplied must agree with revenue collected

SECTION 20 Documents distribution

- | | |
|--|---|
| (1) Cash receipt | <ul style="list-style-type: none">➤ Original → Customer➤ Second copy → Cash summary sheet➤ Third copy → A/Cs copy |
| (2) General receipt | <ul style="list-style-type: none">➤ Original → Customer➤ Second copy → Cash sheet➤ Third copy → A/Cs copy |
| (3) Invoice | <ul style="list-style-type: none">➤ First copy → Customer/Tap Attendant➤ Second copy → A/Cs |
| (4) Payment voucher
attached with proof for
payments | <ul style="list-style-type: none">➤ Invoices➤ A/Cs |
| (5) Daily cash sheets
attached with; | <ul style="list-style-type: none">➤ Daily banking➤ Cash/General receipts |

SECTION 21 Water fee payment

The water fee is paid based on water consumption volume by meter reading.

SECTION 22 Water tariff setting

The information required to determine tariffs includes data relating to the following:

- (1) Number of Registration
- (2) Monthly levels of consumption for each customer
- (3) The costs of water supply including materials, electricity, and salaries

SECTION 23 Bank accounts signatories

Two from the Management Office of O&M Administration

SECTION 24 Summary of financial systems and procedures

1. Ensure that every cash transaction is recorded in the cashbook in systematic way.
2. The financial officer must maintain a box file to keep all documents according to their classification or where possible, several box files should be opened for keeping each type of documents.
3. Ensure that each accounting document is numbered in order to correspond with the cashbook reference numbers.
4. The Cashier must prepare a voucher on which he/she should write all the details concerning the expenditure that has been incurred.
5. The authorized person must approve the voucher.
6. These documents and books must be kept under lock and key.

Attachment-I
Form of Financial Documents

Form 1

XXXX WATER SUPPLY SYSTEM

Serial No.

OFFICIAL RECEIPT

RECEIVED FROM
(NAME):

ADDRESS:

DESCRIPTION:

WATER VOLUME (M3):

AMOUNT PAID IN WORDS:
..... AMD

AMD

DATE:
CASHIER

SIGNATURE:

Form 2 Cash Count Sheet

Form 3 Cash Count Sheet		
Sheet No.	Date	
Type of Notes	Qty	Amount
AMD 20,000.00	_____	_____
AMD 10,000.00	_____	_____
AMD 5,000.00	_____	_____
AMD 1,000.00	_____	_____
	_____	_____
	_____	_____
	(A) Total cash	<input style="width: 100%; height: 20px;" type="text"/>
	(B) Total receipts	<input style="width: 100%; height: 20px;" type="text"/>
	(C) Difference (B – A)	

Form 3

Petty Cash Voucher

Date:

Voucher No.

Payee:

Amount:

Account code:

Amounts in word:

.....

Description:

.....

Approved by:

Project Manager

Date:

Received by:

Name

Signature: Date:

Form 4

CASH BOOK

XXX O&M Administration

MONTH

Sep. 2008

CURRENCY

AMD

LAST BALANCE

2,400,000

Month	Date	DESCRIPTION	A/C CODE	EVI. NO.	OUT	IN	BALANCE
09	01	Last Balance					2,400,000
09	01	Bank deposit		B-01	1,400,000		1,000,000
09	06	Water fees collected		03		35,000	1,035,000
09	07	Salary of staffs		04	25,000		1,010,000
09	07	Electric fee for pump		07	23,250		986,750
09	08	Water fees collected		10		12,000	998,750
09	12	Bank Withdrawal		11		100,000	1,098,750

BANK BOOK

XXX O&M Administration

 NAME OF BANK : YYY-Bank (Yerevan)

 TYPE OF ACCOUNT : Bank Book in AMD

 ACCOUNT NO. : XXX-XXXX

MONTH/YEAR	Sep.2008
CURRENCY	AMD
LAST BALANCE	0

Month	Date	DESCRIPTION	A/C CODE	EVI. NO.	OUT	IN	BALANCE
09	01	Last balance					0
09	01	Bank Deposit (Water fees collected)		B-01		2,400,000	2,400,000
09	12	Withdrawal		02	100,000		2,300,000

PETTY CASH BOOK

MONTH

XXX O&M Administration

Month	Date	DESCRIPTION	A/C CODE	INVOICE NO.	EMPLOYEE	AMOUNT	Receipt No.

Form 7

Order No.

Purchase Order

To:

Date

.....

.....

Item	Units	Quantity	Unit price	Total
Total amount				

Issues by: Sign: Date:

Authorized by: Sign: Date:

Form 8

XXXX O&M Administration
PAYMENT VOUCHER

Ref. No. _____

Payment to: Address:		
Description	Acc. Code	Amount
Total payment		

Amounts in words
.....

Prepared by: Sign Date.....

Checked by: Sign Date.....

Authorized by: Sign Date.....

Chq no.:/Cash Recorded by

Sign: Date

Form 9 Goods Received Note

Serial No.

Goods and services received

From:

Date

.....

.....

Ref. No. of Payment Voucher

Item	Units	Quantity	Unit price	Total
Total amount				

Issues by: Sign: Date:

Authorized by: Sign: Date:

Form 11

*OPERATION
AND MAINTENANCE MANUAL*

User Registration Card/ User Information (See O&M Format - Format 6)

*THE STUDY
FOR IMPROVEMENT OF RURAL WATER SUPPLY
AND SEWAGE SYSTEMS
IN THE REPUBLIC OF ARMENIA*

Attachment-II

- Form of Performance Indicator for Water Supply Management
- Guide for Long-Term Financial Planning

II-1 Form of Performance Indicators for Water Supply Management

The management team shall be responsible to prepare the Water Supply Management Performance Indicators. The table indicates monthly water consumption, chlorine dosage, number of user registrations, monthly water fee, expenditures on staff salaries, water production costs (electric fee), miscellaneous expenses, and etc.

It shall be submitted and reviewed at management office meeting for performance evaluation, while the Project Manager is liable to report and explain to the community council.

II-2 Guide for Long-Term Financial Planning

This shall be used to forecast and plan for water supply management in long term. The guide gives a reference for income and expenditure level according to the water fee collection whereby expected water demand and required budgets to sustain the water supply system.

O&M Format of Pilot Project

Format 1: Daily/ Monthly Sheet- Pump Operation (Lchavan Only)

Format 2: Monthly Sheet- Dosing Record

Format 3: Record of Patrol

Format 4: Monthly Report on Operation and Maintenance Activities

Format 5: Billing Slip of Water Supply

Format 6: User Registration Card/ User Information

Format 7: Summary Table of Monthly Fee

Format 8: Report on Repairing Works

MONTHLY SHEET - Dosing Record

Date	Dosing		Remarks
	Dosing Quantity (kg)	Remaining Quantity (kg)	
A	E	F	G
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

Total Consumed Quantity : kg

Remaining Quantity at the End of the Month : kg

**Draft MONTHLY REPORT
ON
OPERATION AND MAINTENANCE ACTIVITIES**

Year : _____

Date of Issue : _____

Month : _____

1. OPERATION

(1) Total Service days days

(2) Total Pump Operation Hours Hrs.

(3) Total Kw/hr of Pump Operation Kw/hr

2. WATER CONSUMPTION VOLUME

(1) Total Consumption Volume

- From meter reading (total) m³/month

3. CHLORINE DOSAGE

(1) Total Consumed Amount kg

(2) Stocked Amount kg

(3) Expected Amount for Next Month kg

4. RESULT OF MONTHLY INSPECTION

(1) Inspection for Reservoir Tank

--

(2) Inspection for Chlorination System

--

5. RESULT OF PATROL

--

6. IRREGULAR OR EMERGENCY OPERATION

Date	Description

7. ISSUE AND MEASURES

--

Format 5 Billing Slip for Water Supply

Billing Slip of Water Supply <u>Apnagyugh</u> Customer Copy	Billing Slip of Water Supply <u>Apnagyugh</u> O&M Unit Copy
Ticket No.....	Ticket No.....
Date:.....	Date:.....
Amount paid:.....	Amount paid:.....
Last month reading:.....(m ³)	Last month reading:.....(m ³)
This month reading:.....(m ³)	This month reading:.....(m ³)
Amount of water volume:.....(m ³)	Amount of water volume:.....(m ³)
Name:.....	Name:.....
House No:.....	House No:.....
Meter number:.....	Meter number:.....
Signature:.....	Signature:.....

