The Republic of the Union of Myanmar
Ministry of Agriculture, Livestock and Irrigation
Department of Rural Development

WORLD WATER DAY (2017)

Rural Water Supply and Water Treatment

Nay Pyi Taw(MICC II)


(1) Introduction of Our Department Activities
(2) Activities for Rural Water Supply System & Water Treatment
(3) Conclusion

(1) Introduction of Our Department Activities

Rural Water Supply's Background

- Early time, Rural Water Supply are undertook by rural communities themselves, in term of open dug well, Rainwater harvesting ponds, lakes, streams, rivers, etc;
- Round about 1965, Rural Water Supply Branch, Ministry of Agriculture and Irrigation, served the rural water supply , by implementing the deep tube well, especially in CDZ.
- In 1999-2000 , Rural water supply activities hand over to DDA,
- In the year of 2012, DDA was aborted, and formed DRD,
- Now a day DRD is responsible on the rural water supply.

Planning

- Assessment the rural water supply data in 1999-2000 by DDA
- Set up 10 year rural water supply project (2000-2001 to 2009-2010), DDA
- After 10 year RWSP , necessary to implement remaining villages, continued draw 5 year RWSP (2011-2012 to 2015-2016)
- Moreover, for NCDP, DRD set up the 20 years rural water supply plan (2011-2012 to 2030-2031)

Systems

- Shallow Tube well- Water taken form Shallow Aquifer. Its construction cost is economical but easy to be contaminated. Can supply approximately up to (25) households, population up to (125) nos.
- Deep tube well- Water taken from deep or isolated aquifer Water exploration rate can be set. Its construction cost is high but not be able to contaminated easily. It can supply water up to (100) households/ population (500) nos.
- Dug well - Most commonly used in Delta Region and lower part of Myanmar. It can supply water up to (50) households, population (250) nos.
- Rain water collection pond-commonly used in Central Dry zone area , Delta Area in which rain water can be collected. It can supply up to (400) households, population (2000) nos.
- Spring - Most commonly used in Hilly Region and Mountainous area. It can supply water up to (500) households , population (2500) nos.

Current Situation on Rural Water Supply

1.	**Total villages**	-	**63899**
2.	Completed villages in 2000-2001 to 2010-2011 Fiscal year	-	27424
3.	2011-2012 Fiscal Year Completed villages	-	1611
4.	2012-2013 Fiscal Year Completed villages	-	1571
5.	2013-2014 Fiscal Year Completed villages	-	2028
6.	2014-2015 Fiscal Year Completed villages	-	3940
7.	2015-2016 Fiscal Year Completed villages	-	3455
8.	Planned to be implemented on 2016-2017 Fiscal year	-	2055
9.	Will completed after 2016-2017 Fiscal year	-	**42084**
10.	Remaining villages end of 2016-2017 Fiscal year	-	**21815**

Completed villages (65%), Remaining Villages (35%)

Co-operation with Local Donors and International Organizations for Rural water supply

- Local Donors (Rural water supply project)
- UNDP(Human Development Initiative Program)
- UNICEF (Safe Drinking Supply Project, Area Focussed Township Project, Water Supply and Sanitation Project Extension)
- BAJ(Rural safe drinking water supply in Dry Zone)
- WHO(Urban and Rural workshops)
- JICA (Rural water supply project in Dry Zone and Nothern Shan State,Technical Project,RWSP-(Phase-1 and 2),ODA Loan(Phase-1)
- UN-Habitat(Rural Water Supply)(Chin,Mandalay,Magwe)
- ADB(Chin), Progetto Continenti(Magwe),HelpAge(Kayin),
- Care International(Shan,Kayah,Rakhine), TDH Italia(Magwe,Mandalay), CESVI(Sagaing,Magwe,Mandalay), Peace Winds Japan(Kayin), Oxfam(Kachin,Rakhine)

Objectives of Strategy

1. to set out the way to meet the needs of the rural populations for improved domestic water supply services
2. access to use of improved Sanitation with elimination of open defecation
3. to improve hygiene behavior by the year 2030

