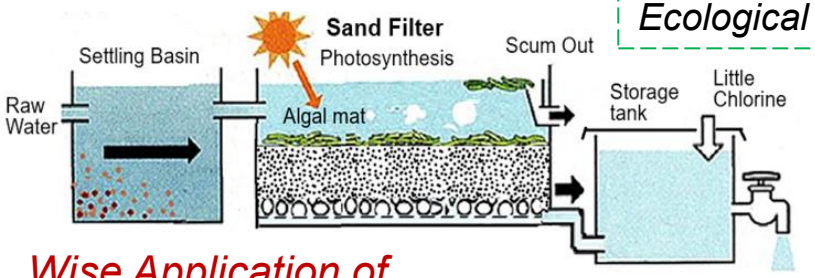
EPS is Wise Application of Naturel Purification System.

Part 10.



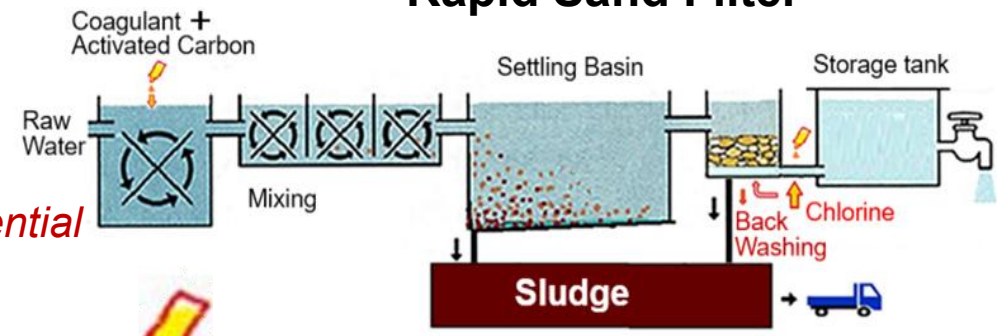
Ecological Purification System

EPS 2025-OBW
Nov. Part 10:81-89
9 slides

Wise Application of Natural Phenomena

Rural people can manage this system.

Rapid Sand Filter



Wise Application of Natural Phenomena

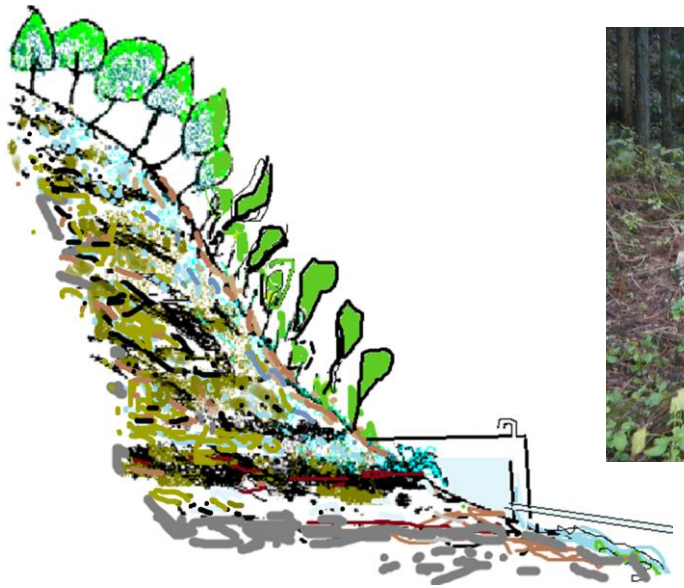
Simple system can be easily managed by local people.

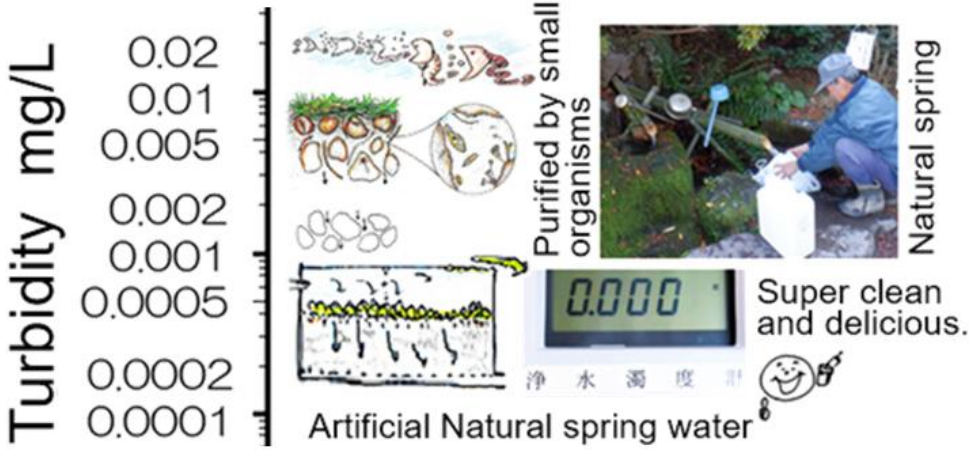
Small simple system is suitable in rural area than high tech system in urban area.

Chlorine is essential for safe water.

American RSF is a commercial filter. SSF of EPS is a natural filter.

Think about where the money is going.

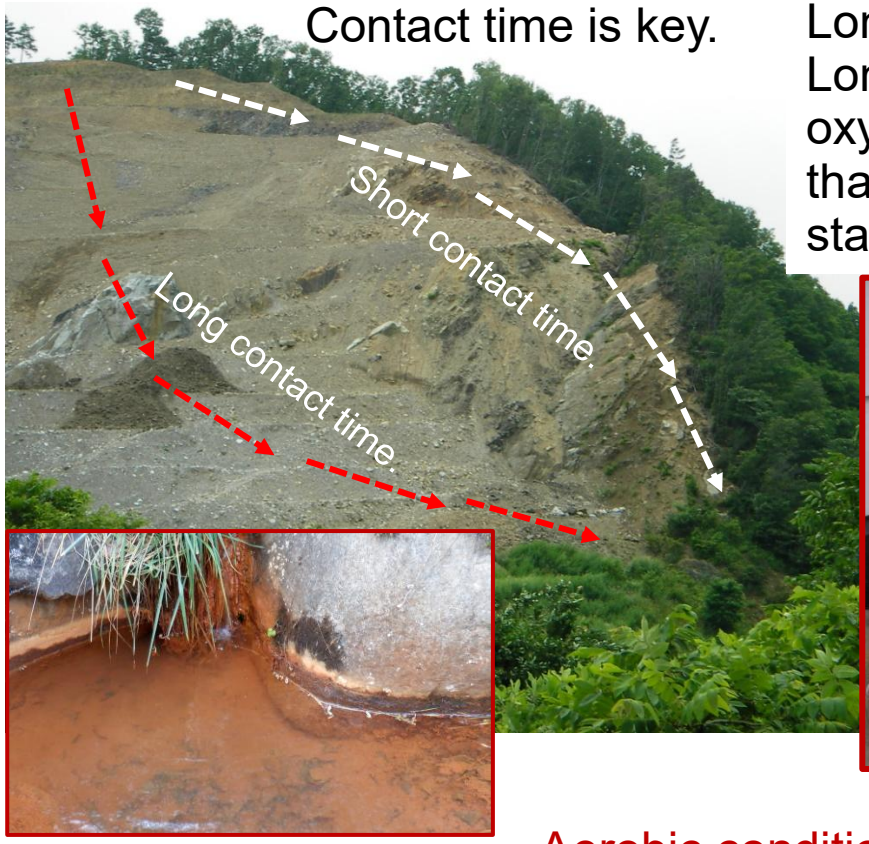




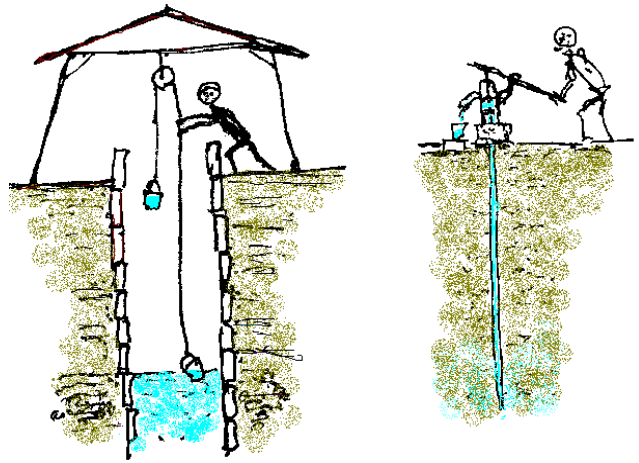
There are many **natural spring waters** in Japan. These are **usually safe to drink**.

The quality of these spring water is good. It will *not become cloudy even in heavy rain or long rain*. Even in years with strong sunshine, the amount of spring water does not change and is **constantly flowing**.

Contact time is key.

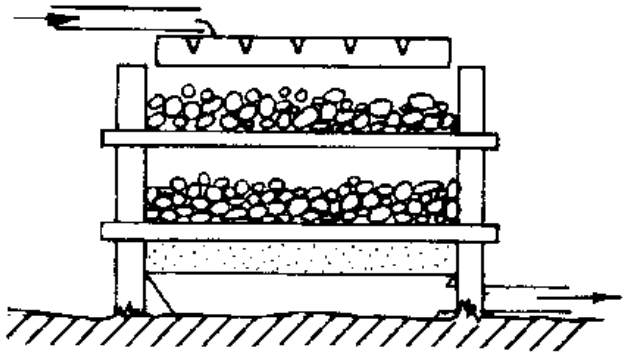


Long residence time of groundwater : Long contact time. When dissolved oxygen disappears, heavy metal ions that remain undissolved in their oxide state begin to dissolve into the water.



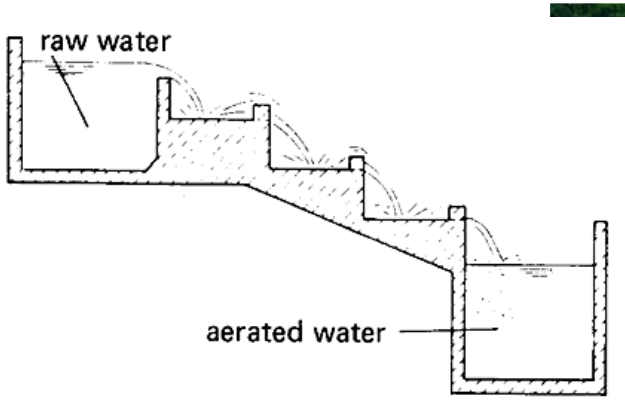
Groundwater in flat plains hardly moves. Over a long period of time, dissolved oxygen is consumed, and iron, manganese, etc. are leached into the groundwater.

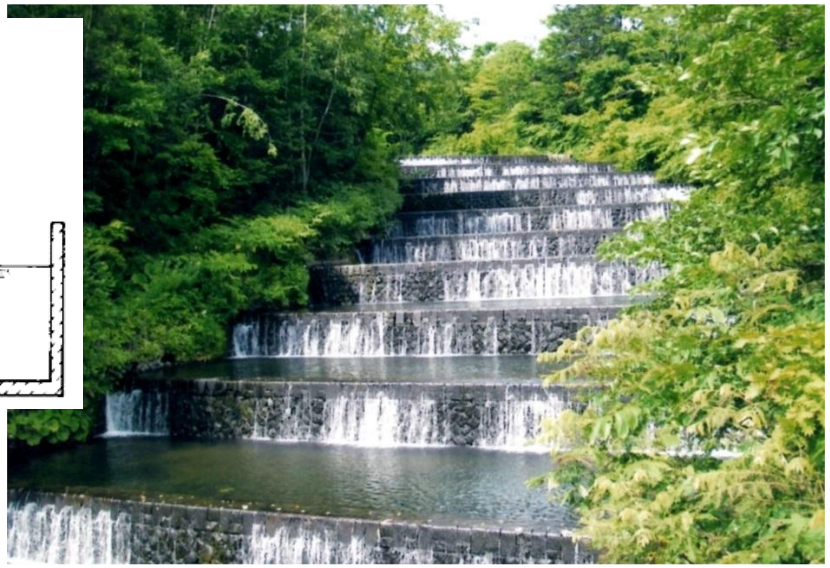
Aerobic condition is essential for safe water.



Aeration to provide oxygen: Aeration is commonly used to treat groundwater. Aeration removes odor, color, iron, and manganese, making it more delicious.

Clean water project team of Yamaha motor company could make clear water using **cascade aeration system** without any chemical reagent.





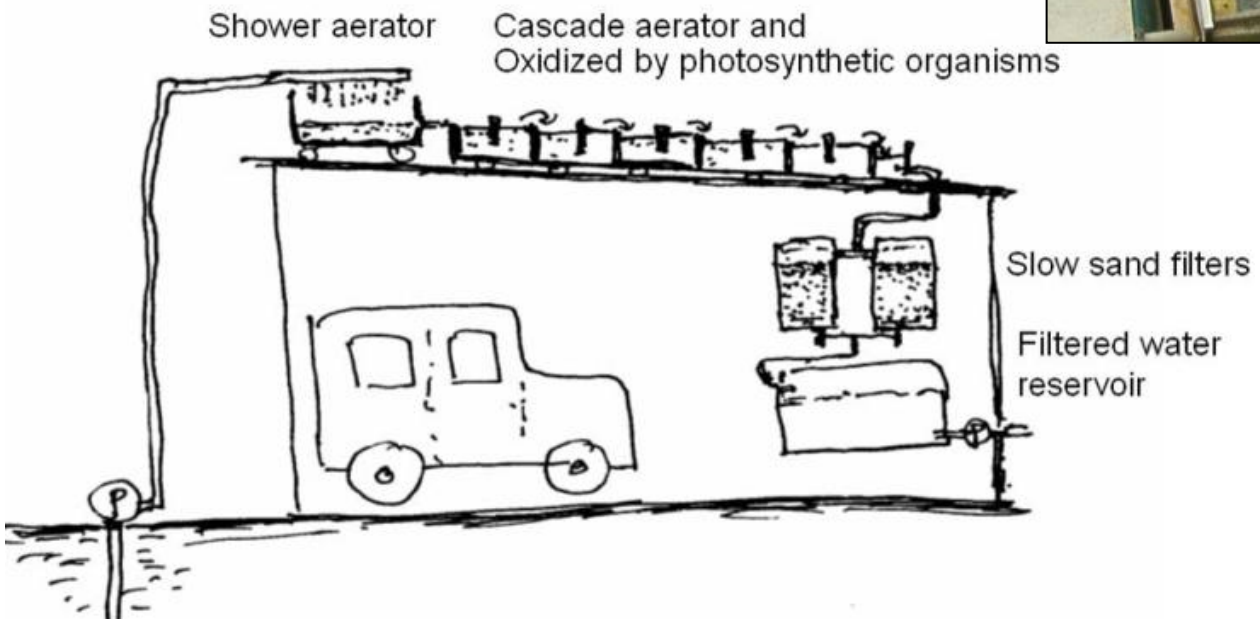
Bekasi, Jakarta, Indonesia

cascade aeration system

Underground water contains iron and manganese in Jakarta plain, Indonesia.
Well water was clear. But the brown colloidal particle was formed soon.

High concentration of iron and manganese in a tube-well water was treated by a cascade aeration with an ecological purification system.

Pre-treatment of cascade aerator using biological activity of bacteria, algae and animals.



Final treatment of slow sand filter is in his garage.