Billing Slip of Water Supply <u>Lchavan</u> Customer Copy	Billing Slip of Water Supply <u>Lchavan</u> O&M Unit Copy
Ticket No.....	Ticket No.....
Date:.....	Date:.....
Amount paid:.....	Amount paid:.....
Last month reading:.....(m ³)	Last month reading:.....(m ³)
This month reading:.....(m ³)	This month reading:.....(m ³)
Amount of water volume:.....(m ³)	Amount of water volume:.....(m ³)
Name:.....	Name:.....
House No:.....	House No:.....
Meter number:.....	Meter number:.....
Signature:.....	Signature:.....

Format 6**User Registration Card / User Information**

Family Name:	
Family Head Name:	
House No.	
Telephone number:	
Number of Family Members:	
Water meter number:	
Tap location:	In house/ in yard

Monthly Water Fee						Year 2008	
Month	Meter reading (m3)		Consumption water volume(m3) (c=b-a)	Date		Amount paid (AMD)	Stamp & Signature
	Last month (a)	This month(b)		reading	paid		
Jan							
Feb							
Mar							
Apr							
May							
Jun							
Jul							
Aug							
Sep							
Oct							
Nov							
Dec							

REPORT ON REPAIRING WORKS

Report No. : _____

Name : _____

Facility : _____

OBJECTIVES

--

PLAN

1) Duration	
2) Supervisor	
3) Nos. of workers	
4) Total Cost	
5) Procedure	

IMPLEMENTATION

1) Duration	
2) Nos. of workers	
3) Total Cost	
4) Procedure	(If changed from the plan)

FINAL INSPECTION

1) Date	
2) Inspector	(Signature)
3) Result	

**JAPAN INTERNATIONAL COOPERATION AGENCY
STATE COMMITTEE ON WATER SYSTEMS**

**THE STUDY
FOR
IMPROVEMENT OF RURAL WATER SUPPLY
AND SEWAGE SYSTEMS
IN
THE REPUBLIC OF ARMENIA**

OPERATION AND MAINTENANCE MANUAL

(for Lchavan Pilot Project)

SEPTEMBER 2008

NIPPON KOEI CO., LTD

Composition of Operation and Management Manual

CHAPTER 1 GUIDELINE FOR COMMUNITY FIELD OFFICER (CFO)

**CHAPTER 2 ARTICLES OF O&M ORGANIZATION ON WATER SUPPLY
SYSTEM**

CHAPTER 3 MANAGEMENT PLAN OF O&M ADMINISTRATION

CHAPTER 4 OPERATION AND MAINTENANCE

CHAPTER 5 FINANCIAL MANAGEMENT

ATTACHMENT : O&M FORMAT FOR PILOT PROJECT

CHAPTER 1 GUIDELINE FOR COMMUNITY FIELD OFFICER (CFO)

1. Objectives

The objective of community operation and maintenance plan is to facilitate and support communities and institutions with the establishment of sustainable water supply system operation and maintenance arrangements. It is essential to consider the specific sustainability issues for the proposed investments and to ensure that long-term sustainability issues receive appropriate attention in all phases of Project implementation.

The following chapter is structured broadly as follows:

- Proposed management arrangements & sustainability considerations
- Community management approach & establishment of the local management organization
- Implementation plan
- Operation and Management (O&M) arrangements

2. Proposed Management Arrangements and Sustainability Considerations

The primary responsibility for O&M based on discussions with:

- Rural communities and community leaders;
- SCWS/ Ministration of Territorial Administration/Marz

Based on sustainability considerations there are one option for operation & maintenance of the proposed water supply systems.

- Operation & Maintenance by communities themselves through a specially constituted community organization;

A simple gravity system fed by a spring and serving a limited number of households is best managed by the community, as the skills required for O&M are available within the community and the costs will be low.

Further, community management of pumped systems will generally have a higher sustainability risk than simple gravity system because of the limited skills and experience within village communities to arrange and implement essential repairs.

The Project will respond to these risks through:

- Appropriate training of O&M personnel,
- Implementation of monitoring and evaluation arrangements to monitor O&M performance during the initial of operation.

3. Community Management Approach

(1) Background to the Community Participation

Participatory demand-responsive approaches for water supply facilities means community participation in decision-making and management of key aspects of planning, implementation, financing, and operation & maintenance of water supply systems.

(2) Characteristics and Constraints of Approach

Community management is a form of community participation in which the community takes the decision on all important aspects of an activity. In the case of water supply, this could include the planning, implementation and operation & maintenance of the proposed water supply system.

The community is responsible for

- maintenance and repair
 - local management organization
 - water use regulation
 - financing
- Communities can decide on local management arrangements within the overall constraint of the operation & maintenance arrangement
 - They must agree to participate in the Project on this basis.

(3) Special Considerations for Approach

Intensive counseling and motivational activities for the community members should be incorporated in the community awareness and training activities. For example if a community water supply system is based on pumping then it is important that the community understand the implications of electricity costs for pump operation and budget accordingly to ensure financial sustainability.

During implementation the pilot project should investigate sanitation improvements in order to ensure maximum health benefits are obtained from the pilot project.

(4) Existing Community Organizations

Existing community organizations in the targeted communities have been analyzed. These are established mainly through the government structures and/or or religions organizations. They do not have the appropriate skills or experience for management of rural water supply.

There are frequently key persons with significant potential to contribute to a local management organization within the community. In order to ensure the selection of a strong a local management organization Community Field Officer (CFO) needs to critically observe existing rural community structures and identify strong potential candidates.

(5) Establishment of O&M Organization

Community management require the establishment of an elected or appointed person to undertaken the management tasks on behalf of the community. It is important that the O&M organization particularly, both to represent the broad interests of consumers and also to ensure that there are appropriate skills represented within the community to enable it to undertake its role.

1) Structure and Formation

The O&M organization will comprise rural community representatives selected by residents of the rural community. The O&M organization will be formed before construction stage. The O&M organization structure will include a project manager, account, chief technician, technical inspector(s), pump operator(s). Training will be provided covering, organization, leadership, financial administrative and technical matters.

The O&M organization will open an account at Bank with at least 2 representatives including the account to be designated as signatories to the account on behalf of the O&M organization.

The structure of the O&M organization and its key responsibilities are summarized in the following Table.

WUA/WUG Structure & Responsibilities

Item	O&M Administration
Members of Management office	<ul style="list-style-type: none"> ▪ Project manager (1) ▪ Account (1) ▪ Chief technician (1) ▪ Technical inspector(s) ▪ Pump Operator(s)
Main Roles	<ul style="list-style-type: none"> ▪ Effectively manage assets of the water supply to deliver water supply services to consumers. ▪ Establish regulations for water management and use of assets including penalties. ▪ Hold regular meetings to consider appropriate matters related to water supply management. ▪ Keep record of meetings. ▪ Resolve problems identified by constituents and/or members. ▪ Ensure constituents are regularly informed about relevant water issues. ▪ Establish water tariff. ▪ Collect water fee from consumers ▪ Establish and maintain bank accounts and financial records. ▪ Carry out periodical monitoring of systems and their performance. ▪

(6) Community Management

The following table summarizes the key outcomes of the Community management approach.

Community Management Objectives

Parameters	Objectives
Role of community management	Community has overall responsibility for management of system commencing with participation in planning and decision-making through to operation and maintenance.
Role of O&M organization	Fully responsible for all aspects of system operation and maintenance including setting and collection of tariffs, water use regulation, management of customer base, and physical system operation & maintenance.
Administration & Finance	Community through O&M organization is responsible for financial planning, tariff setting, billing collection, financing of operation & maintenance as well as general management and administration.
Technical management	Responsibility of O&M organization.

(7) Facilitator of Community Management

A Community Field Officer (CFO) will be appointed by the JICA study team to work in each village to introduce community management approaches into the communities. The CFO’s responsibilities will include assistance to communities with needs assessments, consultation to create awareness, facilitating community planning, facilitating O&M organization members, providing on the job training,

and so on. CFOs will be the key link between the pilot project and the rural community. It is proposed that the CFOs will continue their involvement to assist with monitoring and evaluation.

In addition, the JICA expert will undertake periodic monitoring and evaluation visits during study period.

4. Implementation Plan

(1) Process of Implementation Plan

The implementation plan is based on implementation in line with a demand-based community management approach. The implementation plan is roughly divided into four steps;

- (i) Step 1: Preparation of manuals and guidelines (during basic design)
- (ii) Step 2: Supporting O&M organization (during basic design, and construction stage)
- (iv) Step 3: Monitoring and evaluation through participatory approach (after the construction for at least 3 months)

Process of Implementation

Steps	Activities
Step-1:	<ul style="list-style-type: none"> ▪ Explanation of the project (scope, implementation schedule, funding etc.) ▪ Preparation of manual and guidelines ▪ Proposed management arrangements, community responsibilities, costs
Step-2: Supporting O&M organization	<ul style="list-style-type: none"> ▪ Consideration/establishment of O&M organization (Consideration/ establishment of organizational and representational requirements, election of members, initial training of members, establish bank account) ▪ O&M training for O&M organization members ▪ Preparation of O&M organization regulations
Step-3: Monitoring and evaluation	<ul style="list-style-type: none"> ▪ Operation and maintenance of water supply facilities ▪ Monitoring and evaluation

(2) Organizations

Community members will be facilitated and provided training and technical assistance by the CFOs for each community. Training will be given to several specific categories of people will an appropriate focus and intensity to suit their particular roles.