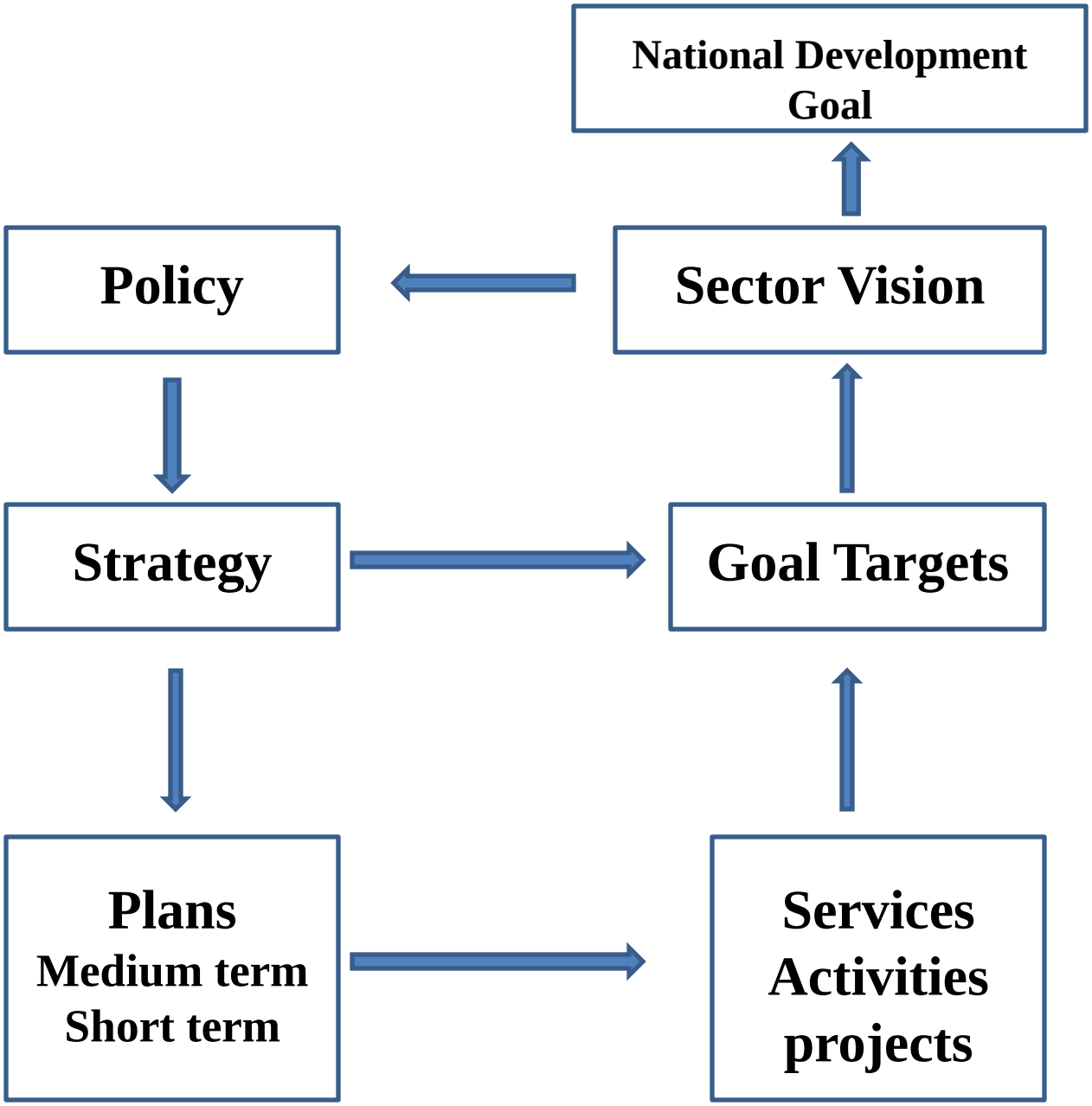
Supporters of WASH sector-

a) Government
b) Development Partners
c) International NGOs
d) National & Local NGOs
e) Private Sector

All the rural populace will have access of effective, efficient and affordable Services for improved water supply by 2030

(1) Water resources management
(2) Water supply design,planning and infrastructure
(3) Water quality standards and water safety plans
(4) Operation and maintenance

Policy, Strategy and Planning



Purposes of Investment Plan

- To guide spending & action for the WASH sector to the year 2030
- To focus on the development & strengthening of administrative systems, fund raising, bidding & other initial task
- To create the capacity for full development of work services

National Investment Plan

Tap/Piped Water Supply System and Others	2015	2020	2025	2030
Rural Water Supply	61%	70%	85%	100%
School Water Supply		40%	65%	100%
Health Facilities Water Supply		50%	75%	100%

Required Capital Expenditures for Improved Water Supply

State /Region	Annual average(000s US$)			Total	Percentage
	Hardware	Software	Total	(2017-2030)	
Kachin	2,468	247	2,715	38,011	1.67
Kayah	559	56	615	8,608	0.83
Kayin	3,124	312	3,437	48,113	2.11
Chin	1,210	121	1,331	18,633	0.82
Sagaing	26,615	2,662	29,277	409,877	18.1
Tanintharyi	2,556	256	2,811	39,357	1.72
Bago	13,273	1,327	14,601	204,411	8.98
Magway	20,427	2,043	22,470	314,581	13.81
Mandalay	25,308	2,531	27,839	389,750	17.11
Mon	3,495	349	3,844	53,816	2.36
Rakhine	6,777	678	7,454	104,362	4.5
Yangon	7,073	707	7,781	108,928	4.78
Shan	11,607	1,161	12,768	178,752	7.86
Ayeyawaddy	16,853	1,685	18,539	259,542	11.4
Nay Pyi Taw	6,515	652	7,167	100,332	4.4
Total	147,862	14,786	162,648	2,277,074	**100**

Main Tasks

- Rural Safe Drinking Water and Sanitation;
- Rural feeder roads and Bridges connecting one village to another,
- Rural electrification works through renewable energy sources;

Objectives on Rural Water Supply

- To gain one water supply system in one villages.
- To sufficient water in rural area.
- To acheive safe drinking water in rural area.