Mr. Jun Kinoshita

Use of natural slope, drinking water could be made by EPS, Bolivia, 2008

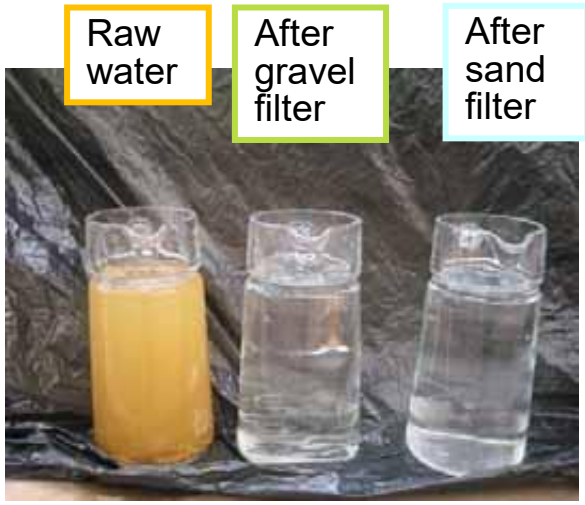
JICA Volunteer report
by Toshiki Horie 2009

Pump for groundwater and source water tank

3 steps of gravel filters

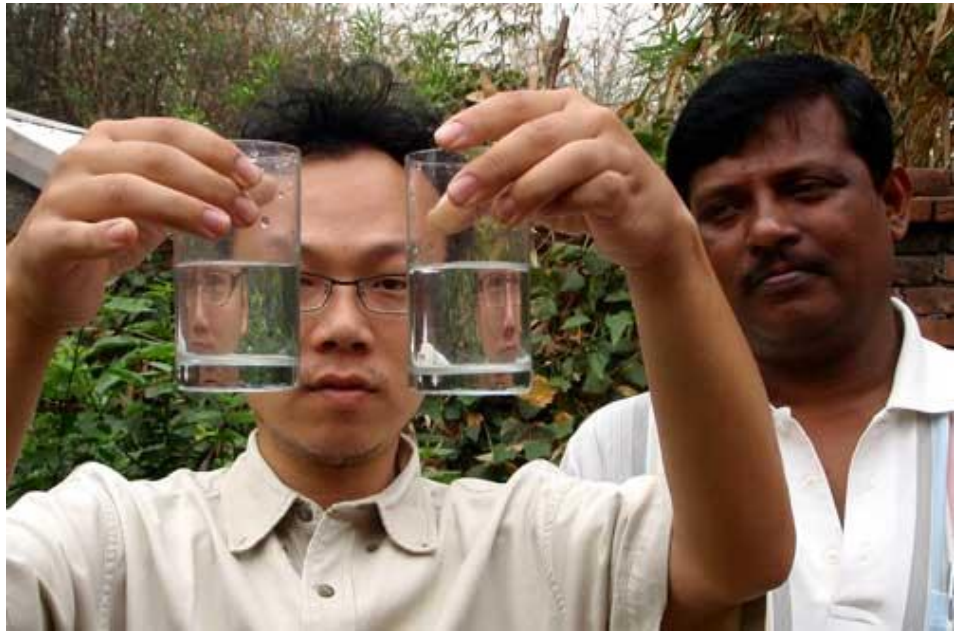
Use of natural slope, pour in sand filter

Filtered water tank



After 4 days, filtered water became clear. After one month, the water became drinkable water, in which coli-form bacteria form was not detected.

Apam Napat Art Project (Mr. Sohei Iwata managed near Kolkata in 2008).



At the foot of mountain, there is a reed plant where underground water leaks out. Porous pipes were set to take the subsurface water which is suspension free water.

Raw water: Suspended Solid free of subsurface water.

Over two years, there is **no scrapping**.

This is almost **no work for maintenance**.

Nest of grazing animal of Chironomid(midge).

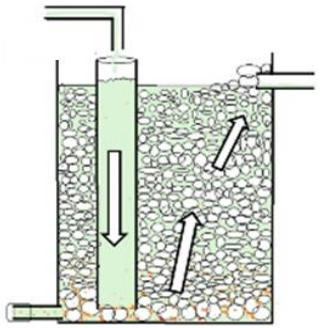
One filter area: 6.8m x 13.5m = 91.8m^2
One filter capacity : 91.8m^2 x 5m/d = 459m^3/d.
One filter can supply for 1,500 persons
(459m^3/d ÷ 0.3m^3/d /person).
Two filters can supply for 3,000 persons
(918m^3/d ÷ 0.3m^3/d /person).

Super clean delicious water without any chemicals.

EPS is Wise Application of Naturel Purification System.

EPS with URF is simple system to make natural clear spring water.
Try this, you can make this system by your self.

Storage



Karasawa WTP (2,200 m3/d for 9,400 villagers from 1977) at Altitude 990 m, Yamagata village, Nagano, Japan

Filtrate storage tank

Settling basin

Surface water of river Karasawa
Settling basin

We would like to recommend to introduce a two-stage URF to deal with turbid water. It will make it easier to drain the sludge from the URF and also make the SSF less likely to clog.

Slow sand filter : 5 filters

Solving filter block problem in Samoa.

Part 11.

EPS 2025-OBW
Nov. Part 11:90-99
10 slides

The German consultant who designed it could not have imagined the heavy rains of the tropics. The Okinawa team recommended improvements to prevent extreme turbidity in tropical regions where heavy rain occurs.

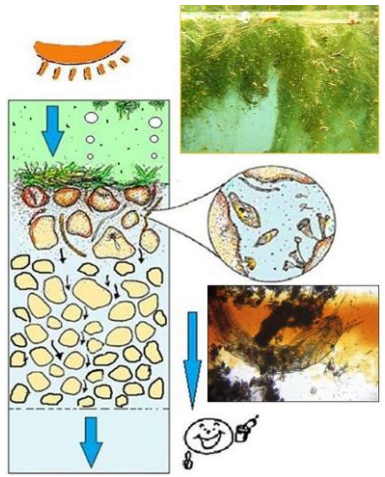
Intake Bar Screen filter

Agreement to Samoa Water Authority.

JICA EPS training in Miyako-Island from 2006 to 2008.

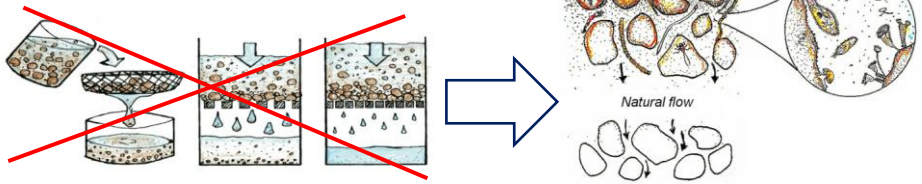
In order to check the training effect, I visited to Samoa with Mr. Akito UECHI from Miyako Water Wks in 2009.

Then, Miyako-Jima‘s Water Supply Model Project in Samoa from 2010 to 2012 was done.



During heavy flooding or rainy days, high turbidity blocks sand filters.

Shallow depth is key.



This filter block was happened by the misunderstand of the real mechanism.
Slow sand filter system is not simple mechanical filter.
This is a real Ecological Purification System.

Slow sand filter problem in Samoa was solved by ecological point in 2010.
YouTube / 13:45

https://www.youtube.com/watch?v=Kkk-wdlHui4

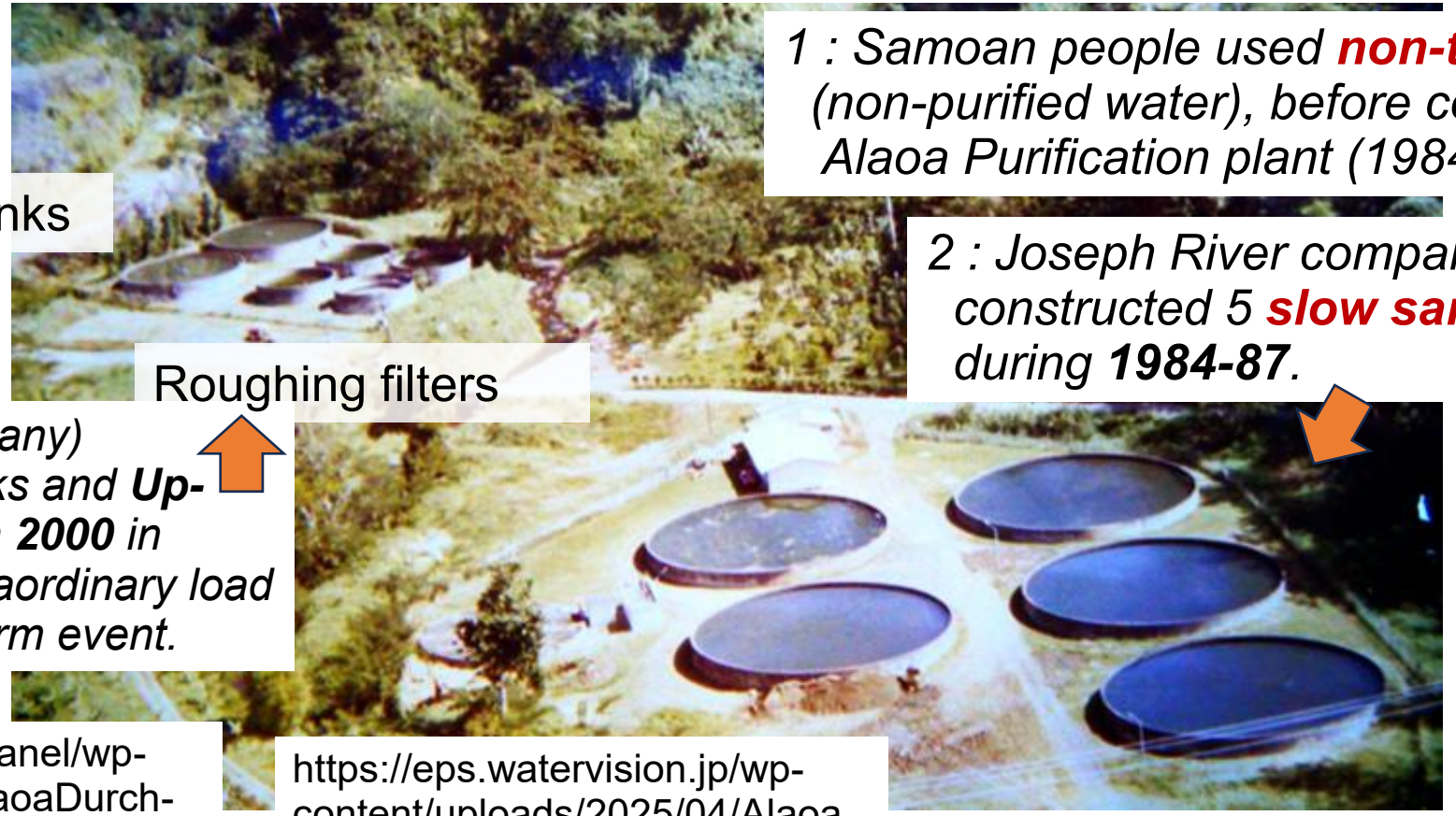
*1 : Samoan people used **non-treated water** (non-purified water), before construction of Alaoa Purification plant (1984).*

Settling tanks

Roughing filters

*2 : Joseph River company (Germany) constructed 5 **slow sand filters only** during **1984-87**.*

*3 : Dorsch consult (Germany) constructed settling tanks and **Up-flow roughing filters** in **2000** in order to reduce the extraordinary load of surface run off by storm event.*

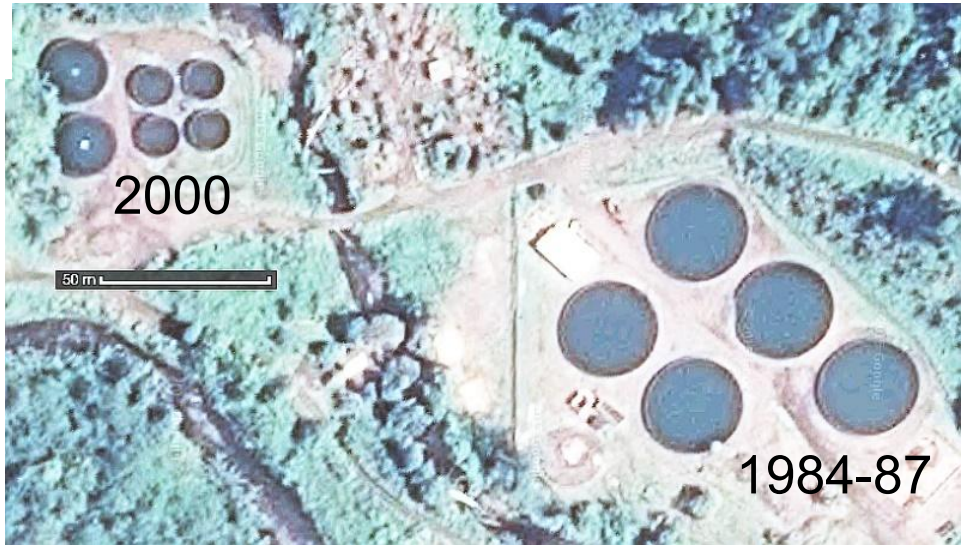


Slow sand filters

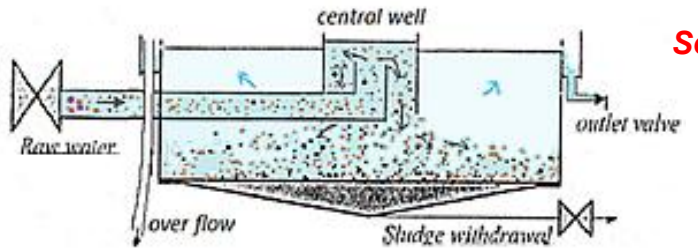
http://www.cwsc.or.jp/cwscpanel/wp-content/uploads/2022/10/AlaoaDurch-Manual.pdf

→ Miller site →

https://eps.watervision.jp/wp-content/uploads/2025/04/AlaoaDurch-Manual.pdf

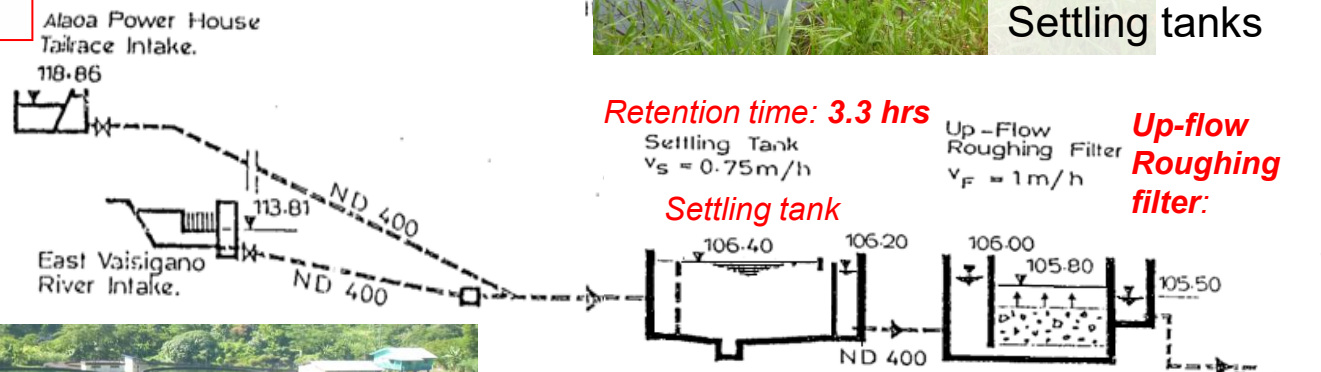


Settling tanks



Settling tank

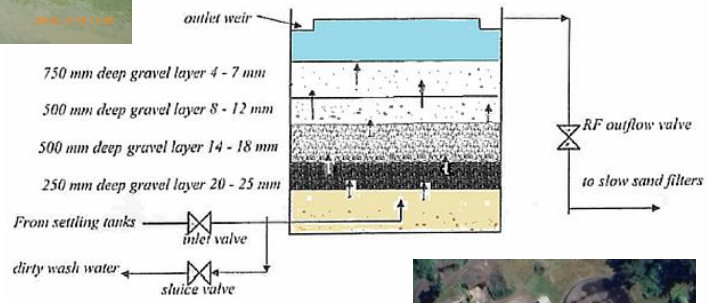
Diameter 17.8 m
Area 248.8 m2
2 tanks
Retention time: ***3.3 hrs***



Up-flow Roughing filter:

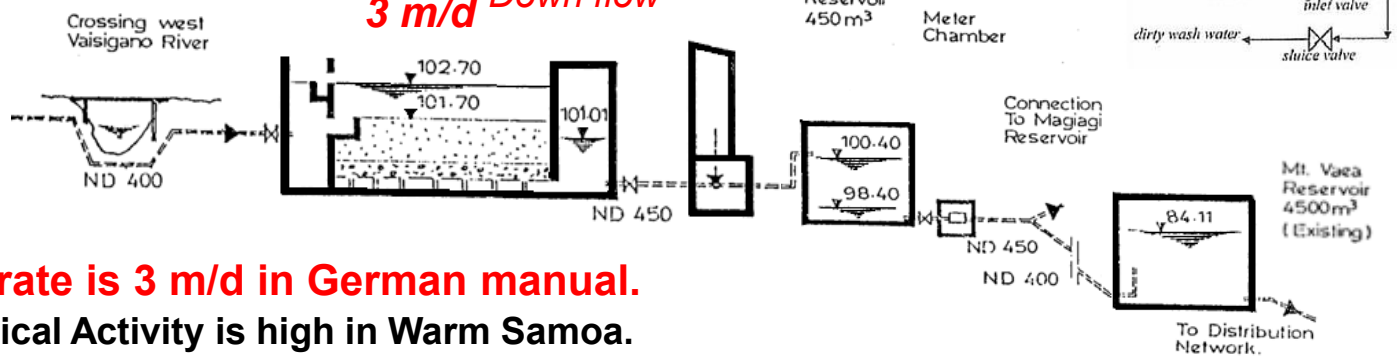
Diameter 11.2 m
Area 98.5 m2
4 filters
Filter rate: ***1 m/h***

Fine, light particles are adhesive to the gravel surface



Slow Sand Filters

Diameter 28 m, Area 616 m2
5 filter ponds, Flow rate: 3 m/d



Fuluasou WTP in Apia.