5. Operation and Maintenance Arrangements

The proposed operation and maintenance arrangements are set out in Table of Summary of Activities.

Summary of Activities (Step 2 and Step 3)

Step	Items	Comment	Time	Responsibility	Participants
Step 2	1.Establishment of O&M organization				
	▪ Election of O&M Administration	<ul style="list-style-type: none"> ▪ Expert for community members ▪ Election of member of management office of O&M organization 	(1 week)	CFO Community head	Community head and residents (customers)
	▪ Initial training of O&M organization members	O&M organization meeting methods, community management approach, and health and hygiene survey.		CFO	O&M organization members
	▪ Preparation of regulations	Define the responsibilities and roles for O&M organization		CFO	O&M organization members
	▪ Establishment of O&M organization	<ul style="list-style-type: none"> ▪ Approval of community council ▪ Establish O&M organization's bank account 	(1 week)	CFO	O&M organization members
	2. Motivation and community empowerment	Personal skills and self-confidence training for members		CFO O&M organization members	Community members
	3. Construction	Cooperation of construction work Providing free labour		Expert O&M organization members	Community members
	4. O&M training	<ul style="list-style-type: none"> ▪ Administration, problem solving, regular meeting, minutes recording, ▪ Finance: Water fee, record-keeping, accountability ▪ Technical: adequate skills for monitoring, operation, and maintenance, 		Expert CFO	O&M organization members
Step 3	1. Monitoring:	<ul style="list-style-type: none"> ▪ Participatory monitoring and evaluation methods ▪ Regular supervision 	(1 week) Each month	Expert CFO	O&M organization members
	5. Follow up:	<ul style="list-style-type: none"> ▪ Technical problems ▪ Maintenance and operation of facilities and O&M organization 	(1 week)	Expert CFO	O&M organization members Community

Appendix 1

Present Condition of Health and Hygiene in Pilot project Area

No.	Community	Marz	Population	date	Main diseases related water	%	Water use in house	
							Boil water before drinking %	Wash hands after defecating %
1	Apnagyugh			Before Pilot Project	Skin, Diarrhea			
2				After Pilot Project				
3	Lchavan			Before Pilot Project	ARI, Diarrhea			
4				After Pilot Project				

Notes: Skin: skin disease. ARI: acute respiratory infection. Eye: eye infection. Gast.: gastroenteritis.

Appendix 2

O&M administration problems and response from experience of previous projects

Issue	Description
<p>Common problems experienced on previous projects</p>	<ol style="list-style-type: none"> 1. Forceful personalities often dominate the O&M administration. 2. Conflict between the decision-making role of the O&M administration and the authority of the traditional leaders. The Project imposes another leadership structure which existing leaders may not support. 3. Internal friction or conflict may occur among community people. 4. The handling of funds can be a focus for conflict. The treasurer position tends to drop out most often. 5. O&M administration fulfil their responsibilities during the construction phase but fail to continue their work after commissioning. O&M administration members tend to break up shortly after their formation due to lack of regular activity. 6. O&M administration only become active when there is a breakdown or some problems. Otherwise beneficiaries feel there is no need to meet or even collect fees. 7. Water users fees have been set but not collected.
<p>Important responses for the Project</p>	<ul style="list-style-type: none"> ▪ Full community participation and agreement in the setting up of O&M administration and drafting of their regulations. ▪ All participants must agree and understand their tasks and responsibilities as water users and as O&M administration members and any system of penalties for infringement of regulations. ▪ O&M administration members' selection in particularly project manager and accountant to be reviewed and confirmed quarterly during the construction stage based on critical observation/review by CFO. ▪ Early technical guidance required for communities regarding viable options. ▪ The Project needs to gain support of existing power structures in the villages: civil, traditional and religious. ▪ CFO roles and responsibilities need to be appropriately designed. CFO capacity in problem solving, communication, and counselling is critical.

CHAPTER 2 ARTICLES OF O&M ORGANIZATION ON WATER SUPPLY SYSTEM

Article 1 : Objectives and Tasks

- a) The O&M organization has a task to manage and maintain water utilization in the community of Lchavan.
- b) The O&M organization is assigned to maintain the water sources and pipe lines, reservoir, water meter, water taps etc.
- c) The community decides to start the O&M organization with approval of the community council (Avagani)

Article 2 : Name of O&M organization

The name of this O&M organization is the Lchavan O&M organization on Water Supply System.

Article 3 : Address of O&M organization

The O&M organization has its own office in the Lchavan community office.

Article 4 : Structure of O&M organization

The structure of O&M organization is composed of:

- a) The management office of O&M organization, which is assigned to represent the O&M organization in community under the community head.
- c) The community council (Avagani), which is composed of all representatives of beneficiaries of water supply, and the highest decision making organization of O&M organization.

Article 5 : Management office of O&M organization

(1) Members of Management Office of O&M organization

The management office of O&M organization is composed of :

Three (3) community members, namely, project manager, accountant, and chief technician, who are elected from the community leaders, office staffs and members. The community head also can serves as project manger. They are elected for two (2) years with renewable possibility.

The staffs employed, namely technical inspectors (meter reader and billing / inspection for reservoir, water intake, and pipeline/ O&M chlorine dosage) and pump operators. They are selected for one (1) year with

renewable possibility from community members.

(2) Attribution of O&M organization Members and Staffs

O&M organization members elected without salary

- a) Project manager, who is the representative and has responsibility for all daily activities of the O&M organization.
- b) Accountant, who is advisor of project manager, and plays a role of accountant of the O&M organization. The financial/accountant also prepares and submits all accounting documents of the O&M organization for auditing to the community council (Avagani). The financial/accountant receives, sends and files all documents of the O&M organization, and takes record of meetings.
- c) Chief technician; who is advisor of project manager, and plays a role of technical matters of the O&M organization.

Staffs employed with salary

- a) Technical inspector; who has responsibilities to reading water meter and billing of water fee monthly. Technical inspector, who has responsibilities to inspect the reservoir, water intake and pipeline monthly. Inspector operates and maintains the chlorine dosage of water supply system in community.
- b) Pump operators; who have responsibilities to operation of pump.

(3) Regular Meeting of management office of O&M organization

Regular meeting of management office of O&M organization is invited once a month and is chaired by the project manager of the O&M organization.

(4) Annual Report

The management office of O&M organization shall prepare annual report, which includes: (a) conducted activities, (b) account documents which have been audited by auditors, (c) action plan, (d) financial plan. The management office of O&M organization shall submit the annual report to the community council (Avagani) for approval, also, shall submit it to the community for reporting after the approval by the community council (Avagani).

Article 6 : Audit

The community council (Avagani) selects two (2) auditors from the member of the community council (Avagani) to audit account of O&M organization. The

auditors shall audit the account one time per year before the regular the community council (Avagani), and shall report the result to the community council (Avagani) .

Article 7 : Water Fee

The income source of this O&M organization is payment for water by water users. The water fee is 120 AMD per m3. To decide the water fee, the O&M organization shall propose the water fee to the community council (Avagani), and the community council (Avagani) shall approve it.