(2)Activities for Rural Water Supply System and Water Treatment

Water supply activities are carried out in the 5 following systems;

- Drilling Tube wells;(Deep Tubewell & Shallow Tubewell)
- New construction and improvement of Hand-Dug wells;
- New construction and renovation of rain water collection Pond;
- Gravity flow systems;
- River water pumping systems & Others.

Drilling Tubewells;(Deep Tubewell & Shallow Tubewell)

New construction and improvement of Hand-Dug wells;

New construction and renovation of rain water collection Pond;

River water pumping systems & Others.

Gravity flow systems;

Rural Water Supply Activities of DFID and DRD Budjet

Above 100 Households 2400 gals Overhead Tank & Pipe Water(2016 – 2017)Fiscal Years

Distribution of Drinking Water to Villages(Emergency Case)

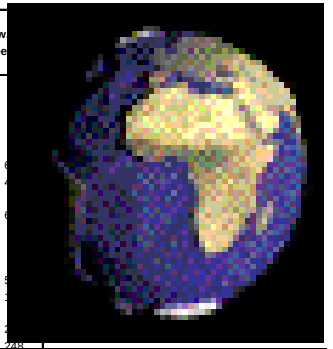
ODA Loans of Town Water Supply(23 Townships)

GIS Data Base and (SWL , Well Depth) Distribution Map

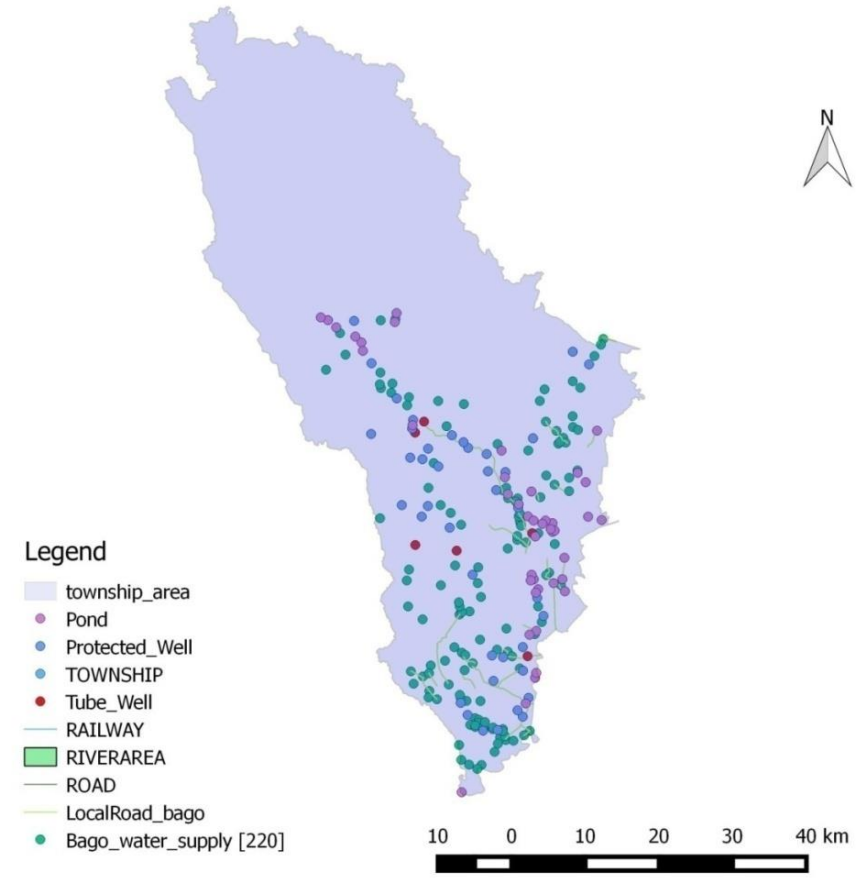
(Deep Tubewell)

Well Inventory (Chauk Township)