Slow Sand Filter
⇒Ecological Purification System : Purification was done by the function of biological communities. It was the food chain.

The filter rate is 3 m/d in German manual.

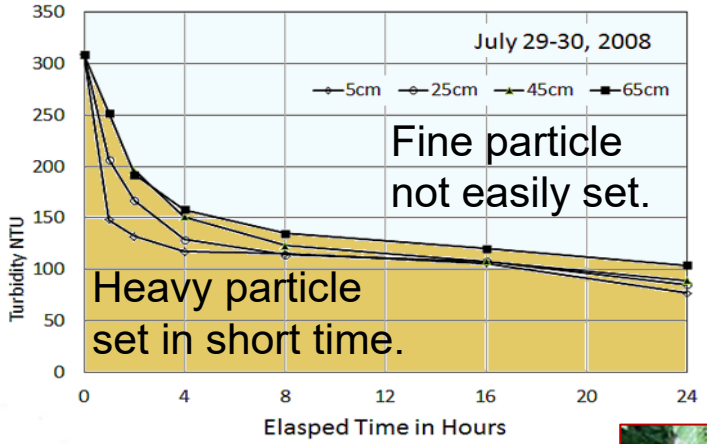
The Biological Activity is high in Warm Samoa.
We checked the performance of higher flow rates.

English standard rate: 5 m/d (0.2 m/h).
Present Thames rater: 10 m/d(0.4 m/h)
Our experiment in Samoa : 2013:
5 m/d, 10 m/d, 20 m/d
= We got **Any rate is good result.**

One day demand in Samoa : 0.1 to **0.3 m3/day** person

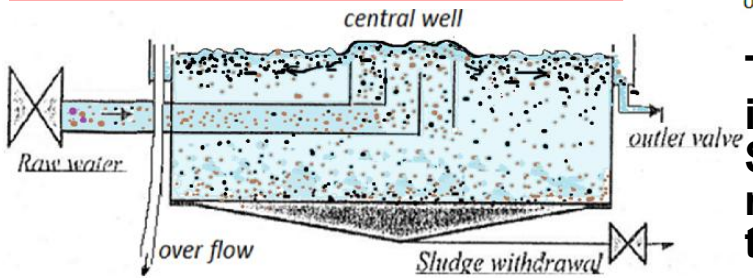
616 m2 x 3 m/d = 1,848 m3/d x 5 filters = 9,240 m3/d = 30,800 persons
5 m/d; 3,080 m3/d x 5 filters = 15,400 m3/d = 51,333 persons
10 m/d; 6,160 m3/d x 5 filters = 30,800 m3/d = 102,666 persons

Population of Apia = 36,000 persons (2021)



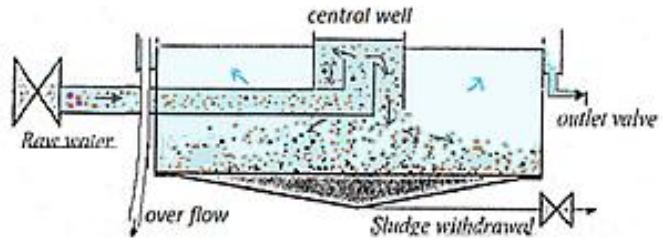
The ideal is a calm surface.

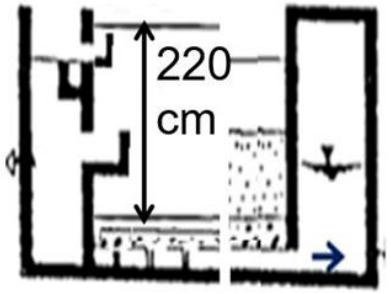
Retention time: 3.3 hrs (design)



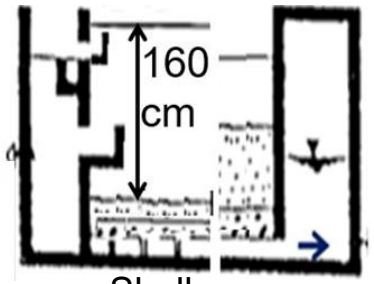
Too much inflow. Short retention time.

We reduce flow rate



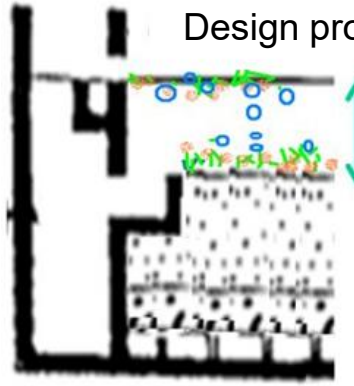


Deep



Shallow

Design profile



Shallow depth: Active photosynthesis:

much oxygen bubble formation.

220 cm Deep

Large mud on the bottom

Almost no sand layer.

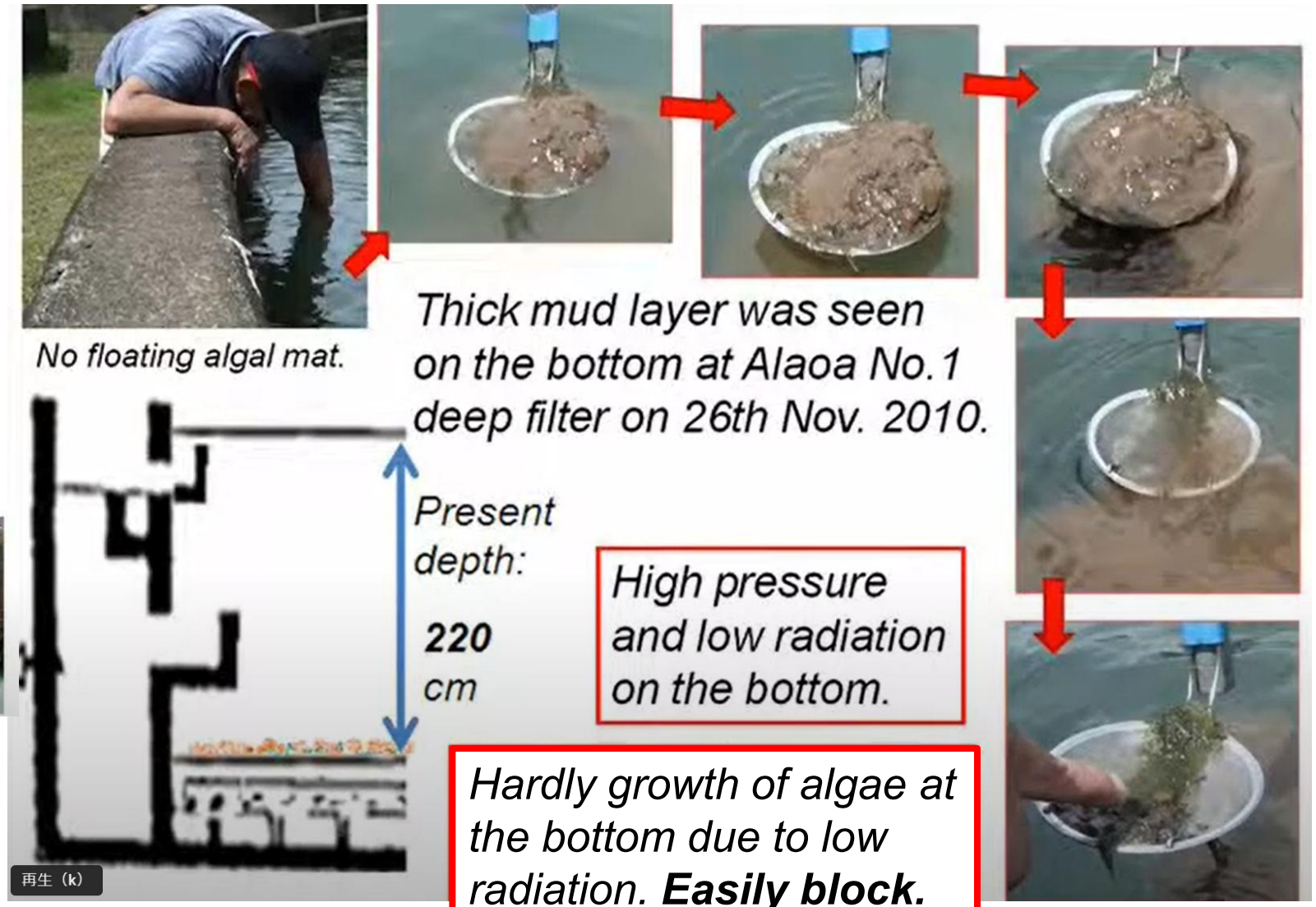
Lifted algal mat with mud in case of shallower depth.

We recommend:
Put sand.
Make shallow depth.

Water depth is the key for ecological purification system.

Role of algal mat in slow sand filter, shallow depth is key: experience in Samoa - YouTube/ 5:05

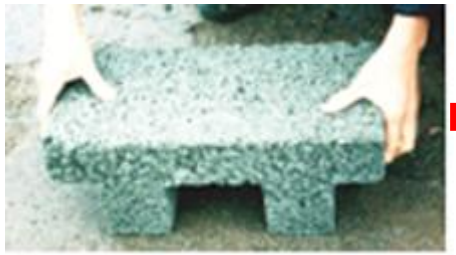
https://www.youtube.com/watch?v=ot-KAm6TuaY



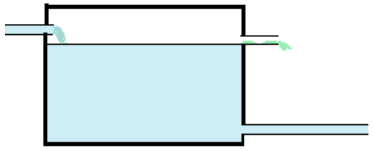
Depth of Fuluasou WTP was also too deep.

Beach sand near a river mouth was washed to make a shallow depth of slow sand filter pond.

I knew there was only sand layer on bottom porous brick in slow sand filter pond in UK.

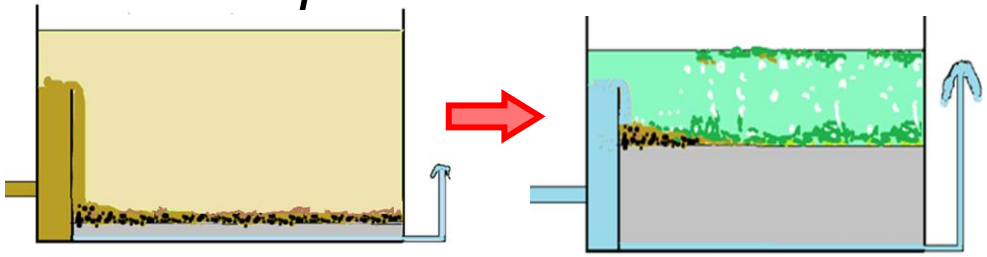


Only the sand was put on the gravel layer using a cloth to separate them.



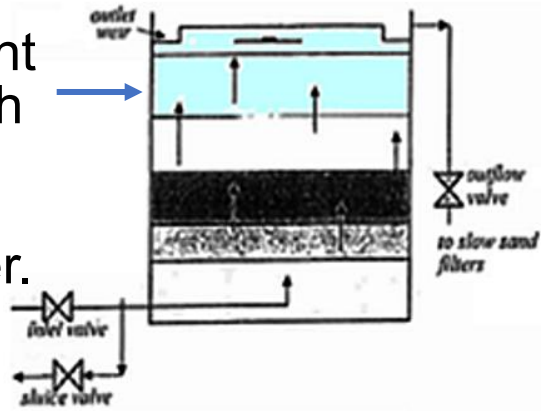
Over-flow from the balance tank of filtrate tank.

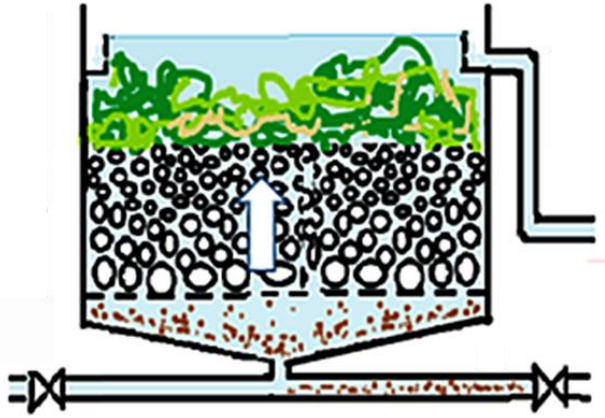
Deep to Shallow

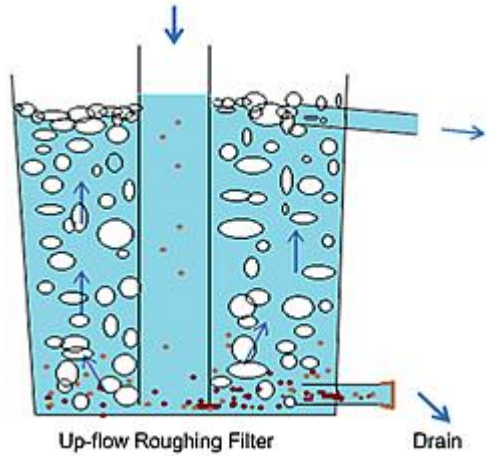


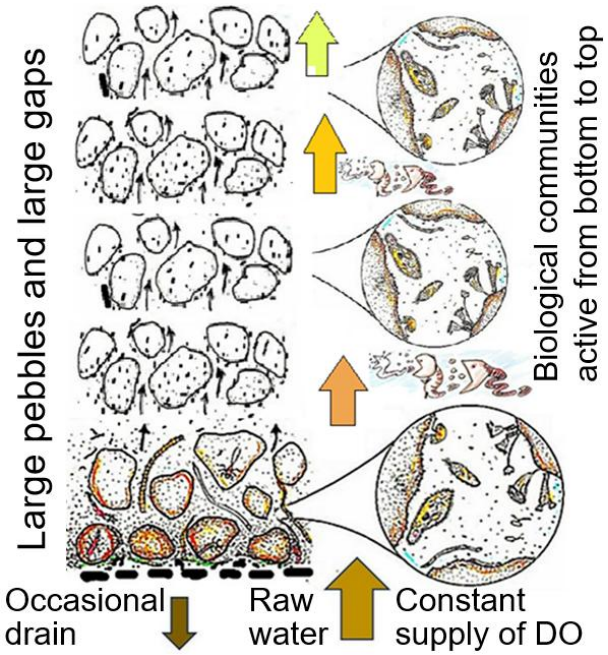
High Biological activity

Supernatant water depth is I meter over the gravel layer.

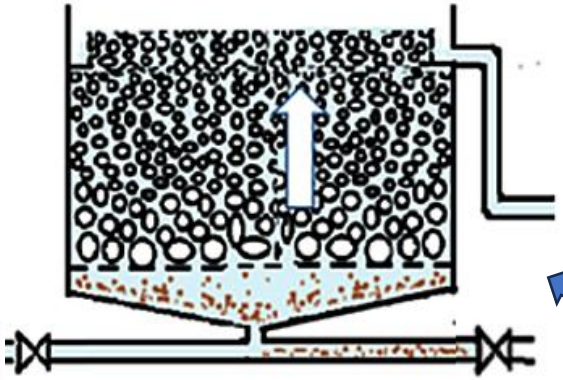








Active growth in URF

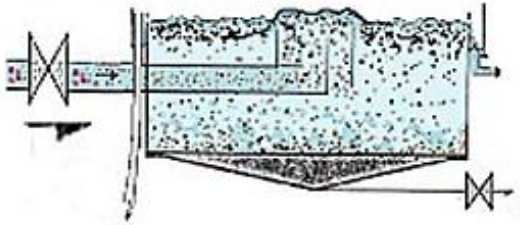


Large area of **gravel surface** is important to adhere suspended matter.