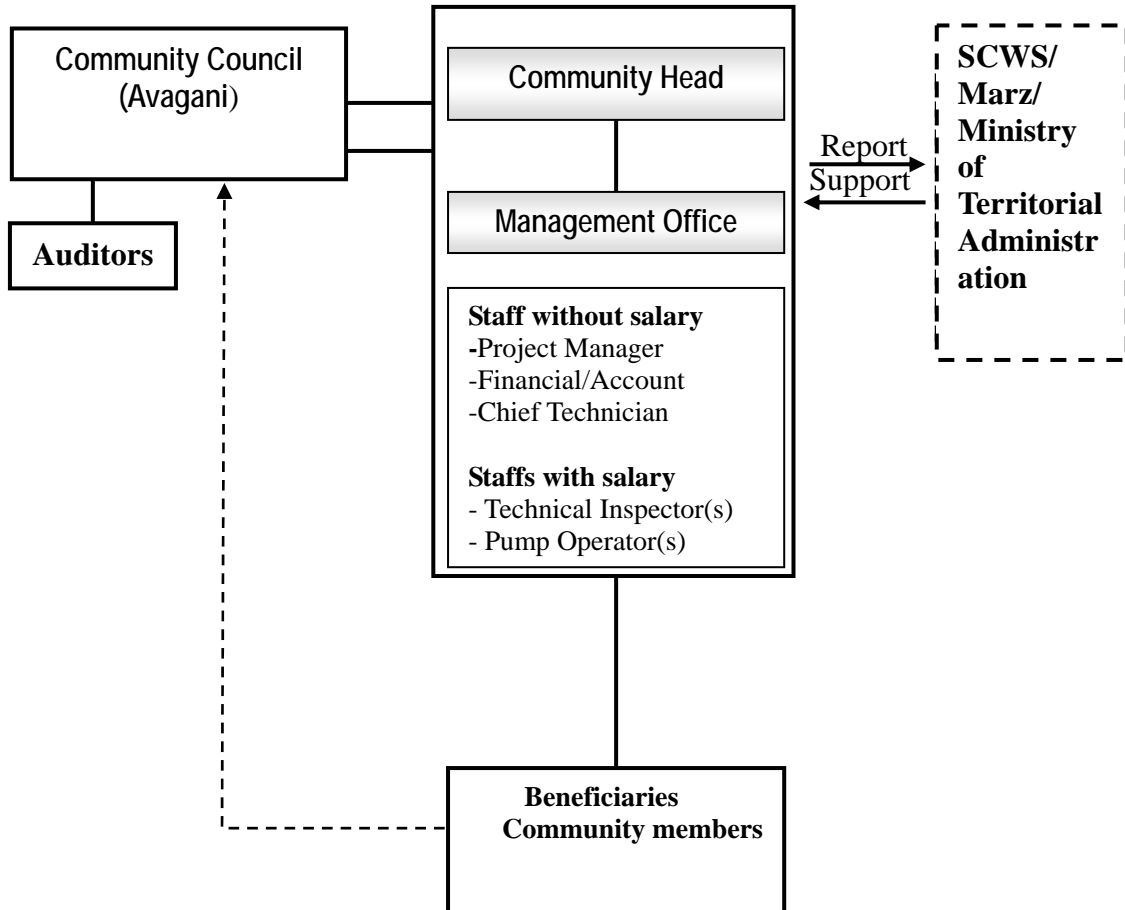
Article 8 : Support by SCWS/ Marz/ Ministry of Territorial Administration

The O&M organization can request to the SCWS/ Marz/ Ministry of Territorial Administration for the support, in the case which a problem rises, and the O&M organization can not solve it.

Article 9 : Detail Regulation

The management office of O&M organization can propose detail regulation of the O&M organization to the community council (Avagani) , and the community council (Avagani) decides the detail regulation.

Organization Chart of O&M organization on Water Supply System



CHAPTER 3 MANAGEMENT PLAN OF O&M ORGANIZATION

1 Scope of Management Plan

The scope of management plan for O&M Administration is shown in following table. The overall goal of O&M Administration is to supply clean water to local peoples with less-expensive and continuous. The Management Plan described in this manual may be effective tool for O&M Administration to achieve the overall goal.

Overall Goal	Constant supply water to beneficiaries
Annual Target	Keep good operation and maintenance of water supply system
Activity	Operation and maintenance by O&M Administration
Management Plan	Annual Action Plan for O&M Administration
	Financial plan

2 Annual Action Plan for Operation and Maintenance

2.1 Contents of Annual Action plan

The annual action plan shall be prepared by the management office and the draft shall be submitted in the community council for approval. The annual action plan consists of the followings;

- 1) Annual targets of O&M administration
- 2) Annual target and contents of activities of staffs
 - a) Chief Technician
 - b) Accountant
 - c) Technical Inspector(s)
 - d) Pump Operator(s)
- 3) Annual Financial Plan
- 4) Work Schedule
- 5) Members and staffs

2.2 Details of Annual Action Plan

(1) Annual target of O&M administration

The annual target is a principle or principles of the year for the activity of O&M administration

, and shall be decided by the **Project Manger** with considering the results of management of last fiscal year and surrounding conditions. The examples are as follows;

- **Supply clean water**
- **Increase the hour of water supply**
- **Good service, good management**
- **Good solution with a day**

(2) Annual target for staffs

The annual target of staffs is a practical target of the year for the activity of each staff of management office, and shall be **decided by each staff** with considering the Annual Target.

1) Accountant

The examples of annual target for the accountant are as follows;

- **To keep transparency of account work.**
- **To check income and outgo per day and week.**
- **To keep an account book and report the monthly income and outgo by monthly meeting.**

2) Chief Technician

The Chief Technician is a responsible of operation and maintenance of water supply facilities and Chief Technician is also the representative of Technical Inspector(s), and Pump Operator (s)

Therefore, the examples are as follows;

- **To keep good maintenance at all the time less than 2 accidents per month.**

3) Technical Inspector(s)

The examples of annual target for the technical inspectors are as follows;

- **To check all pipelines once a month and inform chief technician immediately if we find an anomaly.**
- **To take rapid measure with chief technician within a day when the accident has happened.**

4) Pump Operator(s)

The examples of annual target for the pump technician are as follows;

- **To operate the pump on time and clean up pump house once a week.**

2.3 Annual Activity of the management office of O&M Administration and staffs

The activity of the management office of O&M Administration and staffs are classified as the followings,

- 1) Item of Activity; meeting, reporting, accounting, operating, maintaining, monitoring, etc.
- 2) Term of Activity; daily, weekly, monthly, annually, etc.

(1) Meetings

Monthly meeting for the management office of O&M Administration

The proposed contents of monthly meeting are as follows:

Contents of Monthly Meeting (Example)

I. Report of activity in last month

- Operation and maintenance report from Chief Technician
- Financial report from Accountant (See Attachment 3.4)
- Problems and solutions
- Comment from President / Vice-President

II. Discussion

(2) Job Description of Project Manager

Main Tasks and Responsibility
<ul style="list-style-type: none"> - Overall responsible for the Water Scheme - Provide administrative and management services - Analyze financial reports - Analyze operation and maintenance reports - Authorize payments and procurements - Planning and budgeting - Procure goods and services as per budget allocation - Supervise the staff - Preparation of reports and submit to the community council

Monthly Task
<ul style="list-style-type: none"> - Hold and chair monthly meeting - Checking balances of account
Annually Task
<ul style="list-style-type: none"> - Arrange annual report together with staffs of management office (See Attachment 3.3) - Arrange annual plan together with staffs of management office(See Attachment 3.1) <p>Hold and chair monthly management</p>
Emergency Task
<ul style="list-style-type: none"> - Get information from Chief technicians - Inform the anomalies and damages to other staffs of management office (Shearing information) - Instruct Chief engineer to take measure immediately. - Arbitrate if troubles are happened

(3) Job Description of Accountant

Main Tasks and Responsibility
<ul style="list-style-type: none"> - Preparation and processing of all statutory payments - Preparations of financial reports - Submission of monthly financial reports. - Implementation of accounting control systems - Preparation of budgets, monitoring of actual expenditure against budget and reporting any variances. Custodian of all accountable documents

- Preparation of the Payroll for staffs
- Administration of cash and bank transactions
- Preparation of monthly water supply overall performance indicators. (Attachment 2(4))

Daily Task
<ul style="list-style-type: none"> - Check revenue and expenditure - Carry out secretary work (e.g. write/receive letters)
Weekly Task
<ul style="list-style-type: none"> - Make and check weekly balance
Monthly Task
<ul style="list-style-type: none"> - Collect water fee from All the beneficiaries - Make monthly balance sheet and submit to monthly meeting - Report the balance in monthly meeting (See Attachment 2-3) - Deposit water fee to the bank account - Withdraw and pay salaries to all the staffs - Make record of meeting
Annually Task
<ul style="list-style-type: none"> - Make annual statement of account and submit to community council - Participate community council - Make annual financial report - Submit all the records and documents to the Auditor - Make record of meeting
Emergency Task
<ul style="list-style-type: none"> - Providing cash for measure(s) taken by Technician(s)

(4) Job Description of Chief Technician

Main Tasks and Responsibility
<ul style="list-style-type: none"> - Know the condition of water supply facilities by inspecting or corresponding with technical inspector and pump operators - Support technical inspectors and pump operators - Manage the day-to-day operations of the water supply and emergency operation and repairing works

Daily Task

- Contact to other technicians if necessary (e.g. to monitor their work and/or workability)
Monthly Task
- Make monthly report and submit to monthly meeting - Report the general/ particular conditions of water supply facility in monthly meeting
Annually Task
- Make annual report and submit to community council - Participate community council - Report the general/ particular conditions of water supply facility in community council
Emergency Task
- Inform the anomalies and damages and plan of measure(s) to project manager - Carry out measure(s) with other technicians after the approval of the project manager