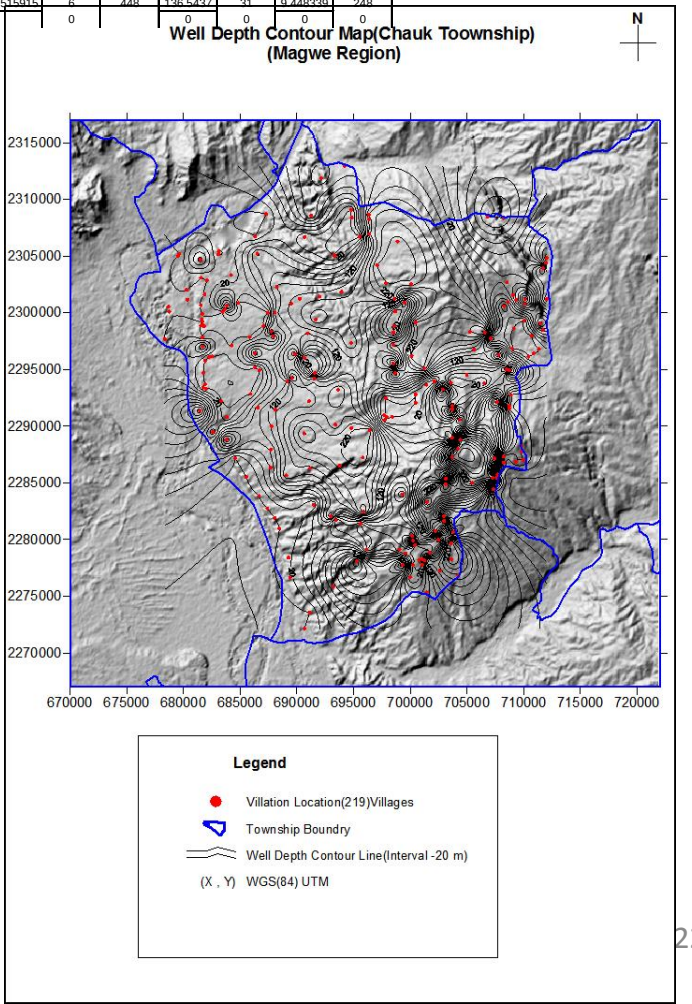
Sr.No	Village Tract	Village Name	Location(X) Longitude	Location(Y) Latitude	UTM(X)	UTM(Y)	SRTM(Elev) (meter)	House hold	Population	Drilling Depth (feet)	Drilling Depth (meter)	Pipe (feet)	Well Depth (meter)	Well Depth (Elev-m)	Pipe-dia (inch)Ø	Casing (feet)	Casing (meter)	Screen (feet)	Screen (meter)	S.w (fee
1		Yele	94.81709313	20.5793319	689396.454	2276648.197	62.70505693	196	1076	0	0				0		0	0	0	
2		Kyunthit(W)	94.81587503	20.5951672	689249.915	2278399.91	63.80547722	153	861	0	0				0		0	0	0	
3		Kyunthit(E)	94.85342835	20.5719935	693193.922	2275878.427	97.31161582	86	437	0	0				0		0	0	0	
4		Padatha(N)	94.97512013	20.7592848	705629.9	2296763.985	249.9353174	180	913	0	0				0		0	0	0	
5		Padatha(S)	94.96858395	20.7393197	704976.134	2294545.171	285.9108067	41	181	0	0				0		0	0	0	
6		Letpangyaun	94.99556054	20.7548877	707764.61	2296303.296	270.0852946	141	779	900	274.3066138	758	231.027126	-4.22131924	6	728	221.8836	30	9.143554	
7		Letpangyaun Ywat	94.95343044	20.5924633	703593.548	2278266.523	260.6475601	350	2069	895	272.7826882	863	263.029564	-12.1351281	4	843	256.9339	20	6.095703	
8		Pakannge	94.93237847	20.5662576	701433.211	2275338.97	213.6966049	112	658	0	0				0		0	0	0	
9		Sale	94.95343044	20.6050603	703576.813	2279661.217	283.1798082	101	637	870	265.16306	860	262.115209	18.0167482	6	830	252.9717	30	9.143554	
10		Uyin(W)	94.94344791	20.5833126	702564.919	2277240.95	246.2103918	48	208	0	0				0		0	0	0	
11		Okpo	94.95913474	20.5793909	704205.654	2276826.342	235.9125288	74	488	0	0				0		0	0	0	
12		Tabingan	94.90102217	20.8132673	697842.98	2302648.159	229.3600176	255	1370	0	0				0		0	0	0	
13		Onbwedaw	94.92253214	20.8119601	700083.918	2302529.984	268.5473261	145	776	755	230.1127705	763	232.551052	38.4345556	6	630	192.0146	133	40.53642	
14		Yele(N)	94.8084461	20.8108905	688208.895	2302274.133	115.4329697	98	1697	405	123.4379762	400	121.914051	-8.00500648	6	380	115.8183	20	6.095703	
15		Yele(S)	94.82068658	20.7973428	689500.044	2300788.576	130.3557395	98	798	0	0				0		0	0	0	
16		Nyizu	94.84136467	20.7847458	691668.723	2299418.359	157.3290856	72	590	640	195.062481	640	195.062481	-37.7333953	4	580	176.7754	60	18.28711	
17		Uyin(N)	94.82781696	20.8015022	690237.156	2301257.468	143.8374041	82	646	500	152.3925632	479	145.992076	-8.55515915	6	448	136.5437	31	9.448339	248
18		Myinthakon	94.84445451	20.8029283	691967.417	2301435.072	157.9211668	30	366	0	0				0		0	0	0	0