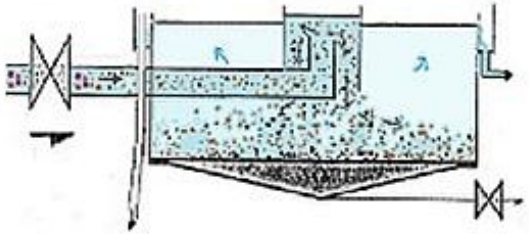
Clear water in river bed.

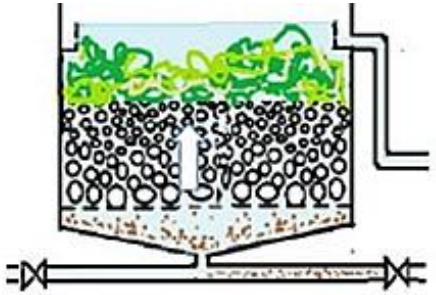
Full gravel with small crushed stones.

Advise for a better plant system to Samoa

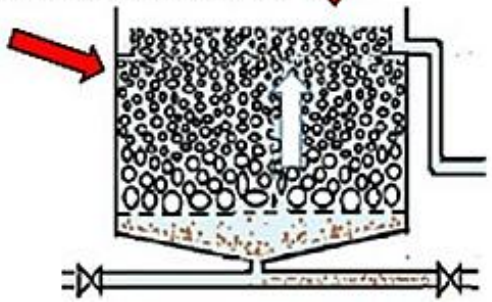


Reduce inflow
⇒Easy to settling



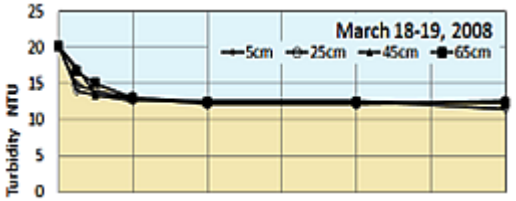


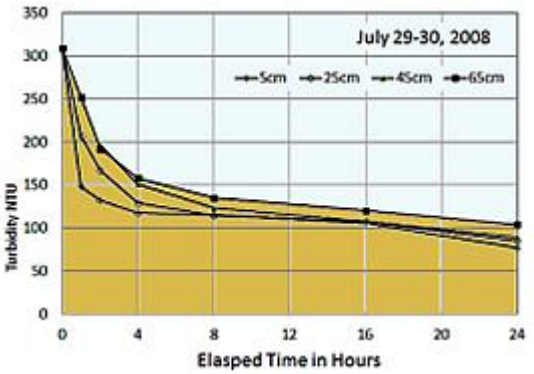
Thicker gravel media
⇒Expand active area



Make shallow depth
⇒ Activate algae

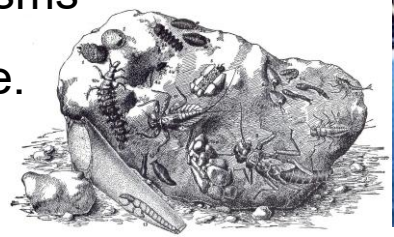
Improvements to the Purification Function.





Suitable residence time for settling

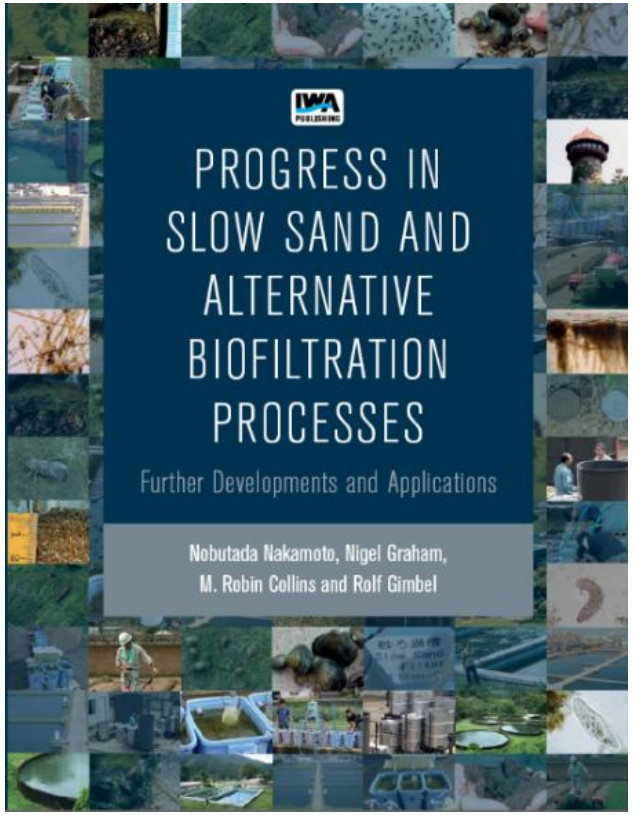
Small organisms active on the stone surface.



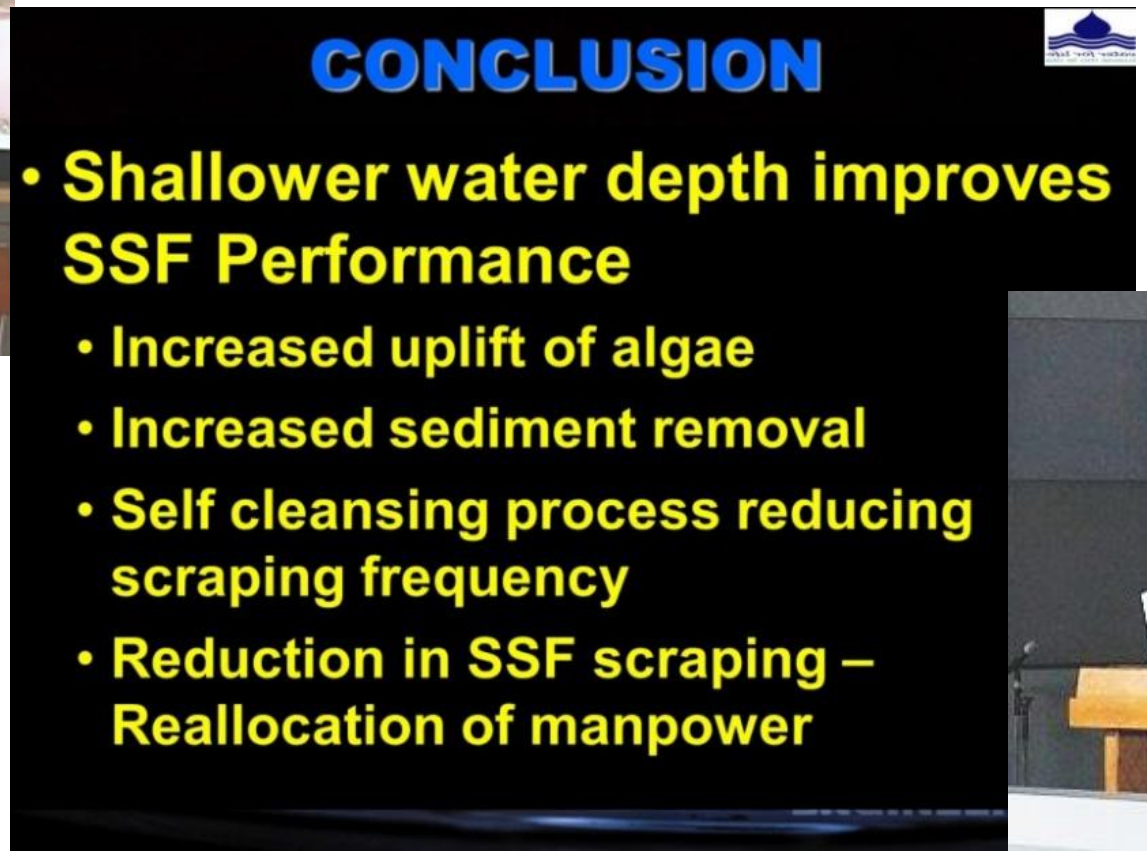
Shallow depth is better for algal activity.

Stuffs of Samoa Water Authority presented their activity at the 5th Conference at Nagoya, Japan in 2014.

They made shallow water depth of 0.5 - 1m.



5th Slow sand filter conference in 2014.



17:10

https://www.youtube.com/watch?v=Ht6Axz8LwIs

Every Rural People for Safe Water in Fiji

Part 12.

EPS 2025-OBW
Nov. Part 12:100-119
20 slides

CONSTITUTION OF THE REPUBLIC OF FIJI

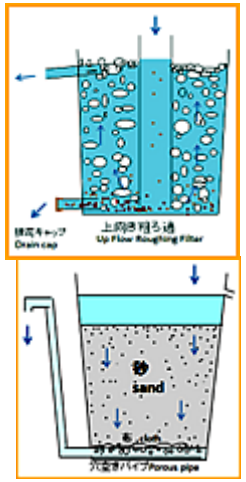
Right to adequate food and water

36.-(1) The State take reasonable measures within its available resources to achieve the progressive realisation of the right of every person to be free from hunger, to have adequate food of acceptable quality and to **clean and safe water in adequate quantities**.

https://www.fiji.gov.fj/getattachment/a3cddc01-dc73-4823-83b8-f290672ddae0/2013-Constitution-of-The-Republic-of-Fiji.aspx

He returned back to Fiji. He made a model to make safe drinking water by EPS technology at the yard of Department of Sewage and Water. Water source was rain harvest tank.

Mr. Vishwa Jeet from Fiji gave many questions to me.



The PM had attention for EPS display during the World Marine Time Day on **Sept. 28, 2012**.
Mr. Vishwa Jeet informed the PM on the functions of the EPS and reference to JICA was made.

New plans for cleaner water

Kick off Workshop on Jan. 16. 2013. at Holiday Inn. Commander Francis B. Kean, Permanent Secretary, Ministry of Works, Transport, Public Utilities.

The Fiji Times ONLINE
Quality water for all

Ecological Purification System in Fiji, 2013 for Safe Drinking Water - YouTube/ 3:05

https://www.youtube.com/watch?v=kbCaSAACQZ0

Beginning of Ecological Purification System (EPS) to make safe drinking water in Fiji / 1:45

https://www.youtube.com/watch?v=wxAGhjx7e40

He explained using rain harvest tanks for the EPS system in Fiji.

THE FIJIAN GOVERNMENT

EPS technology is our technology for ours. We can make it by ourselves.

KALOKOLEVU VILLATERS WELCOME ACCESS TO CLEAN DRINKING WATER 7/17/2013

Reverend Uraia Peni Volavola, left, JICA Fiji resident representative Shumon Yoshiara and Minist permanent secretary Commander Francis Kean cut the ribbon to officially commission the new ec purification system at Kalokolevu Village on

Timaima Bolaciri, carrying Taniela Tabukarawa, and Una Koroi try out the new ecological purification system at Kalokolevu Village yesterday. Picture: JONACANI LALAKOBAU

More than 270 villagers in Lami now have access to clean ana safe drinking water through an ecological purification system (EPS), thanks to the partnership between the Department of Water and Sewerage, the Water Authority of Fiji (WAF) and the Japan International Cooperation Agency (JICA).

The EPS, which is the first of its kind to be installed in a local rural setting, was commissioned by the Ministry of Works, Transport and Public Utilities permanent secretary Commander Francis Kean in Kalokoleve village, Lami yesterday.

Commander Kean said the pilot project was aimed at improving accessibility to clean water and sanitation to people living in rural areas.

He said this is a major milestone for the country and Government in particular in its desire to lift the living standards of people in the rural and maritime areas.

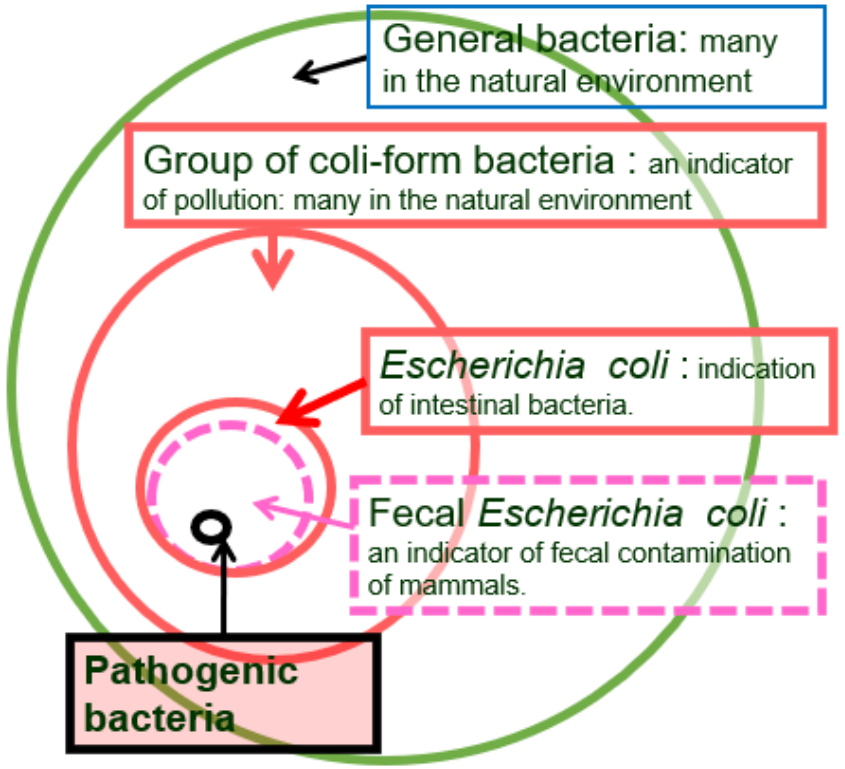
“Improving the living standards of the rural citizens through better accessibility to clean water and sanitation is one of the key priorities of this Government as enshrined in the Peoples Charter for Change, Peace and Progress and Government Roadmap to Sustainable Development in the medium term,” Commander Kean said.

Quality Water for All : Safe and Clean Water Project in Fiji, 2013 - YouTube/ 7:43

https://www.youtube.com/watch?v=Vrr2EOS1PMA

NAVATUVULA VILLATERS GET ACCESS TO CLEAN DRINKING WATER 9/12/2013

Opening ceremony of public tap on September 11, 2013. at 2nd EPS.



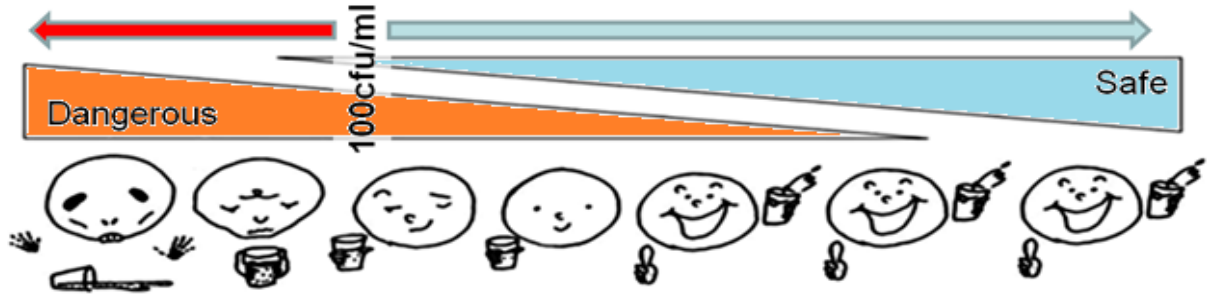
Germ : Cholera

Fecal Coli-form

Coli-form bacteria

General bacteria

Which level of water, we need?



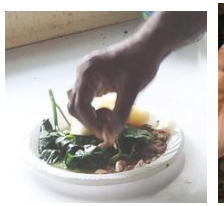
Reduce Risk !

We have to think about acceptable risk to drink.














Right to adequate food and water
36.-(1) : to **clean and safe water in adequate quantities**.