(5) Job Description of Technical Inspector

Main Tasks and Responsibility
- Meter reading and billing - Treat water in conformity with the required guidelines or standards - Conduct the dosing work - Technical patrol of facilities - Supervise any repairing works as required - Compile meter reading reports every month and submit to the Chief Technician - Ensure that all reported faults are followed up and documented

Daily Task
- Operate chlorination apparatus of distribution reservoir - Report daily work to Chief technician
Monthly Task
- Meter reading and billing - Technical Patrol of pipeline, reservoir, water intake - Make monthly report and work sheet and submit to Chief technician - Participate monthly meeting
Emergency Task
- Examine/ Confirm anomalies and damages

- | |
|--|
| <ul style="list-style-type: none"> - Inform the anomalies and damages to Chief Technician - Execute measure(s) by instructions from Chief Technician |
|--|

(6) Job Description of Pump Operator

- | |
|--|
| Main Tasks and Responsibility |
| <ul style="list-style-type: none"> - Operate pumps, - Maintain pump, control panel and pump house - Record pump operation |

- | |
|---|
| Daily Task |
| <ul style="list-style-type: none"> - Switching on and off pump - Inspection of pump - Write a daily record of operations |

- | |
|--|
| Weekly Task |
| <ul style="list-style-type: none"> - Report weekly work to Chief technician |

- | |
|--|
| Monthly Task |
| <ul style="list-style-type: none"> - Make monthly report and work sheet and submit to Chief technician - Participate monthly meeting |

- | |
|--|
| Emergency Task |
| <ul style="list-style-type: none"> - Examine/ Confirm anomalies and damages - Inform the anomalies and damages to Chief Technician - Execute measure(s) by instructions from Chief Technician |

3 Financial Plan

3.1 Basic Concept of Financial Plan for O&M Administration

Financial plan is fundamental issue for management of O&M Administration. Imagine if you are the staff of management office, you want to get good salary. While if you are one of beneficiary of water supply, you want that the water fee is low. The purpose of financial plan is to give satisfactory both management office and beneficiaries by estimating, executing, examining and modifying the amount of income and expense. IF both sides, even one side, are not satisfied, O&M Administration and water supply system are ruined and spoiled.

3.2 Procedure of Making Financial Plan

Procedure of making financial plan is as follows;

- 1) Calculate the cost of operation and maintenance (per month)
- 2) Estimate the salary of staffs in management office, (per month)
- 3) Estimate the amount of water to be used by beneficiaries (per month)
- 4) Calculate necessary cost per household (per month)
- 5) Consider the above necessary cost as water fee
- 6) If necessary cost is NOT applicable as water fee, reduce the salary of staffs again and recalculate.
- 7) When necessary cost is applicable as water fee, set water fee and make balance sheet
- 8) If necessary cost is still NOT applicable, reduce the staff and/or discuss other solution together with sector/district officials (e.g. subsidy from the government)

If water supply system is already exist and water fee is already set, you have to take existing condition (O&M Administration, water fee, etc.) into account.

Procedure for Financial Planning for O&M Administration

1	START	
2	Calculation of operation cost	Dozing powder
		Electric fee for pump
3	Calculation of maintenance cost	Maintenance cost for pipes
		Maintenance cost for pump
4	Estimation of salary for staffs	Salary for staffs in management office
5	Total cost is estimated	
6	Estimation of water amount to be supplied	Estimate the number of beneficiaries of water supply system
		Calculation the amount of water to be used by beneficiaries
7	Necessary cost per household is estimated	No
		Yes
8	Adoption of water fee	
9	Making Balance Sheet	

3.3 Operation Cost

Operation cost for water supply facility consists as follows;

- 1) Salary of staffs
- 2) Cost for purchasing chlorine for disinfection
- 3) Electric fee
- 4) Miscellaneous, as papers, stationary, and cost for office equipment

Items for estimating Operation cost

Items	Cost Estimation Example		Remarks
	Unit	Unit Price (AMD)	
2) Cost for Purchasing Chlorine (Calcium-hypochloride 65%)	1 drum (xx kgs)		1 drum can disinfect x,000L of water (Excluding transportation fee)
3) Electric Fee for Pump	Kw/h		
5) Miscellaneous	Month	3000 - 5,000	Photocopy paper, Stationary etc.

Note: these costs are only estimation and you have to use actual cost of last year

3.4 Maintenance Cost

Maintenance cost for water supply facility consists as follows;

- 2) Maintenance Cost for Water Supply Facilities
 - 2-1) Cost for Reservoir and Pipeline
 - 2-2) Cost for Pump

Items for estimating maintenance cost

Items	Cost Estimation Example		Remarks
	Unit	Unit Price (AMD)	
2-1) Cost for Reservoir tank, Pipeline	Pipeline meter / month		Example: 10m of pipeline,/month shall be allocated
2-2) Cost for Pump(s)	AMD/kW/year	10,000	Example: 3.3 kW pumps, shall be allocated

Note: these costs are only estimation and you have to use actual cost of last year

3.5 Salary for Staffs

Salary for staffs consists as follows;

- 1) Accountant
- 2) Chief Technician
- 3) Technical Inspector(s)
- 4) Pump Operator(s)

Items for estimating maintenance cost (for piped systems)

Items	Cost Estimation Example		Remarks
	Unit	Unit Price (AMD)	
1) Accountant	Month	10,000 – 30,000	full-time/ part time employee
2) Chief Technician	Month	10,000 – 30,000	full-time/part time employee
3) Technical Inspector(s)	Month	10,000 – 30,000	Full-time employee
4) Pump Operator(s)	Month	10,000 – 30,000	full-time/part time employee

Note: these costs are only estimation and you have to use actual cost of last year

3.6 Estimation of water to be supplied

Water fee is a main income of O&M Administration, therefore estimation of beneficiaries is equal to estimate real income of O&M Administration. The Estimation shall be based on the income of last year, but if it is difficult or no actual experience, it is assumed that one beneficiary use 100L per day (100L/day/person). Water amounts are estimation and you have to use actual amount of last year.

3.7 Consideration of Water fee

Estimated total cost and water amount to be supplied, you can calculate necessary cost per liter (L). If necessary cost is less than appropriate water fee, the financial plan may be applicable and fix the fee, and finalize financial plan to submit to the community council.

If more than appropriate water fee, you have to make an effort to reduce the cost or get some subsidence close for appropriate fee.

It is very important for O&M Administration to estimate balance preliminary to avoid miss-manage the financial plan. If the O&M Administration runs without financial plan, O&M Administration does no longer exist and water supply facility may be destroyed. It is attached sample of estimation for water supply system in Attachment 4.

4 Reporting and Evaluation of Management Plan

4.1 Annual Plan and Financial Plan

The annual plan and financial plan shall be drafted and submit to the community council for approval. The plan shall be made based on the last annual report. The forms of annual plan and financial plan are attached in the attachment.

Attachment 1(1) Annual Action Plan

Attachment 1(2) Meeting Plan

Attachment 1(3) Annual Financial Plan

4.2 Annual Report

The annual report shall be drafted and submit to the community council for approval. The forms are attached in attachment as follows;

Attachment 1(1) Annual Report

Attachment 2(2) Annual Report for Meeting

Attachment 3(3) Annual Financial Report

Attachment

- 1 Form of Management Plan**
 - (1) Form of Annual Action Plan**
 - (2) Form of Meeting Plan**
 - (3) Form of Annual Financial Plan**
- 2 Form of Annual Report**
 - (1) Form of Annual Report**
 - (2) Form of Annual Report for Meeting**
 - (3) Form of Financial Report**
- 3 Form of Monthly Financial Balance**
- 4 Example of Estimation for Piped Water Supply System**
- 5 Data Sheet**

Attachment 1(1) Form of Annual Action Plan

<p>Annual Action Plan of year <u>200</u> for <Name of Water Users Association></p>
<p>Overall Annual Target</p>
<p>- <Describe Annual target> - -</p>
<p>Annual Target of the Work</p>
<p>Accountant: - <Describe Annual target> - -</p>
<p>Chief Technician: - <Describe Annual target> - -</p>
<p>Technical Inspector: - <Describe Annual target> - -</p>
<p>Pump Operator: - <Describe Annual target> - -</p>

Attachment 1(2) Form of Meeting Plan

Meeting Plan of year <u>200</u>		
Plan of Monthly meeting for the Management office		
<Describe planned date (ex.: Friday in First Week of Every Month)>		
Members and Staffs of the Management office in this Year		
	(Name)	(Mobile Number)
Project manager		
Accountant		
Chief Technician		
Technical Inspector (1)		
Technical Inspector (2)		
Pump Operator (1)		
Pump Operator (2)		
<Other Staffs(If any)>		