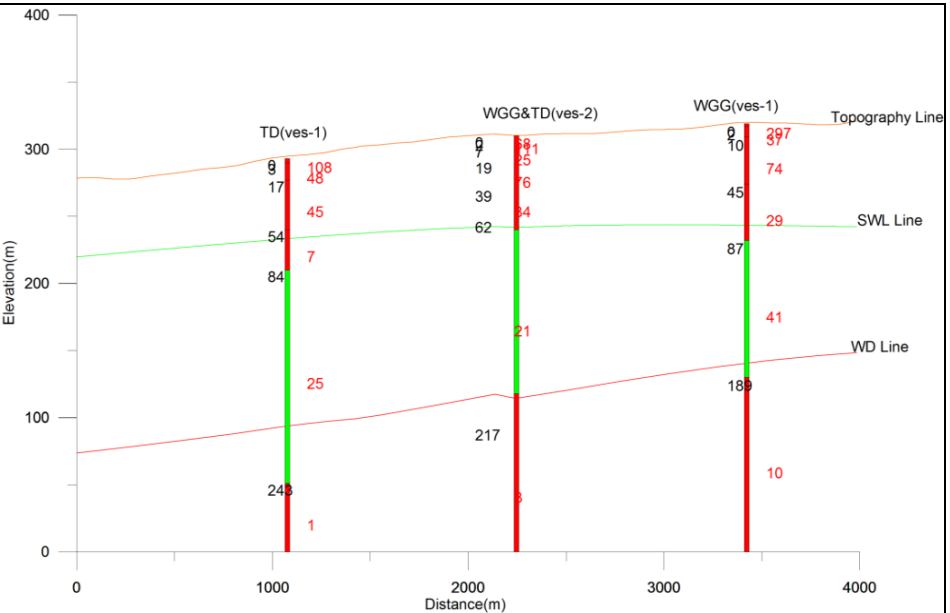
Water Supply Information Map(Bago Township)

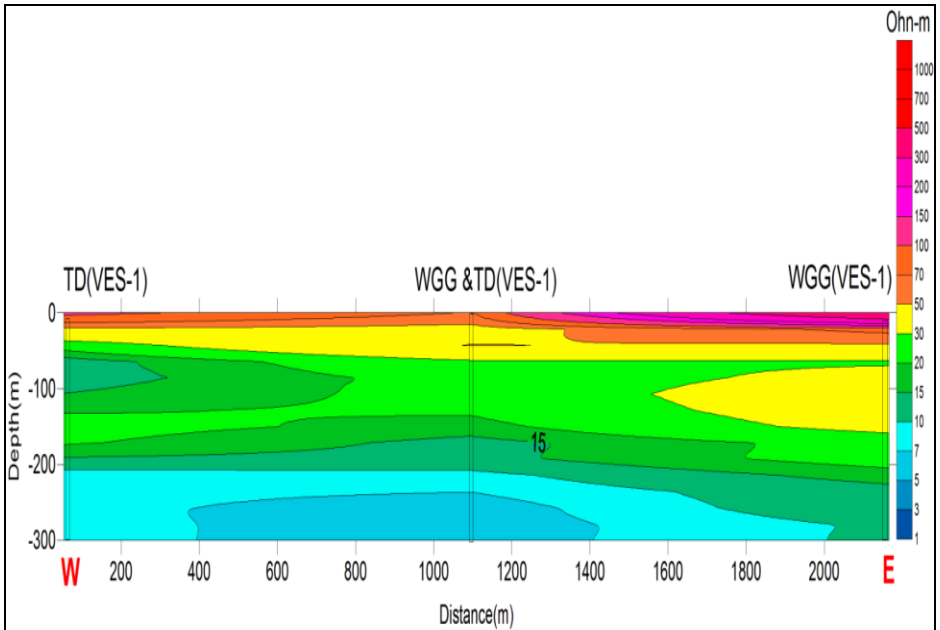


Well Depth Contour Map(Chauk Toownship) (Magwe Region)



Groundwater Investigation for Geophysical Survey





Water Quality Analysis

(1)Physical Water quality Parameter

(1)pH
(2)Ec µs/cm
(3)TDS Mg/L
(4)Turbidity NTU (Nephelometry turbidity unit

Scanning Analyzer

Turbidity

(2)Chemical Water Quality Parameter

(1)Hardness ($CaCO_3$) Mg/L
(2)Iron (Fe)Mg/L
(3)Fluoride(F)Mg/L
(4)Chloride(CL)Mg/L
(5)Nitrate(NO_3)Mg/L
(6)Arsenic(Ars)Mg/L
(7)Manganese(Mn)
(8)Sulphate(SO4)