CONSTITUTION OF THE REPUBLIC OF FIJI

Germ free !

EPS water is germ free. We can drink it.

Aug. 2011 JICA training → in 2012 Model in Fiji → Jan. 2013 Kick off → Pilot Plant in Village

The model and the actual plant are different.

Pilot plant was constructed in Kalokolevu Village by DWS in 2013

KALOKOLEVU VILLATERS WELCOME ACCESS TO CLEAN DRINKING WATER
July /17/2013

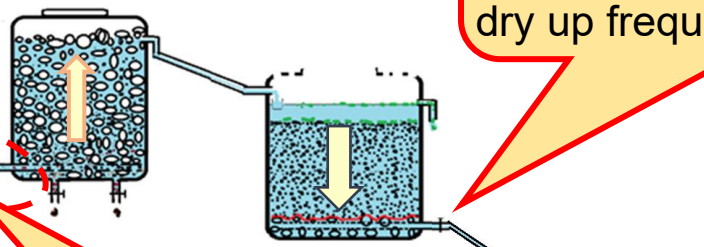
This plant held a grand water-opening ceremony.
However, there was a problem with the water occasionally becoming cloudy from the tap.
As a result, a request was made to Japan for EPS experts.

Receiving tank

Sediment heavy muddy matter

Rain harvest tanks of 2.7 tons

Hard to keep water level of EPS and constant natural flow. EPS water happens to drain off, and dry up frequently.



Non-treated water

Hard to control the flow rate and hard to catch filter clog.

Trapped mud in URF easily was drawn back to existing distribution pipe.

By the ball tap, water flow was stopped. Dangerous to EPS function.

Non-treated water

A system that prevents turbidity from returning.

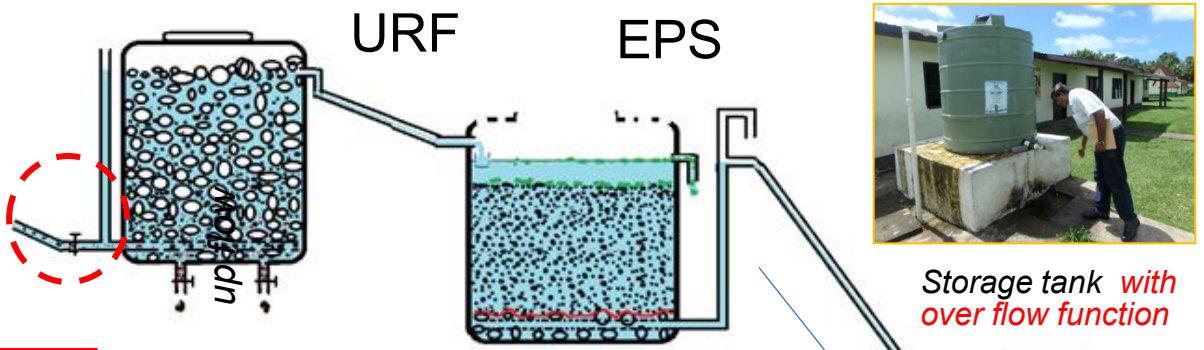
Don't stop the flow.

Nakamoto pointed out important weak points to improve some points in Nov. 2014 .

There's no need to be afraid of making mistakes. You fail and realize your mistake.

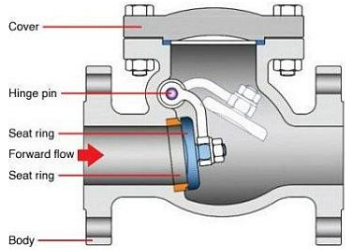
By improving, you will deepen your understanding and become better. It's good to make a lot of small mistakes.

*Nakamoto advised the fail-safe system for inflow trouble of **back draw** in Oct. 2015.*

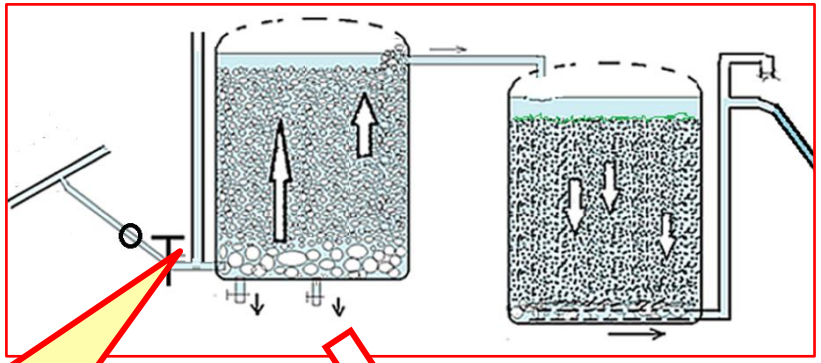


Storage tank with over flow function

No.1

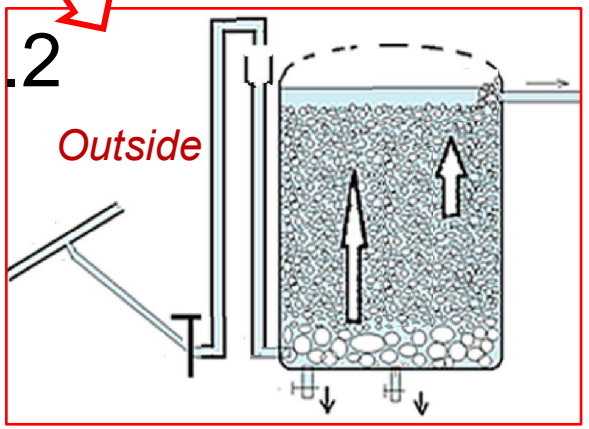


Swing check valve



One way valve is necessary to protect draw back of mud, when water pressure is low in the existing pipe. This is the Japanese standard.

No.2

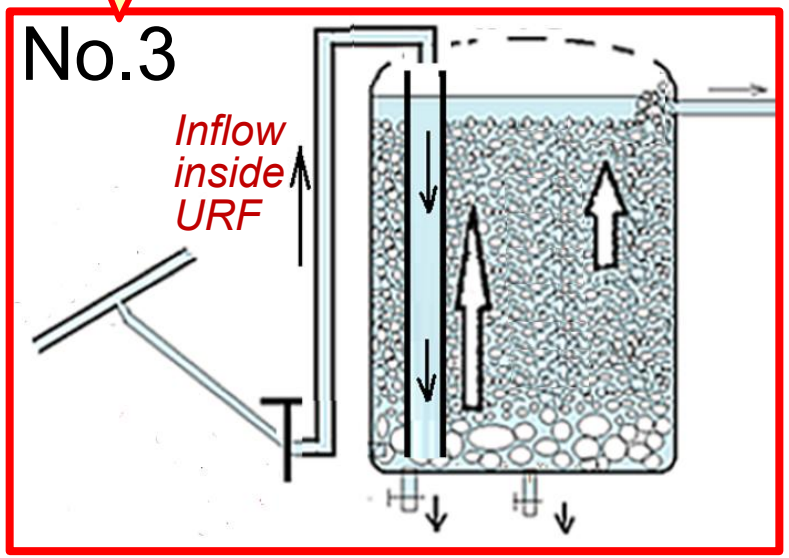


Fail Safe system against back draw in case of low water pressure.

Fail safe system against back draw in case of low water pressure.

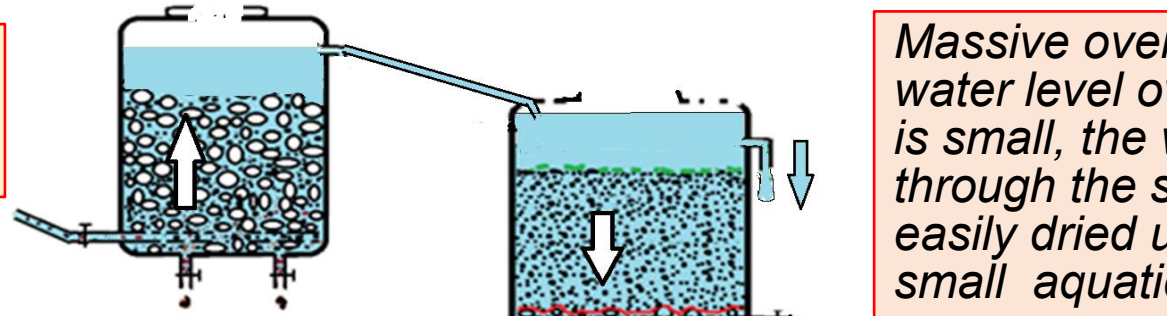
Ideal inflow system which was taught at JICA training in Japan.

No.3



Present Kalokolevu EPS is hard to regulate, check the flow and difficult to catch filter clog.

Repair idea of the existing Kalokolevu EPS.

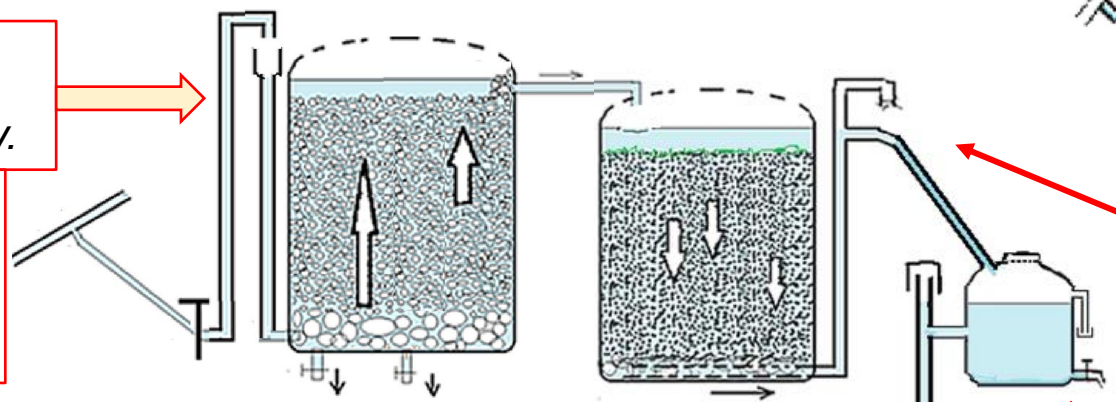


Massive over flow from EPS to keep water level over sand layer. If the inflow is small, the water is easily drain off through the sand layer. Sand surface is easily dried up. This is dangerous to small aquatic organisms.

There is a risk of leakage of coliform bacteria in the filtrate.

When inflow system change to this. Flow control becomes easy.

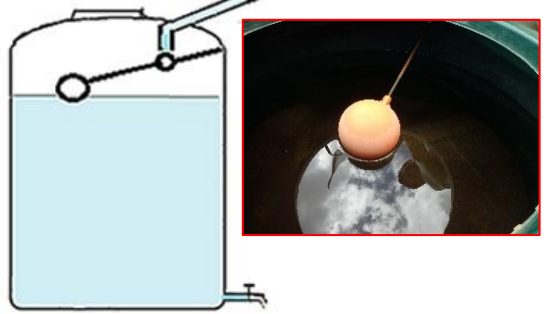
This flow system is also against back draw to existing main pipe.



Filter clog is easy to catch. Accumulated mud can be easy drained off.

The water level over the EPS can be kept by the siphon cut system for filtrate.
This is to keep natural over flow from the bottom.

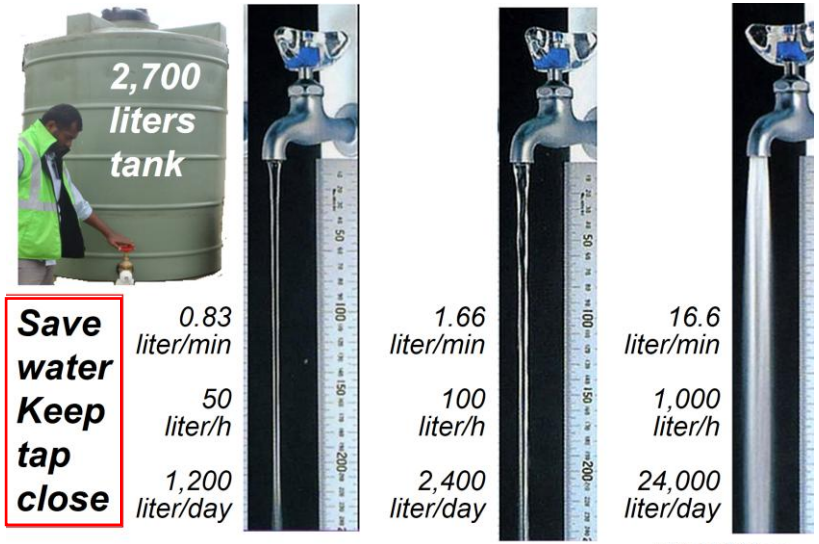
*We propose to insert a **small balance tank with over flow function** between EPS and Storage tank at village center. This **balance tank** is to keep natural flow for EPS. Excessive over flow is not necessary.*

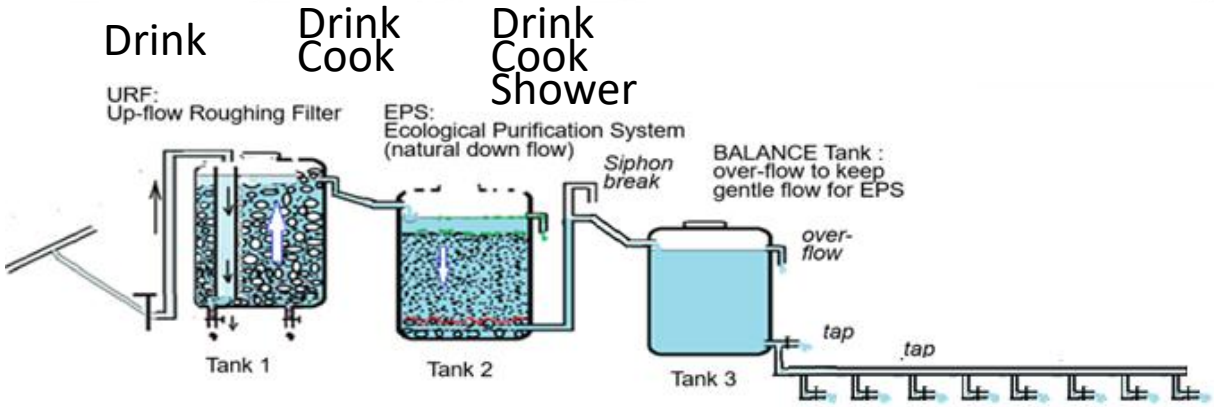


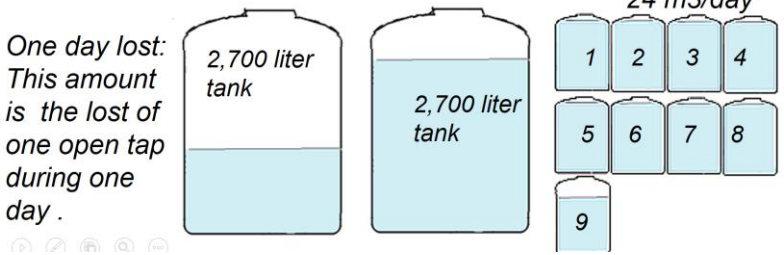
*A small amount of the over flow from the balance tank is enough when the storage tank **with ball tap** is full of filtrate.*

Comment on more use of EPS water in a village

EPS capacity of 2,700 liters tank									
radius（r）=0.7m、（π x r x r）=1.54m2									
flow rate			filtrate			Available persons			remarks
m/d	cm/h	m3/d	liter/d	liter/h	liter/min	2 liter/d	6 liter/d	100 liter/d	
2	8	3.1	3,080	128	2.1	1,540	513	31	Original flow rate in UK, 1829
5	20	7.4	7,392	308	5.1	3,696	1,232	74	English standard rate
10	42	15.4	15,400	642	10.7	7,700	2,567	154	Present Thames Water rate
15	63	23.1	23,100	963	16.0	11,550	3,850	231	Possible rate in warm region
20	83	30.8	30,800	1,283	21.4	15,400	5,133	308	Possible rate in warm region







1. Block distribution system for EPS water is recommended.

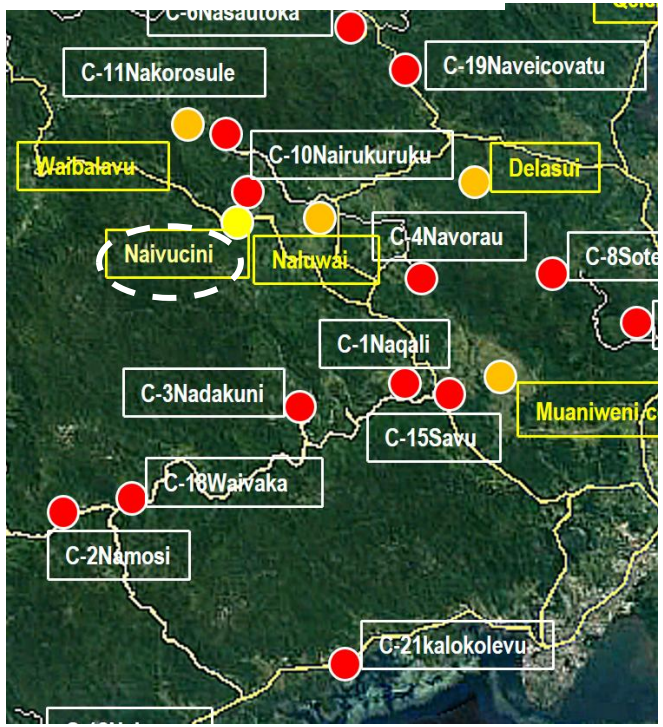
2. Install more public taps for villagers.