Attachment 1(3) Form of Annual Financial Plan

Annual Financial Plan of year <u>200</u> for <Name of O&M Administration>			
Income per Year (AMD)		Expenditure per Year (AMD)	
WATER FEE		OPERATION COST	
Month	Amount of water fee to be collected		Amounts
		Electric fee	
		Dosing powder	
		Miscellaneous	
		Total	AMD
		MAINTENANCE COST	
		Pumps	
		Pipelines/ Facilities	
		Total	AMD
		SALARY	
		Accountant	
		Chief Technician	
		Technical Inspector	
		Technical Inspector	
		Pump Operator	
Total	AMD	Pump Operator	
OTHERS			
		Total	AMD
		OTHERS	
Total	AMD	Total	AMD
Annual income total:		Annual expenditure total:	
	AMD		AMD
Reserve fund:	AMD	<Explanation>	
Loss:	AMD	<Explanation>	
Name and branch of bank: _____ Account No.: _____			

Attachment 2(1) Form of Annual Report

<p>Annual Report of year <u>200</u> for <Name of Water Users Association></p>
<p>Achievements of Annual Target</p> <p>- <Describe Achievements of Annual target> - -</p>
<p>Achievements of the Work</p> <p>Accountant: - <Describe Result, Achievement and Evaluate your activity by yourself> - - -</p> <p>Chief Technician - <Describe Result, Achievement and Evaluate your activity by yourself> - - -</p> <p>Technical Inspector - <Describe Result, Achievement and Evaluate your activity by yourself> - - -</p> <p>Pump Operator: - <Describe Result, Achievement and Evaluate your activity by yourself> - -</p>

Attachment 2(2) Form of Annual Report of Meeting(1/2)

Annual Report of Meeting of year <u>200</u> for <Name of O&M Administration>			
Monthly meeting for the Management office			
Date	Place	Participant	Discussed Items
Jan			
Feb			
Mar			
Apr			
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			
Others			

Attachment 2(3) Form of Annual Financial Report

Annual Financial Report of <u>200</u> for <Name of O&M Administration>			
Income per Month (AMD)		Expenditure per Month (AMD)	
WATER FEE		OPERATION COST	
Month	Amount of water fee to be collected		Amounts
		Electric fee	
		Dosing powder	
		Miscellaneous	
		Total	AMD
		MAINTENANCE COST	
		Pumps	
		Pipelines/ Facilities	
		Total	AMD
		SALARY	
		Accountant	
		Chief Technician	
		Technical Inspector	
		Technical Inspector	
		Pump Operator	
Total	AMD	Pump Operator	
OTHERS			
		Total	AMD
		OTHERS	
Total	AMD	Total	AMD
Annual income total:		Annual expenditure total:	
	AMD		AMD
From:	To:	From:	To:
Reserve fund:		<Explanation>	
	AMD		
Loss:		<Explanation>	
	AMD		

Attachment 2 (4) Water Supply Management Performance Indicators

Attachment 3 Form of Monthly Financial Balance

Financial Balance of <Month> <u>200</u> for <Name of O&M Administration>			
Income per Month (AMD)		Expenditure per Month (AMD)	
WATER FEE		OPERATION COST	
	Amount of water fee to be collected		
		Electric fee	
		Dosing powder	
		Miscellaneous	
		Total	AMD
		MAINTENANCE COST	
		Pumps	
		Pipelines/ Facilities	
		Total	AMD
		SALARY	
		Accountant	
		Chief Technician	
		Technical Inspector	
		Technical Inspector	
		Pump Operator	
Total	AMD	Pump Operator	
OTHERS			
		Total	AMD
		OTHERS	
Total	AMD	Total	AMD
Monthly income total:		Monthly expenditure total:	
	AMD		AMD
Reserve fund:	AMD	<Explanation>	
Loss:	AMD	<Explanation>	

Attachment 4 Example of Estimation for Water Supply System

Monthly Expenditure (Unit: AMD)

Operation and Maintenance Cost of Water Supply System				
Item	Amount per month	Quantity	Monthly Cost	Condition
Operation Cost				
Electric fee	35,000	1	35,000	3kw x 30days
Purchasing of dosing powder	10,000	1	10,000	5kg
Miscellaneous	5,000	1	5,000	
Maintenance cost				
Pump	10,000	1	10,000	
Pipeline	50,000	1	50,000	50m
		Total	110,000	

Salary for Management office				
Item (Salary)	Amount per month	Quantity	Monthly Cost	Condition
Project manager	0	1	0	Voluntary, No salary
Accountant	10,000	1	10,000	
Chief Technician	10,000	1	10,000	
Technical Inspector	12,000	2	24,000	2 person
Pump Operator	8,000	3	24,000	3 person
		Total	68,000	

Monthly Income			
Item	Amount	Unit	Condition
Expected Beneficiaries	100	household	
Average water consumption	10	M3	Total 1,000m3
Water tariff	200	AMD	Per M3
Total	200,000	AMD	

CHAPTER 4 OPERATION AND MAINTENANCE (With Pump)

1 Piped Water Supply System with Pump

The following facilities are major piped water supply systems;

- Water collection facilities; (Water intake from spring and pump)
- Transmission pipe
- Reservoirs
- Distribution pipe
- Household connections and water taps

Gate valve is common equipment installed in water supply system. Water meters are installed for household connections.

2 Description of Facilities

2.1 Water collection facilities; (Water intake from spring and pump)

(1) Functioning

- Collecting water from spring
- Water sending to reservoir through transmission pipe

(2) Method of Operation

- Daily operation plan shall be prepared based on the demand and reservoir capacity.
- Operation hours and date shall be decided based on the electric operation cost.

(3) Tasks

The following tasks for operation and maintenance shall be done by pump operator.

1) Daily Tasks

The pump operator carries out pump switch on/off following pump operation plan.

He also records the daily/weekly pump operation (**Format-1**).

- Pump operation hours
- Electric meter reading

(4) Maintenance

- Pump house shall be cleaned
- Check the intake and equipments

2.2 Transmission and Distribution Pipes

(1) Functioning

- Transmit water to the Reservoir
- Distribute water to the house water taps

(2) Tasks

The technical inspector is in charge of the patrol for the pipelines. Through the patrol, the inspector checks the followings and the results of the inspections are recorded on

Format-3:

- a) Leakage from the pipelines and the house water taps
- b) Illegal connection and vandalism

(3) Maintenance

After some parts of pipelines are repaired, it is necessary to clean the pipes as below:

- a) Decide the lines to clean.
- b) Confirm whether enough water is in the reservoir.
- c) Close all the gate valves off the decided line.
- d) Flushing water for the pipeline.
- e) Open all the gate valves which are closed, and resume the service.

2.3 Distribution Reservoir

(1) Functioning

- To store water and send to each house water tap through the distribution pipes

(2) Method of Operation

1) Dosing Chlorination Operation

a) Chlorine mixing and dosage

Put chlorine into the tank and mix with water fully. Chlorine dosage rate shall be 1.0ppm = 1.0g/m³.

Record the dosing time, the dosing quantity and remaining quantity on **Format-2**.

(3) Tasks

The following tasks for operation and maintenance shall be done by inspector.

1) Daily Tasks

The inspector carries out putting chlorine into the tank and mixing with water. He also records the chlorine quantities consumed and stored.

2) Monthly Tasks

The inspection on monthly basis for the reservoir is only for sedimentation in the tank. The inspector climbs up the reservoir tank and check the amount of the sedimentation inside of the tank. The result of the inspection is recorded on **Format-3** and Chief Technician shall prepare Monthly Report (**Format-4**).

The patrol on monthly basis for the chlorination system is to check the condition of the mixing tank inside. Patrol results shall be recorded on **Format-3**.

(3) Maintenance

- Reservoir shall be cleaned at twice a year. However there is much sedimentation, the tank shall be cleaned more often.

- If the outside part of distribution reservoir is always wet, it is a possibility of seepage from inside. In that case, the pipe work technician drains the water from Distribution reservoir and check wall inside. If there is anomalies, repair immediately. The method of repair is as follows;

- 1) Plaster the crack and surrounding wall (the surface shall be roughness)
- 2) Make mortar
- 3) Put the mortar to the plastered portion

2.4 Water Meter Chamber and Water Tap

(1) Functioning

- Distribute water to beneficiaries.