Potable+(M)
Microbiology

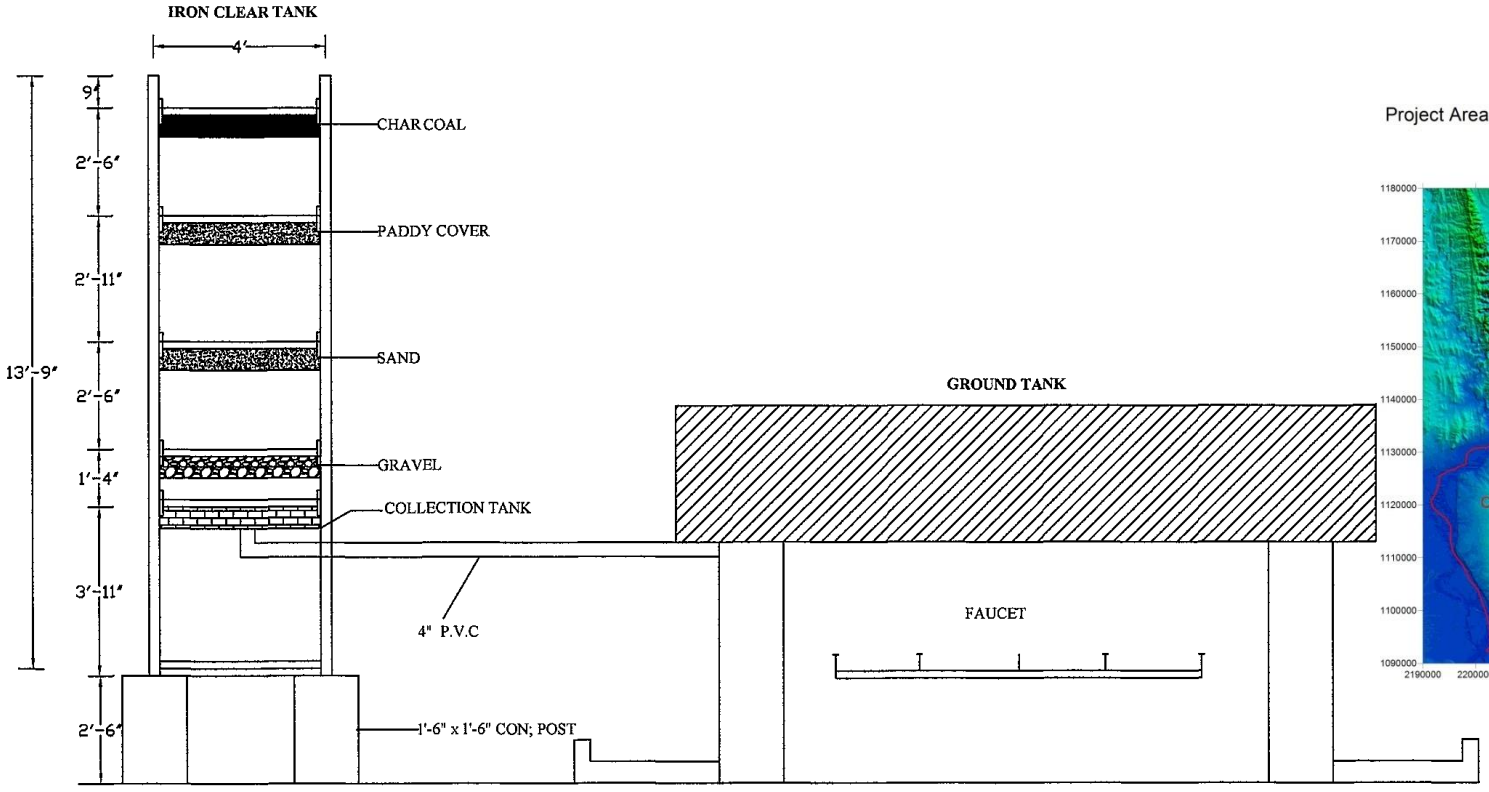
Potable+(C)
Chemical

(3) Bacteriological Analysis

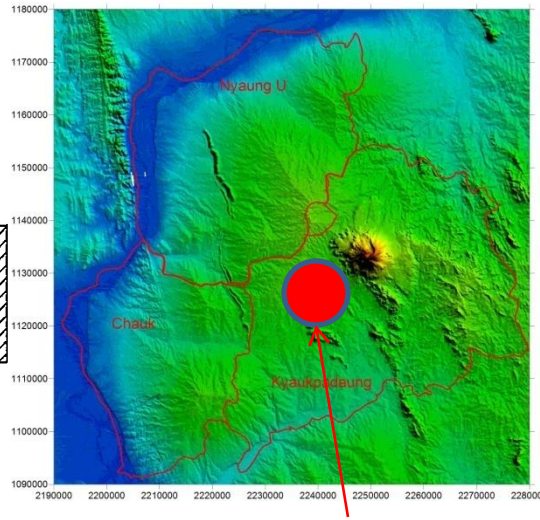
Surface Water Treatment System for Rural Water Supply