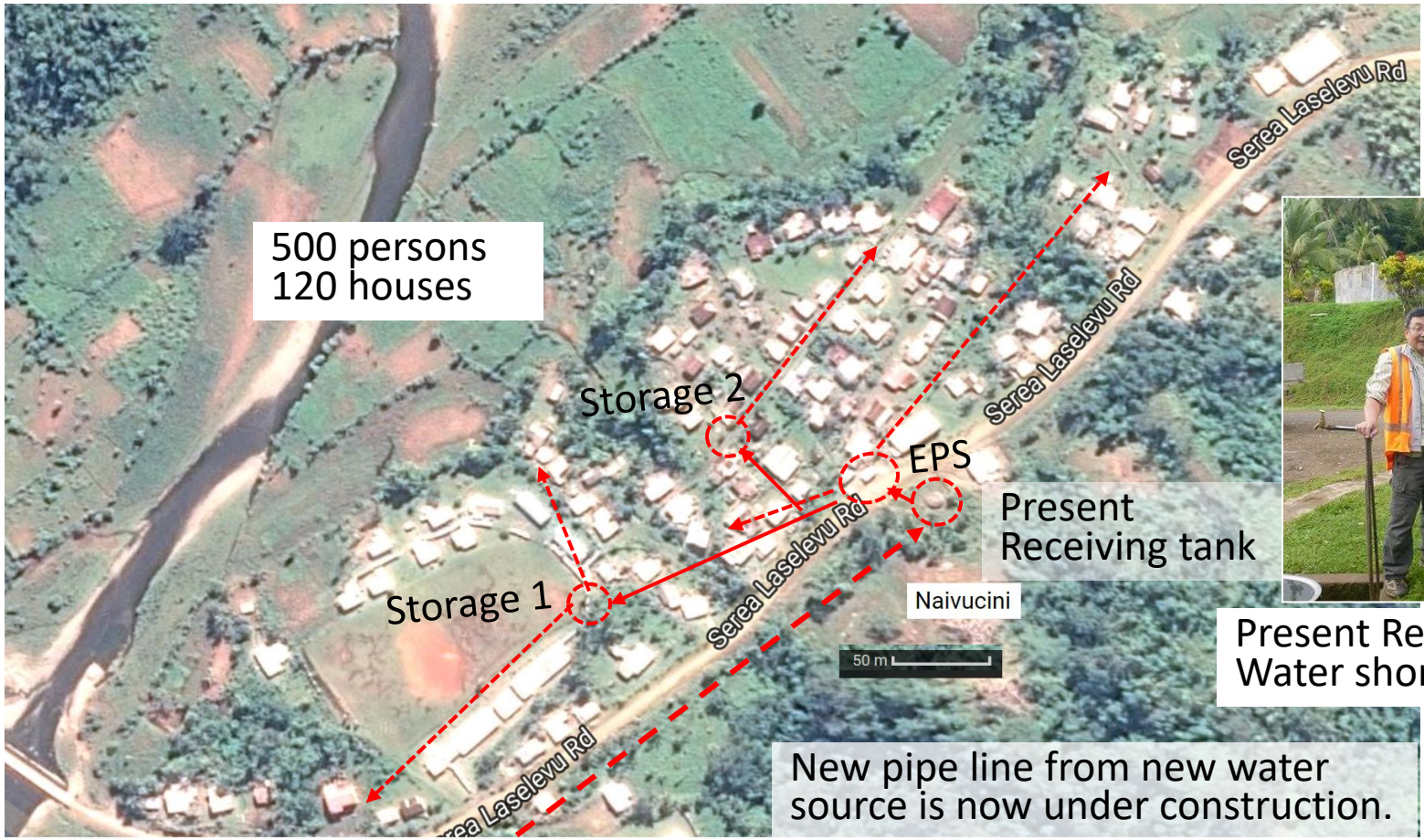
3. Training for the save the limited amount of EPS water.

There is non-detected leak, therefore we can install EPS pipe with may public taps in a small village (even up to 200 persons).

Sites visit on 03/07/17

Naivucini

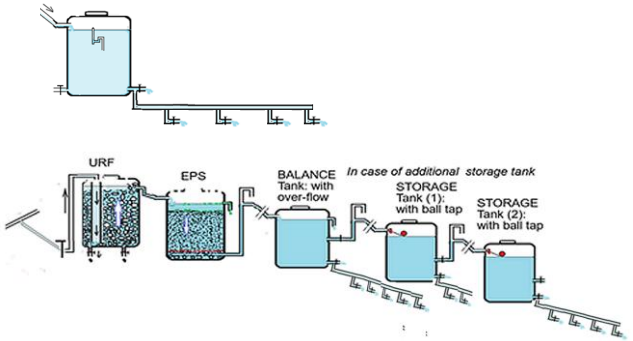




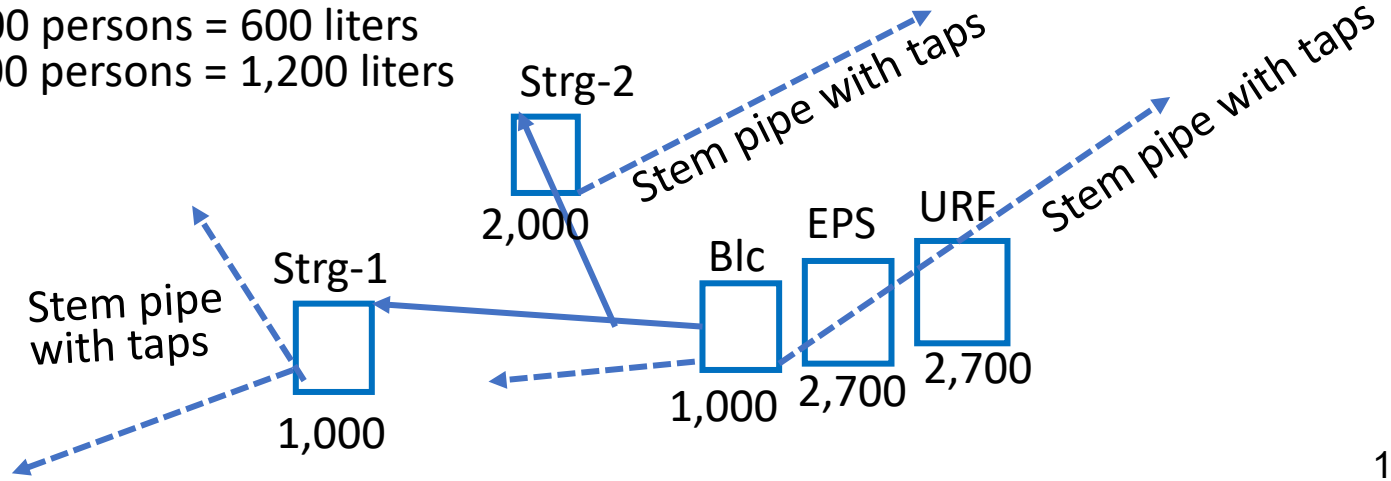
Present Receiving tank.
Water shortage problem.

6 liters x 100 persons
= 600 liters

More use of EPS water is key to be better quality.



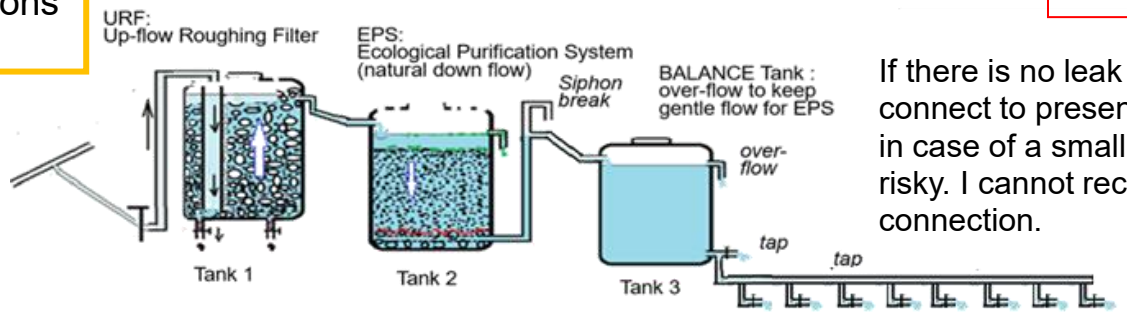
6 liters x 100 persons = 600 liters
6 liters x 200 persons = 1,200 liters



Comment on more use of EPS water in a village

If there is non-detected leak, we can install long distribution pipe for many public taps in a small village.

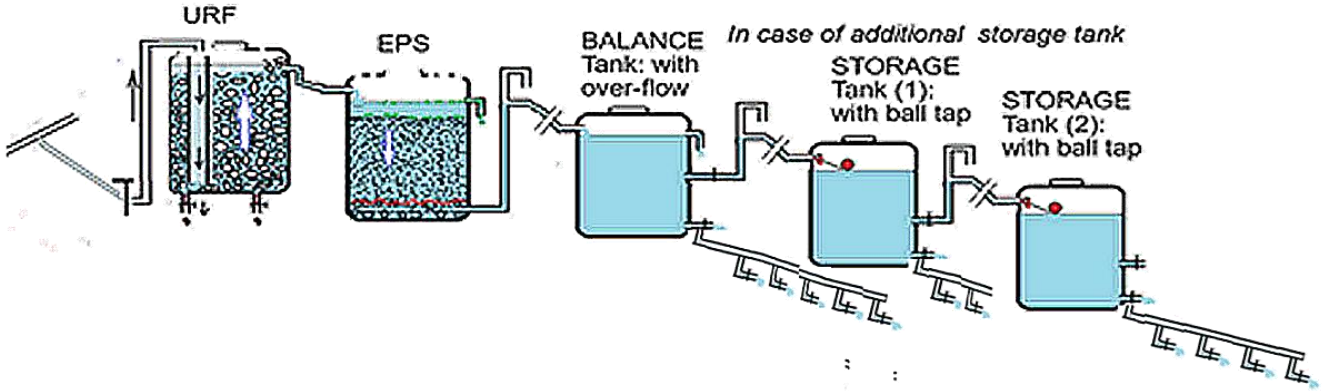
Up to 200 persons in a village



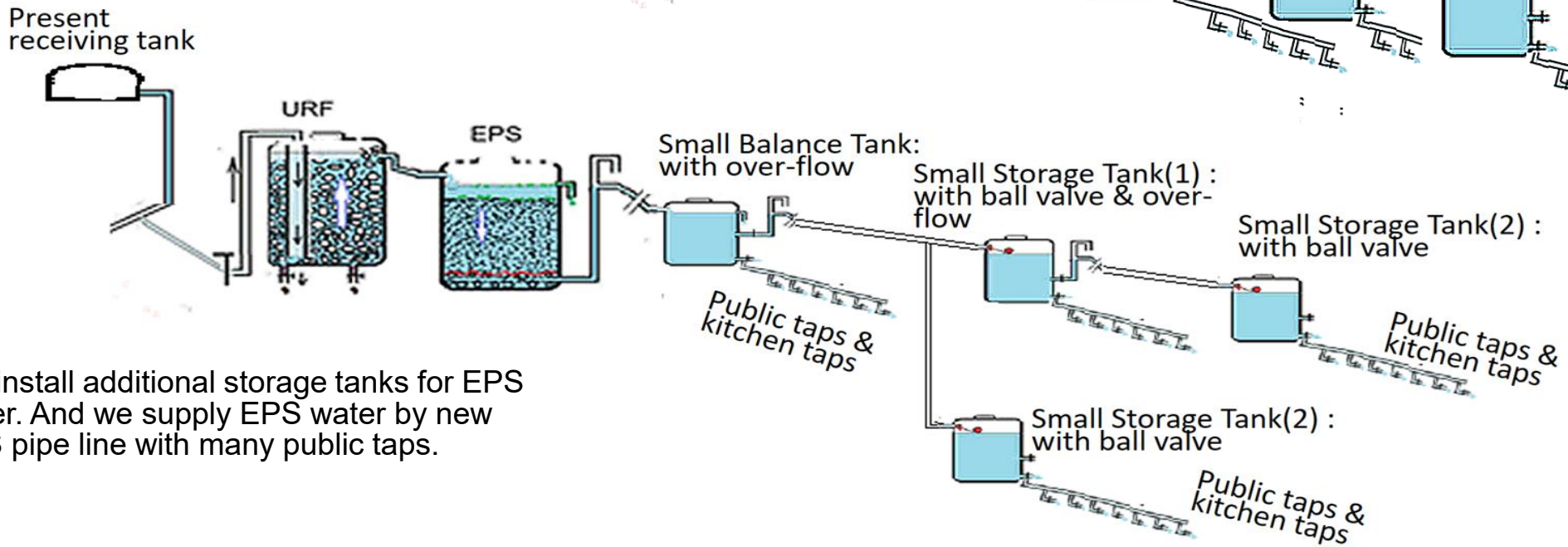
If there is no leak problem, we may connect to present distribution pipe in case of a small village. But this is risky. I cannot recommend this connection.

200 to 500 persons in a village

We supply EPS water by new EPS pipe line with many public taps. Or we install additional storage tanks for EPS water. And we supply EPS water by new EPS pipe line with many public taps.



More 500 persons in a village



We install additional storage tanks for EPS water. And we supply EPS water by new EPS pipe line with many public taps.

WHAT IS AN ECOLOGICAL PURIFICATION SYSTEM?

An Ecological Purification System or EPS is a method of purifying water using natural resources such as stones, gravel and sand stored in two or three different tanks where water will filter through the stones, gravel and sand as a purification process before it is ready for drinking or consumption.

Algae grows on the sand surface to provide oxygen and trap particles and remove nutrients. Other micro-organisms decompose organic matters. This food web results in the removal of impurities (organic/inorganic and pathogenic) in the process, resulting in purified water.

This system does not require power or chemicals. It is cost effective and easy to construct.

EPS AT NADELEI VILLAGE, BA

NAVOLAU VILLAGER DRINKING WATER THAT HAD BEEN TREATED BY EPS

Contact Address
Level 3 Nasilivata House, Samabula, Suva.
Phone: (679) 3310 575 Fax: (679) 3310672

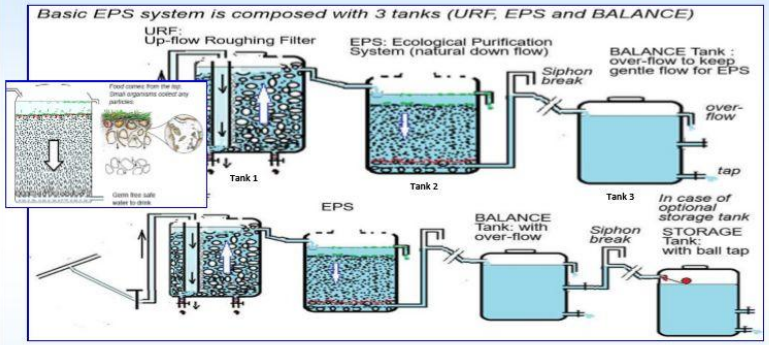
water OUR LIFELINE

ECOLOGICAL PURIFICATION SYSTEM

The Department of Water and Sewerage is responsible for the implementation of Ecological Purification Systems in Fiji using biological processes of nature to clean and purify water for human consumption.