(2) Method of operation

- a) Check the hygiene condition surrounding the chamber and tap
- b) Open the cover and read the water meter and record it on **Format-5**.
- c) Close the cover

(3) Tasks

The following tasks are done by technical inspector;

1) Daily Task

Technical inspector record the water consumed by each household and collect water fee. The amount of water and collected fee are recorded on **Format-6**.

2) Monthly Task

Accountant count the monthly sales based on **Format-7** and submit it to the project manager.

3) Biannual Task

Technical inspector shall check the condition of water meters, water taps, and pipes.

3. In Case of Emergency

Emergency cases are:

- 1) When the pump stops suddenly because of overheat and electrical problems,
- 2) When the chlorine dosage stops because of stacking of the pipes, and
- 3) Any other cases that the water supply service should be stopped.

When an emergency case occurs, the responsible person for the facility which has problem stops the operation and inform of the situation to the Chief Technician. The chief technician reports to the project manager and analyzes the problem and

instructs the responsible person in the measures. The results of repairing works are recorded on **Format-8**.

CHAPTER 5 FINANCIAL MANAGEMENT

SECTION 1 Introduction

This document outlines the operation and maintenance for the internal financial management of water supply system. The document shall be updated or modified upon authorization of the project manager, according to their convenience in actual operation. If any discrepancy found between the community financial/accounting system and this manual, the community financial/accounting system is applied.

SECTION 2 Financial Documents for Management

The Water Supply System shall keep and use the following financial documents.

Form No.	Name	Description
Form-1	Official receipt	-used by the cashier to acknowledge payments received from the customers
Form-2	Cash count sheet	-used for recording daily reconciliation of receipts issued with cash at hand
Form-3	Petty cash vouchers	-used for authorizing petty expenses
Form-4	Cash book	-used to record all income collected and payments made at the cash office
Form-5	Bank book	-used to record bank deposits/withdrawals
Form-6	Petty cash book	-used for accounting for petty expenses
Form-7	Purchase order	-used for ordering goods and services
Form-8	Payment Vouchers	-raising payments for approval indicating the goods services received or supplied by the supplier.
Form-9	Goods received note	-used to acknowledge receipt of goods
Form-10	Stock records	-used for recording stocks of goods issues and in stock
Form-11	User registration card	-used for providing accurate record of the members and acts as control in terms of revenue collection.

The forms are attached in Attachment-I

SECTION 3 Financial documents systems

- (1) A register for financial documents should be maintained
- (2) All financial documents must be recorded in the register
- (3) Receipts and issues must be signed for
- (4) Serial numbers must be counter-checked for errors when receipted
- (5) Cancelled documents should not be destroyed but recorded and retained in the original book
- (6) The documents must be kept under lock and key
- (7) One member of staff must be responsible for the custody of financial documents

SECTION 4 Cash transactions systems

- (1) Control over cash collections
- (2) Receipt of cash must only be by the cashier or an authorized person
- (3) Evidence should be there to show receipt of cash by serially numbered receipt books.
- (4) There should be agreement of cash collections with cash and sales records
- (5) Any shortages and surpluses should be investigated

SECTION 5 Protection of cash

- (1) Cash box should be maintained

SECTION 6 Recording of transactions

- (1) All cash transaction should be recorded in the appropriate books of accounts
- (2) Cash books
- (3) Ledger A/Cs
- (4) The duties of the cashier should be limited to receiving cash if necessary
- (5) Holidays/staff leave should be arranged for those who handle securities e.g. cash at least once a year this is essential to avoid high risk of mistakes.

SECTION 7 Bank account

The management office of O&M Arrangement will maintain bank accounts:

- (1) Current account for operation

This account is used for financing recurrent expenditures for operation and maintenance

SECTION 8 Paying into bank

- (1) Money received should be banked the same or the day following the day of receipt (daily)
- (2) Comparisons of bank slips against initial receipts records and cash book must be made
- (3) Banking of funds must be intact and disbursement controlled

SECTION 9 Managing cash at hand

- (1) Cash float must be authorized and maintained or held to a certain limit daily
- (2) Only authorized persons are allowed access to the cash box
- (3) I.O.U's should be safeguarded

SECTION 10 Bank reconciliation

- (1) Bank statements should be collected on a regular basis
- (2) Bank reconciliation will be done every month to agree balances in the cash book with what is shown on the bank statement
- (3) Bank reconciliation should be checked and initiated by an independent person and senior officer.

SECTION 11 Petty cash transaction

- (1) Petty cash transaction should be in a Petty Cash Book.
- (2) Petty cash book should be kept on the imprest system
- (3) No payments should be made out of petty cash except against a receipt of petty cash voucher counter signed by someone authorized to permit expenditure.
- (4) No money of any should be paid into petty cash except the amount needed to reimburse the imprest.
- (5) Neither should the amount of the imprest be increased without proper authority

SECTION 12 Making payments

The following procedures will be followed:

- (1) Pro forma invoice or quotations must be supplied or obtained
- (2) Vouchers for payments must be prepared and authorized

SECTION 13 Procurement systems and Procedures

- (1) At least three quotations shall be sought for any selective procurement process. The purpose is to ensure efficient use of resources by selecting the cheaper source of quality goods and services.
- (2) Stores requisition should be raised when supplies in stock are down to re-order level.
- (3) Stores requisition/purchase order must be signed by the project manager. The buyer responsible for procurement checks authorization of requisition/purchase order.
- (4) The buyer should prepare the purchase order using supplier's latest price list
- (5) When goods arrive, the quantity is checked against the purchase order
- (6) Inspection of goods is carried out as to quality and quantity
- (7) The receipt of goods is recorded by raising the Goods Received Note (GRN).
- (8) If goods are short delivered, a shortage memo is raised at the same time and cross-referenced to the GRN

SECTION 14 Sales systems -Selling Water

- (1) Changes in the customer data must be verified and authorized
- (2) Revenues collected at household should be verified with meter reading records

SECTION 15 Stock system

- (1) Reception, checking and recording of goods inward by completing the GRN and signing the delivery note
- (2) Ensure the stocks are in the safe custody
- (3) Precautions must be against theft, misuse, fire, and deterioration.
- (4) Stock records should be regularly maintained
- (5) Review of condition of stock should be undertaken on regular basis, damaged and obsolete stocks established.

SECTION 16 Wages and salaries system and procedures

- (1) Wages and salaries should be authorized
- (2) Deductions should be correctly calculated and recorded: Income tax, NAPSA and other deductions.
- (3) Records must be kept in terms of details of the terms of employment and rates of pay
- (4) Payroll records should be checked against costing records
- (5) Each employee should receive a pay slip

SECTION 17 Wages paid in cash

- (1) A note analysis must be prepared for each employee, and in total.
- (2) Employees should acknowledge the receipt of their wage packet, possibly by signing or initialing a payroll list.

SECTION 18 Pay records should be maintained

- (1) Master payroll (analysis sheet)
- (2) Income tax, NAPSA and other records

SECTION 19 Accounting for water

Meter reading for amounts of water supplied must agree with revenue collected

SECTION 20 Documents distribution

- | | |
|--|---|
| (1) Cash receipt | <ul style="list-style-type: none">➤ Original → Customer➤ Second copy → Cash summary sheet➤ Third copy → A/Cs copy |
| (2) General receipt | <ul style="list-style-type: none">➤ Original → Customer➤ Second copy → Cash sheet➤ Third copy → A/Cs copy |
| (3) Invoice | <ul style="list-style-type: none">➤ First copy → Customer/Tap Attendant➤ Second copy → A/Cs |
| (4) Payment voucher
attached with proof for
payments | <ul style="list-style-type: none">➤ Invoices➤ A/Cs |
| (5) Daily cash sheets
attached with; | <ul style="list-style-type: none">➤ Daily banking➤ Cash/General receipts |

SECTION 21 Water fee payment

The water fee is paid based on water consumption volume by meter reading.

SECTION 22 Water tariff setting

The information required to determine tariffs includes data relating to the following:

- (1) Number of Registration
- (2) Monthly levels of consumption for each customer
- (3) The costs of water supply including materials, electricity, and salaries

SECTION 23 Bank accounts signatories

Two from the Management Office of O&M Administration

SECTION 24 Summary of financial systems and procedures

1. Ensure that every cash transaction is recorded in the cashbook in systematic way.
2. The financial officer must maintain a box file to keep all documents according to their classification or where possible, several box files should be opened for keeping each type of documents.
3. Ensure that each accounting document is numbered in order to correspond with the cashbook reference numbers.
4. The Cashier must prepare a voucher on which he/she should write all the details concerning the expenditure that has been incurred.
5. The authorized person must approve the voucher.
6. These documents and books must be kept under lock and key.

Attachment-I
Form of Financial Documents

Form 1

XXXX WATER SUPPLY SYSTEM

Serial No.