Water Treatment System for Iron Removal

IRON FILTRATION FACILITY

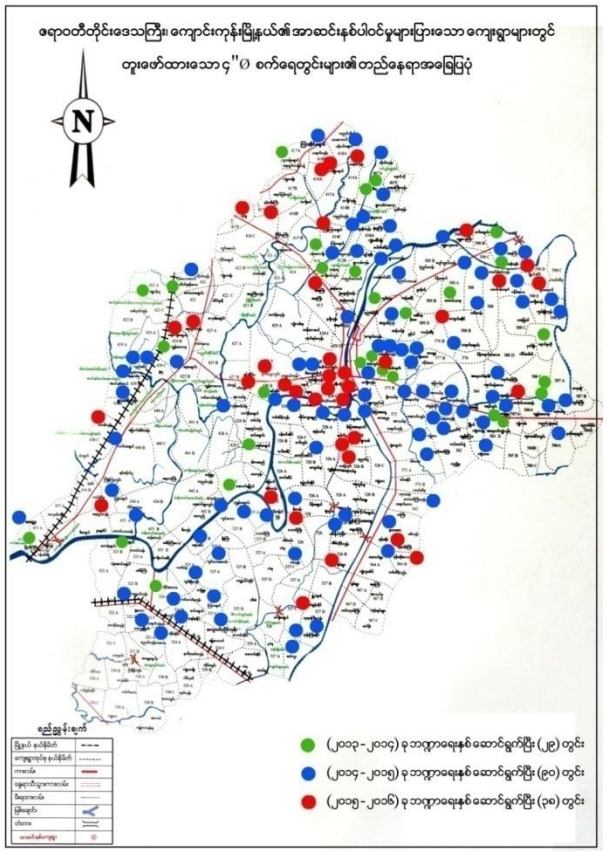


Project Area Map(Nyaung U,Kyaukpadaung,Chauk Township)