COMPLETE SERVICE DELIVERY THAT IS ACCESSIBLE TO ALL

UNDERSTANDING HOW THE ECOLOGICAL PURIFICATION SYSTEM (EPS) WORKS:



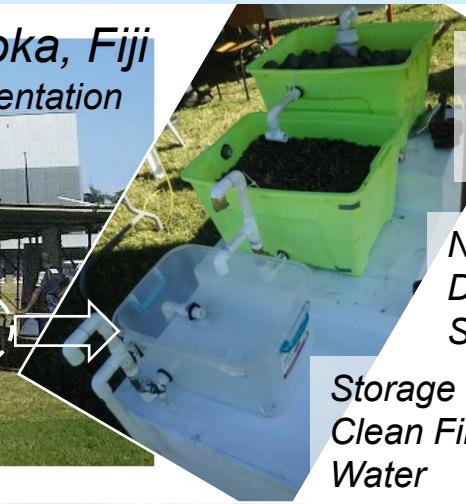
1. Water flows from source into the Upflow Roughening Filter Tank (URF) which has gravel.
2. From the URF Tank, water then flows into the Ecological Purification System Tank (EPS) which consists of sand with algae growth and other micro-organisms (established ecosystem) present to purify water.
3. With the slow filtering, water then passes into a storage tank ready for consumption.

ACCESSIBLE, SAFE, AFFORDABLE DRINKING WATER AND SANITATION FOR FIJI.

World Water Day 2018. March 22/23 Lautoka, Fiji

Nature for Water

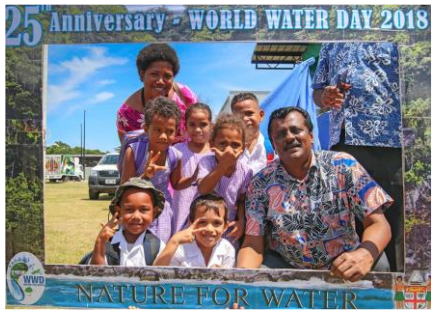
Receiving tank : Sedimentation



Up-flow Roughing Filter

Natural Down flow Sand Filter

Storage tank for Clean Filtered Water



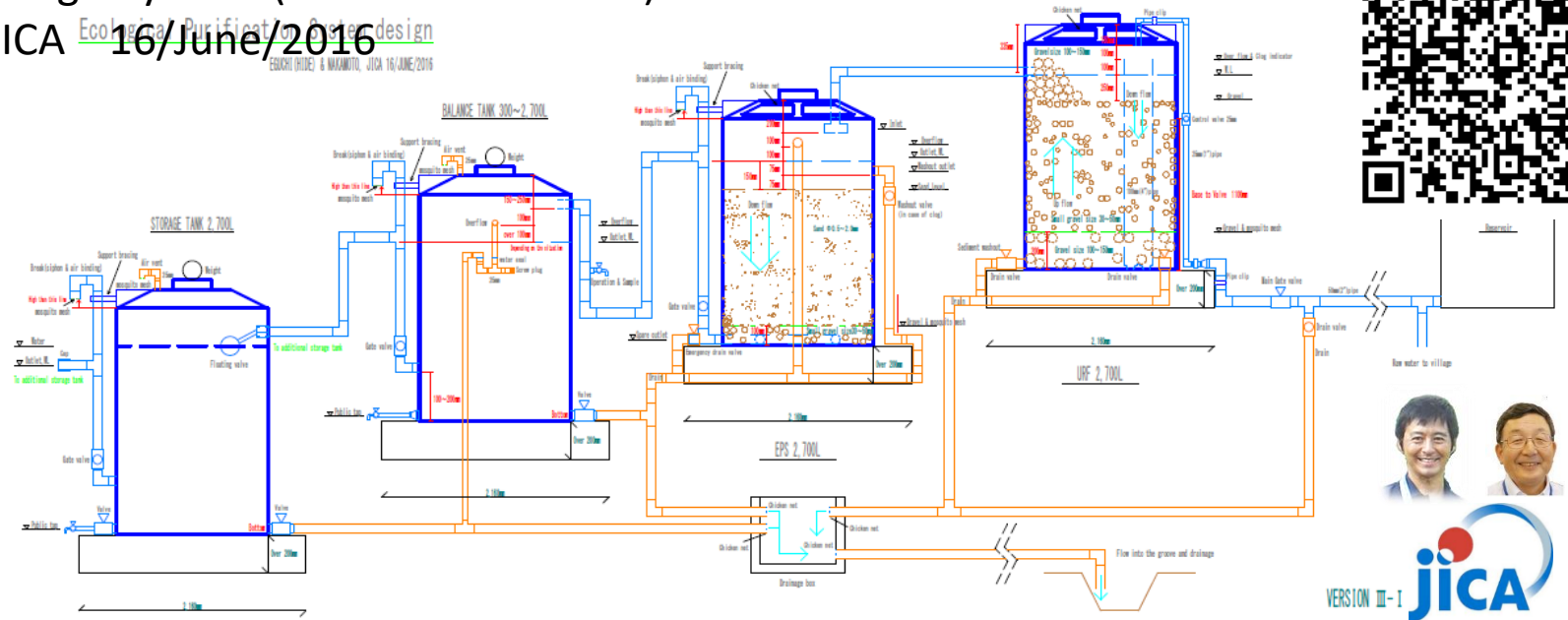
The Fiji Water and Sewerage Authority uses models to actively explain the EPS project.

New movement to make more larger scale of EPS concrete plant arises by own activities of a rural village in March, 2018.

Ecological Purification System for Fijian 2,700 Rota Tank Plant

Design by Hide (Hidemitsu EGUCHI) and Nobutada NAKAMOTO

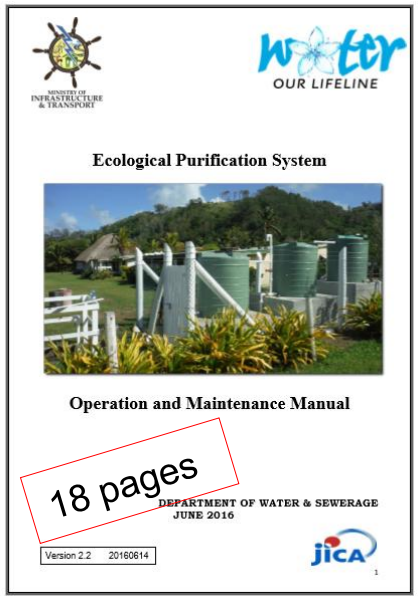
JICA 16/June/2016



https://eps.watervision.jp/wp-content/uploads/2025/04/EPS_design.pdf

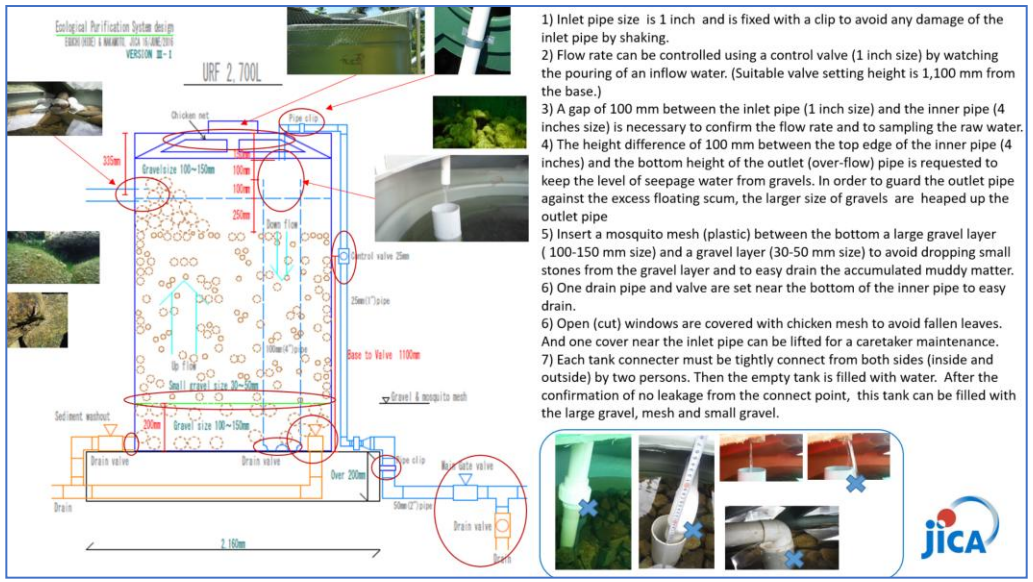
https://eps.watervision.jp/wp-content/uploads/2025/04/Fiji-EPS-2016-tank300-2700CAD-Design.pdf

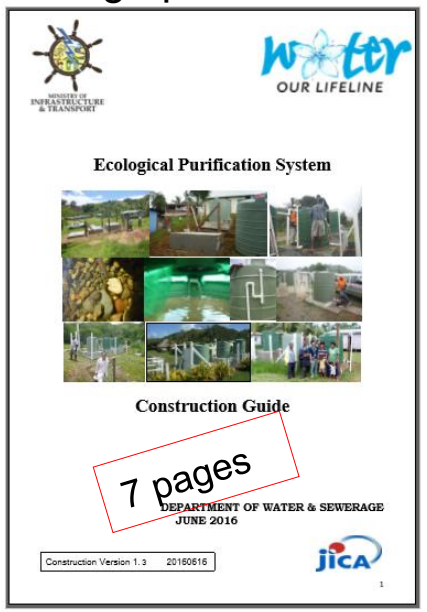
Operation and Maintenance Manual June 2016



https://eps.watervision.jp/wp-content/uploads/2025/04/160614-Eng-Fiji-EPS-Manual_Eng.pdf

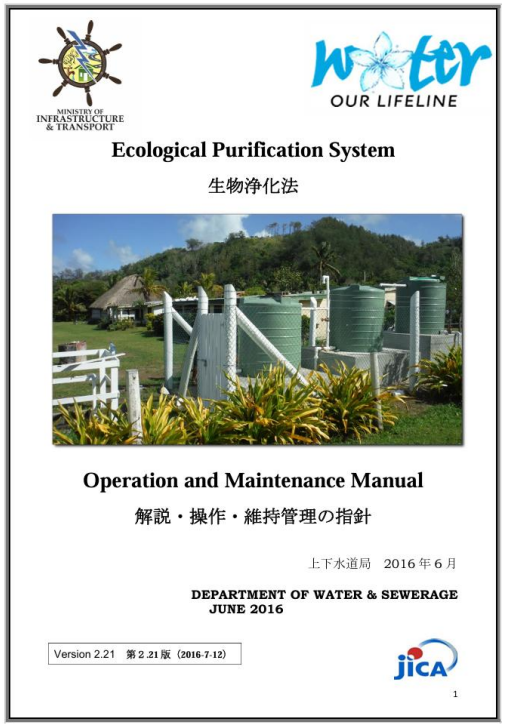
Construction Guide June 2016



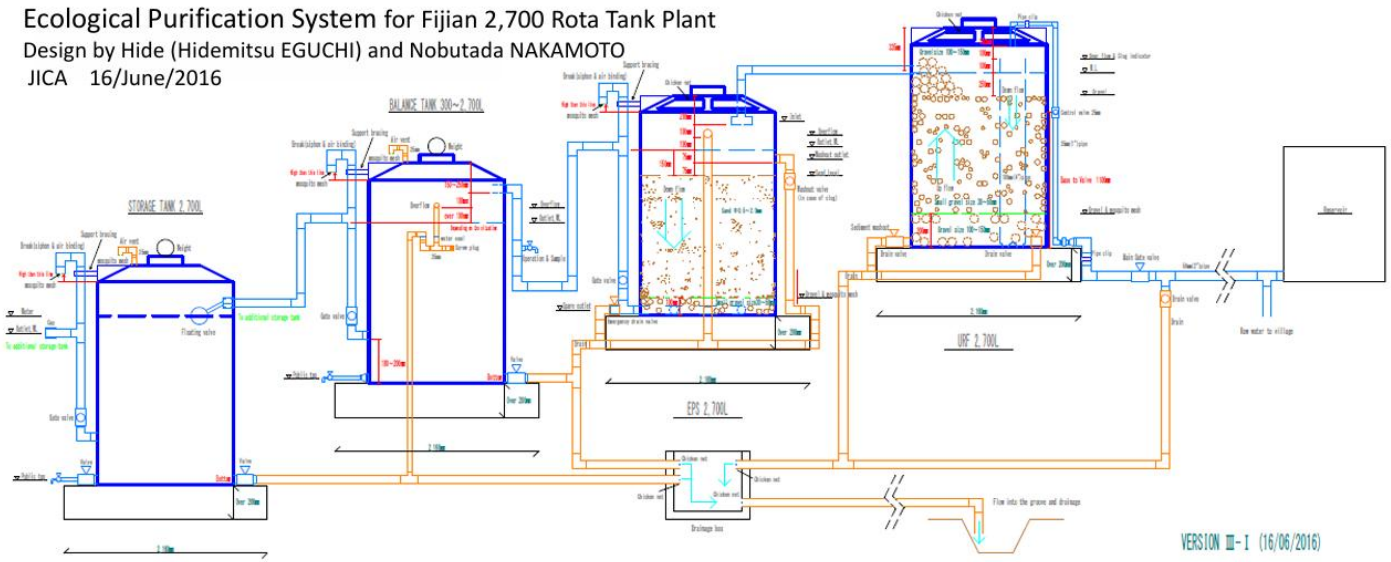


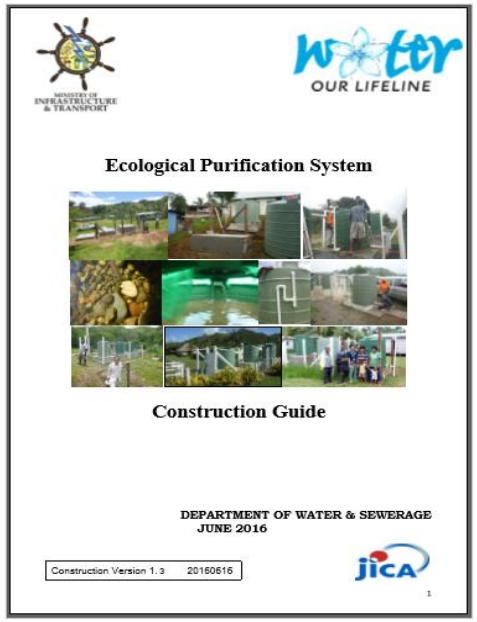
Nakamoto translated the English manual for EPS construction and maintenance into Japanese for the benefit of Japanese experts and volunteers coming to Fiji.
I provided these guidelines to the JICA Fiji office and made them available online via QR code.