OFFICIAL RECEIPT

RECEIVED FROM
(NAME):

ADDRESS:

DESCRIPTION:

WATER VOLUME (M3):

AMOUNT PAID IN WORDS:
..... AMD

AMD

DATE:
CASHIER

SIGNATURE:

Form 2 Cash Count Sheet

Form 3 Cash Count Sheet		
Sheet No.	Date	
Type of Notes	Qty	Amount
AMD 20,000.00	_____	_____
AMD 10,000.00	_____	_____
AMD 5,000.00	_____	_____
AMD 1,000.00	_____	_____
	_____	_____
	_____	_____
	(A) Total cash	<input style="width: 100%; height: 20px;" type="text"/>
	(B) Total receipts	<input style="width: 100%; height: 20px;" type="text"/>
	(C) Difference (B – A)	

Form 3

Petty Cash Voucher

Date:

Voucher No.

Payee:

Amount:

Account code:

Amounts in word:

.....

Description:

.....

Approved by:

Project Manager

Date:

Received by:

Name

Signature: Date:

Form 4

CASH BOOK

XXX O&M Administration

MONTH

Sep. 2008

CURRENCY

AMD

LAST BALANCE

2,400,000

Month	Date	DESCRIPTION	A/C CODE	EVI. NO.	OUT	IN	BALANCE
09	01	Last Balance					2,400,000
09	01	Bank deposit		B-01	1,400,000		1,000,000
09	06	Water fees collected		03		35,000	1,035,000
09	07	Salary of staffs		04	25,000		1,010,000
09	07	Electric fee for pump		07	23,250		986,750
09	08	Water fees collected		10		12,000	998,750
09	12	Bank Withdrawal		11		100,000	1,098,750

BANK BOOK

XXX O&M Administration

 NAME OF BANK : YYY-Bank (Yerevan)

 TYPE OF ACCOUNT : Bank Book in AMD

 ACCOUNT NO. : XXX-XXXX

MONTH/YEAR	Sep.2008
CURRENCY	AMD
LAST BALANCE	0

Month	Date	DESCRIPTION	A/C CODE	EVI. NO.	OUT	IN	BALANCE
09	01	Last balance					0
09	01	Bank Deposit (Water fees collected)		B-01		2,400,000	2,400,000
09	12	Withdrawal		02	100,000		2,300,000

Form 7

Order No.

Purchase Order

To:

Date

.....

.....

Item	Units	Quantity	Unit price	Total
Total amount				

Issues by: Sign: Date:

Authorized by: Sign: Date:

Form 8

XXXX O&M Administration
PAYMENT VOUCHER

Ref. No. _____

Payment to: Address:		
Description	Acc. Code	Amount
Total payment		

Amounts in words
.....

Prepared by: Sign Date.....

Checked by: Sign Date.....

Authorized by: Sign Date.....

Chq no.:/Cash Recorded by

Sign: Date

Form 9 Goods Received Note

Serial No.

Goods and services received

From:

Date

.....

.....

Ref. No. of Payment Voucher

Item	Units	Quantity	Unit price	Total
Total amount				

Issues by:

Sign:

Date:

Authorized by:

Sign:

Date:

Form 11

*OPERATION
AND MAINTENANCE MANUAL*

User Registration Card/ User Information (See O&M Format - Format 6)

*THE STUDY
FOR IMPROVEMENT OF RURAL WATER SUPPLY
AND SEWAGE SYSTEMS
IN THE REPUBLIC OF ARMENIA*

Attachment-II

- Form of Performance Indicator for Water Supply Management
- Guide for Long-Term Financial Planning

II-1 Form of Performance Indicators for Water Supply Management

The management team shall be responsible to prepare the Water Supply Management Performance Indicators. The table indicates monthly water consumption, chlorine dosage, number of user registrations, monthly water fee, expenditures on staff salaries, water production costs (electric fee), miscellaneous expenses, and etc.

It shall be submitted and reviewed at management office meeting for performance evaluation, while the Project Manager is liable to report and explain to the community council.

II-2 Guide for Long-Term Financial Planning

This shall be used to forecast and plan for water supply management in long term. The guide gives a reference for income and expenditure level according to the water fee collection whereby expected water demand and required budgets to sustain the water supply system.

O&M Format of Pilot Project

Format 1: Daily/ Monthly Sheet- Pump Operation (Lchavan Only)

Format 2: Monthly Sheet- Dosing Record

Format 3: Record of Patrol

Format 4: Monthly Report on Operation and Maintenance Activities

Format 5: Billing Slip of Water Supply

Format 6: User Registration Card/ User Information

Format 7: Summary Table of Monthly Fee

Format 8: Report on Repairing Works

DAILY /MONTHLY SHEET - PUMP OPERATION

O&M4-3
Format-1

Month : _____ Pump No. : _____

Date	Electric Operation Hours							Pump Operation Hours			Daily Total	Remarks	
	Start Time	Start electric meter	End Time	End electric meter	Total Hours	Total electric meter	Daily Total electric meter	Start	End	Total Hours			
	A	B	C	D	E=C-A	F=D-B	A	B	C=B-A				
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
Monthly Total													

Monthly Total Electric Operation Hours : Hours

Monthly Total Pump Operation Hours : Hours

Monthly Total Electric Consumptions : kw/hr

MONTHLY SHEET - Dosing Record

Date	Dosing		Remarks
	Dosing Quantity (kg)	Remaining Quantity (kg)	
A	E	F	G
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

Total Consumed Quantity : kg

Remaining Quantity at the End of the Month : kg

**Draft MONTHLY REPORT
ON
OPERATION AND MAINTENANCE ACTIVITIES**

Year : _____

Date of Issue : _____

Month : _____

1. OPERATION

(1) Total Service days days

(2) Total Pump Operation Hours Hrs.

(3) Total Kw/hr of Pump Operation Kw/hr

2. WATER CONSUMPTION VOLUME

(1) Total Consumption Volume

- From meter reading (total) m³/month

3. CHLORINE DOSAGE

(1) Total Consumed Amount kg

(2) Stocked Amount kg

(3) Expected Amount for Next Month kg

4. RESULT OF MONTHLY INSPECTION

(1) Inspection for Reservoir Tank

--

(2) Inspection for Chlorination System

--

5. RESULT OF PATROL

--

6. IRREGULAR OR EMERGENCY OPERATION

Date	Description

7. ISSUE AND MEASURES

--

Format 5 Billing Slip for Water Supply

Billing Slip of Water Supply <u>Apnagyugh</u> Customer Copy	Billing Slip of Water Supply <u>Apnagyugh</u> O&M Unit Copy
Ticket No.....	Ticket No.....
Date:.....	Date:.....
Amount paid:.....	Amount paid:.....
Last month reading:.....(m ³)	Last month reading:.....(m ³)
This month reading:.....(m ³)	This month reading:.....(m ³)
Amount of water volume:.....(m ³)	Amount of water volume:.....(m ³)
Name:.....	Name:.....
House No:.....	House No:.....
Meter number:.....	Meter number:.....
Signature:.....	Signature:.....

Billing Slip of Water Supply <u>Lchavan</u> Customer Copy	Billing Slip of Water Supply <u>Lchavan</u> O&M Unit Copy
Ticket No.....	Ticket No.....
Date:.....	Date:.....
Amount paid:.....	Amount paid:.....
Last month reading:.....(m ³)	Last month reading:.....(m ³)
This month reading:.....(m ³)	This month reading:.....(m ³)
Amount of water volume:.....(m ³)	Amount of water volume:.....(m ³)
Name:.....	Name:.....
House No:.....	House No:.....
Meter number:.....	Meter number:.....
Signature:.....	Signature:.....

Format 6**User Registration Card / User Information**

Family Name:	
Family Head Name:	
House No.	
Telephone number:	
Number of Family Members:	
Water meter number:	
Tap location:	In house/ in yard

Monthly Water Fee						Year 2008	
Month	Meter reading (m3)		Consumption water volume(m3) (c=b-a)	Date		Amount paid (AMD)	Stamp & Signature
	Last month (a)	This month(b)		reading	paid		
Jan							
Feb							
Mar							
Apr							
May							
Jun							
Jul							
Aug							
Sep							
Oct							
Nov							
Dec							

REPORT ON REPAIRING WORKS

Report No. : _____

Name : _____

Facility : _____

OBJECTIVES

--

PLAN

1) Duration	
2) Supervisor	
3) Nos. of workers	
4) Total Cost	
5) Procedure	

IMPLEMENTATION

1) Duration	
2) Nos. of workers	
3) Total Cost	
4) Procedure	(If changed from the plan)

FINAL INSPECTION

1) Date	
2) Inspector	(Signature)
3) Result	