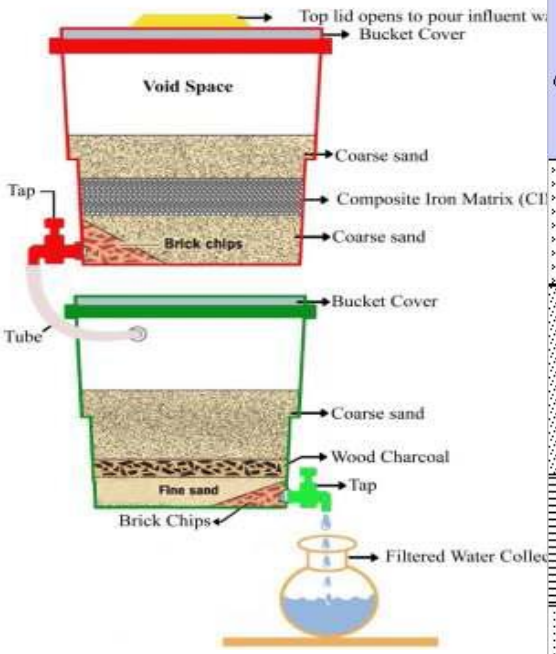


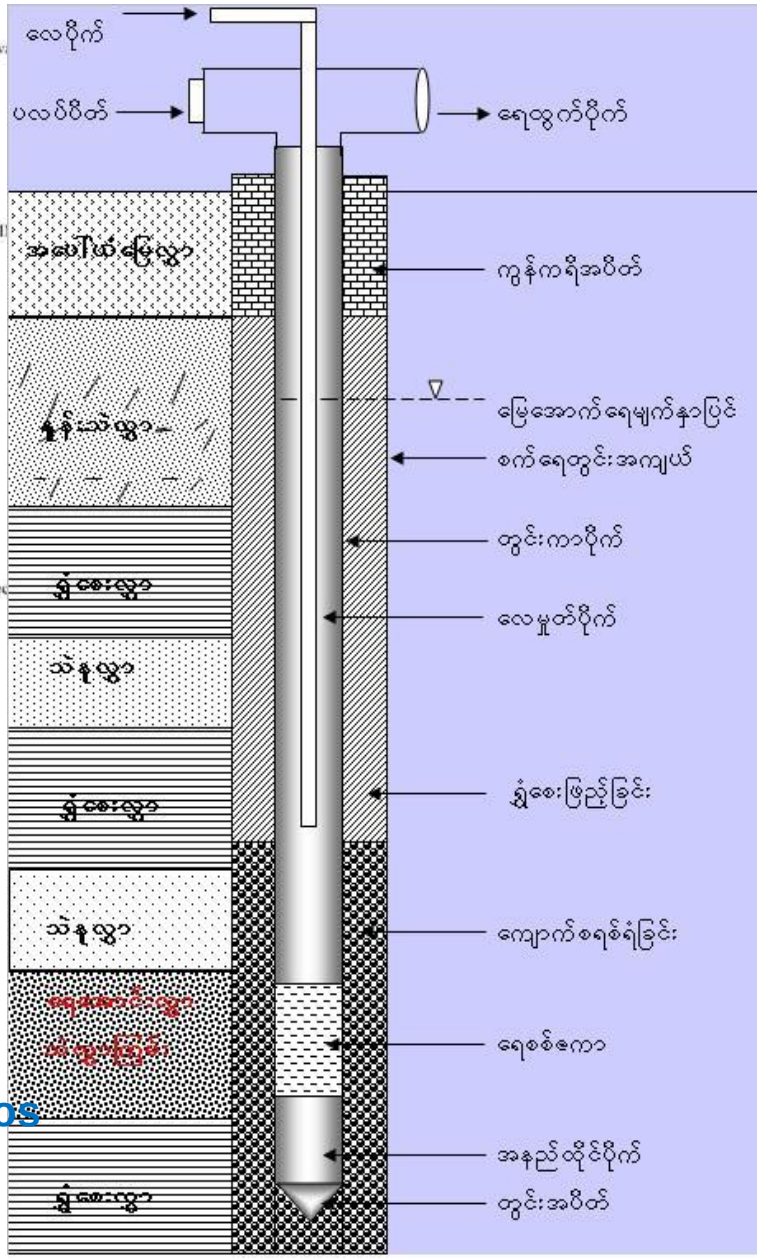
High Iron Area

High Arsenic Contants of KyaungKone Township(Ayearwaddy Region)



Small Scale Treatment System





Total Villages(416)

High Contants of Arsenic Aquifer(50'-200')
>50Ppb(286 Villages)

Arsenic Free Aquifer (400'-600')

Total DeepTubewell(296)Nos

Field Water Analysis

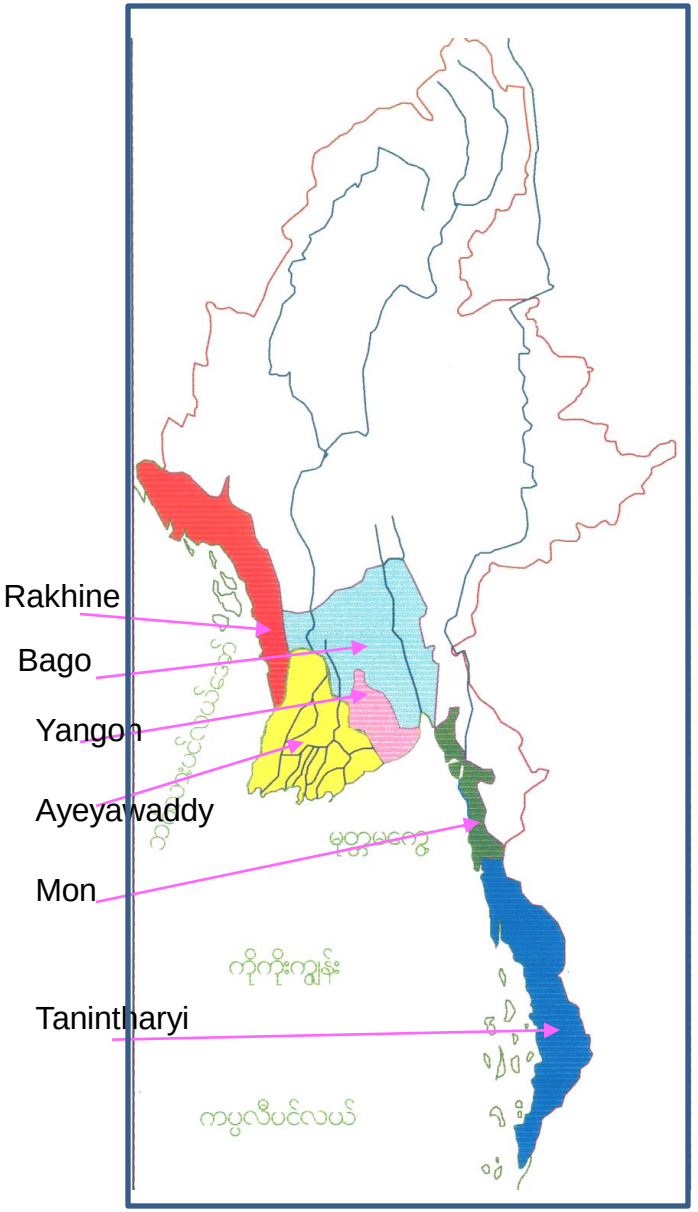
Sea Water Intrusion Areas

- Rakhine Costal Regions 443 Miles
- Ayearwaddy Costal Regions 272 Miles
- Tanintharyi Costal Regions 670 Miles

Total (1385)Miles

Current Situation and Fresh Water Conditions

- Dug Well
- Shallow Well
- Deep Well
- Reserver
- Rain water Collection Pond
- River Water
- Gravity Flow System



(3)Conclusion

- In the near future Myanmar may reach the stage in which water become a scare resource due to the increase of water demand brought about by rapid population growth, expansion of irrigation and industrial production.

- We are taking to be more supply sufficiently fresh water in coming future. Also,the department will take intensively her duties which are maintenance of previous works and mornitoring to the balance of demand and supply of fresh water and it is realize the essences of efficient water utilization and water conservation comprehensively,to safegarding natural resources.

- Our Department always ready to Cooperate for pure and fresh water supply to the people.

Thank you very much for your attention