日本語の維持管理指針も作りJICAフィジー事務所に提出した。



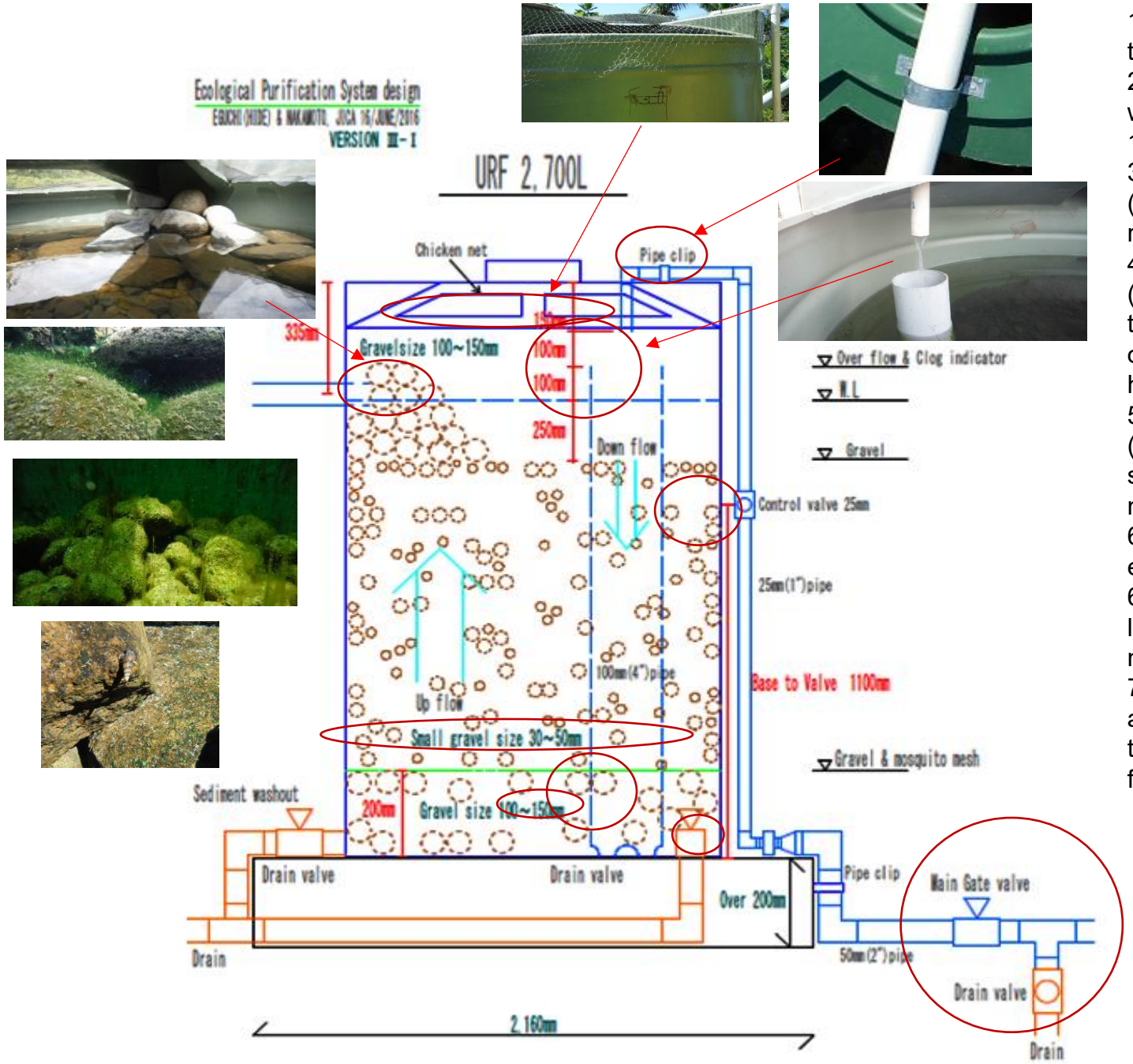
https://eps.watervision.jp/wp-content/uploads/2025/04/160712-Jap-Fiji-EPS-Manual.pdf





日本語の建設指針・施工注意点を作りJICAフィジー事務所に提出した。

https://eps.watervision.jp/wp-content/uploads/2025/04/Fiji-EPS-2016-tank300-2700CAD-DesignJPN.pdf



1) Inlet pipe size is 1 inch and is fixed with a clip to avoid any damage of the inlet pipe by shaking.
2) Flow rate can be controlled using a control valve (1 inch size) by watching the pouring of an inflow water. (Suitable valve setting height is 1,100 mm from the base.)
3) A gap of 100 mm between the inlet pipe (1 inch size) and the inner pipe (4 inches size) is necessary to confirm the flow rate and to sampling the raw water.
4) The height difference of 100 mm between the top edge of the inner pipe (4 inches) and the bottom height of the outlet (over-flow) pipe is requested to keep the level of seepage water from gravels. In order to guard the outlet pipe against the excess floating scum, the larger size of gravels are heaped up the outlet pipe
5) Insert a mosquito mesh (plastic) between the bottom a large gravel layer (100-150 mm size) and a gravel layer (30-50 mm size) to avoid dropping small stones from the gravel layer and to easy drain the accumulated muddy matter.
6) One drain pipe and valve are set near the bottom of the inner pipe to easy drain.
6) Open (cut) windows are covered with chicken mesh to avoid fallen leaves. And one cover near the inlet pipe can be lifted for a caretaker maintenance.
7) Each tank connecter must be tightly connected from both sides (inside and outside) by two persons. Then the empty tank is filled with water. After the confirmation of no leakage from the connect point, this tank can be filled with the large gravel, mesh and small gravel.

EPS

Public Seminar/ Workshop

" An approach to securing the safe water "

Reviewing Fiji's successful EPS implementation at Rural Area and future perspective of implementation in PICs

12 & 13 March 2019

@ Japan-Pacific ICT Centre, USP Laucala Campus

Day 1 09:30~17:00 Public Seminar (Inc. refreshments & lunch)

Main Presenter - Dr Nobutada NAKAMOTO*

JICA Expert, EPS advisor for Rural Water Supply
Professor Emeritus of Shinshu University, Japan

* Live lecture from JICA HQ, Tokyo Japan

Day 2 09:00~18:30 Workshop & Study Tour (Inc. lunch)**

Workshop - Demonstration of EPS Construction

By Mr Makoto YANO, Okinawa Blue Water, Japan

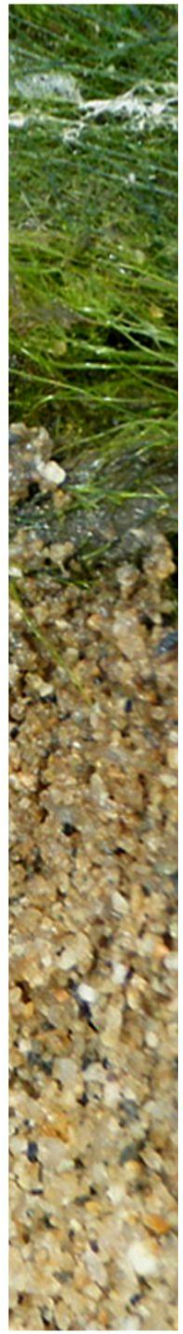
Study Tour - EPS Site Visit to NAKINI Village

18:30~20:00 - Evening Reception (Cocktail Party)

JICA

** Pre-registration is required at Day 1 (close at 11:30) due to limited space.

For further details, please contact JICA Fiji Office by email: jicafj-recept@jica.go.jp or telephone: +679 330 2522



ECOLOGICAL PURIFICATION SYSTEM

People loved the latest advanced technology. However, there is suitable technology for each country. That can be maintained and managed by local people. That is EPS.

https://www.youtube.com/watch?v=vji0ay-7GA8

EPS Fiji Wksp 2019 for safe water/ 7:08

EPS Seminar/ University of South Pacific, Suva, Fiji March 2019/ 4:32

https://www.youtube.com/watch?v=fEl5ghBzfMw&t=23s

Fiji JICA planned that EPS public seminar at the end of 4 years EPS JICA contribution (Nov. 2014 to Dec. 2018) in Fiji by Nakamoto on 12 and 13 March 2019.

Nakamoto prepared the plan of the workshop in Fiji before returning to Japan in December, 2018.

However, upon returning home, concerns arose about my health, so my lecture was quickly changed to an online one from JICA Headquarters in Tokyo.

One month after the workshop, I underwent heart bypass surgery on 19th, April, 2019. Six and a half years have now passed (November, 2025).

Fijian Minister for Infrastructure opens the Ecological Purification System Project at USP (The University of South Pacific)

https://www.youtube.com/watch?v=iBcjbocOleQ&t=2s

11 min 21 sec

Fiji Government

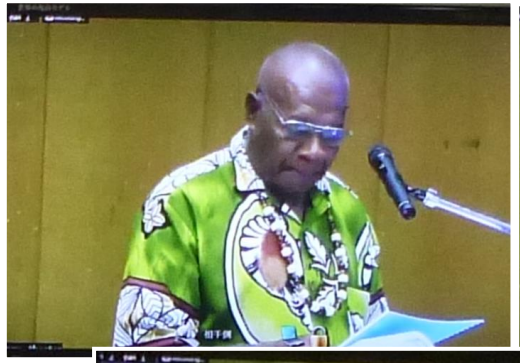
The implementation of community based Ecological Purification System was made possible through the funding of government.

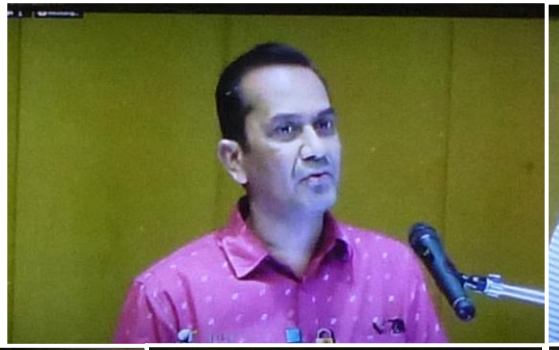
The Fijian Minister for Infrastructure, Transport, Disaster Management and Meteorological Services Hon. Jone Usamate, in saying this, officiated as Chief Guest at the opening of the Ecological Purification System (EPS) Workshop which was held at The University of the South Pacific.

The EPS is a chemical-free and energy-free water purification technology which was initiated by Dr. Nobutada Nakamoto, Professor Emeritus of Shinshu University in Japan.

Also present at the opening event was special guest was Deputy Vice Chancellor of USP Mr. Derrick Armstrong.

The workshop is a two-day event hosted by JICA from 12-13 March, 2019 at The University of the South Pacific ICT Centre in Suva, Fiji.

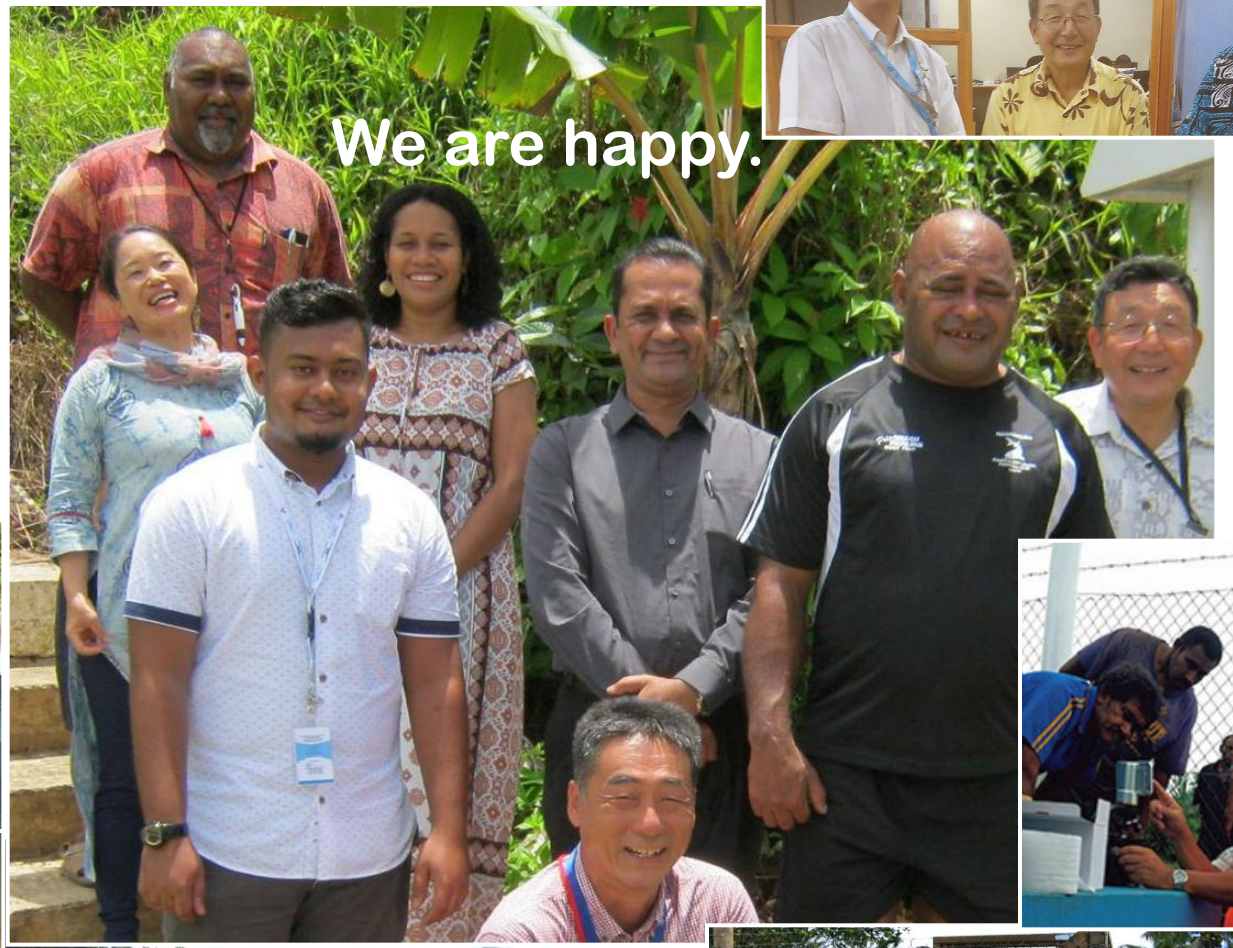




We are all happy!!

17:30-18:30 Wrap-up

We are happy.



Fijian people made EPS plants by themselves.

EPS

Public Seminar/ Workshop

Fijian EPS project for rural people started from Jan. 2013.

Day 1 09:30~17:00 Public Seminar (Inc. refreshments & lunch)

Main Presenter - Dr Nobutada NAKAMOTO*

JICA Expert, EPS advisor for Rural Water Supply
Professor Emeritus of Shinshu University, Japan

* Live lecture from JICA HQ, Tokyo Japan

Day 2 09:00~18:30 Workshop & Study Tour (Inc. lunch)**

Workshop - Demonstration of EPS Construction

By Mr Makoto YANO, Okinawa Blue Water, Japan

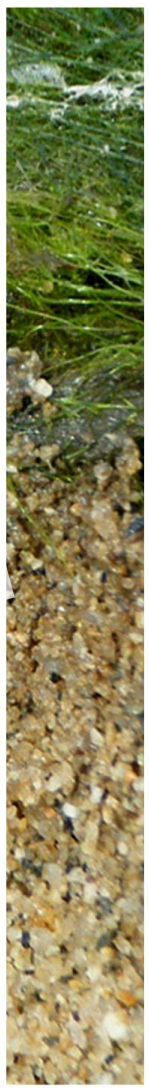
Study Tour - EPS Site Visit to NAKINI Village

18:30~20:00 - Evening Reception (Cocktail Party)

JICA

** Pre-registration is required at Day 1 (close at 11:30) due to limited space.

For further details, please contact JICA Fiji Office by email: jicafj-recept@jica.go.jp or telephone: +679 330 2522



ECOLOGICAL PURIFICATION SYSTEM

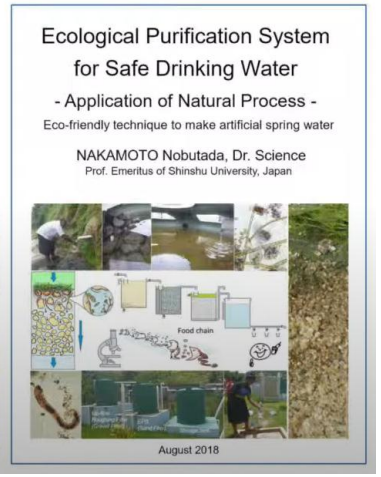
EPS Public Seminar/Workshop 11:30-12:30 Principle of EPS, Q&A

Ecological Purification System for Safe Drinking Water

- Application of Natural Process -

NAKAMOTO Nobutada, Dr. Scinece
Prof. Emeritus of Shinshu University

Eco-friendly technique to make artificial spring water



https://www.youtube.com/watch?v=fEl5ghBzfMw&t=62s

4min 32 sec

EPS to make safe drinking water is real our technology.

https://www.youtube.com/watch?v=vji0ay-7GA8&t=254s

7min 08 sec

Remember Three Steps

1. Knowing is NOT enough. We must APPLY it to something useful.
2. Willingness is NOT enough. We must PUT it into the PLAN and ACTION.
3. Putting the PLAN into action is NOT enough. We must ACCOMPLISH the goals.

CONSTITUTION OF THE REPUBLIC OF FIJI

This Constitution issued on 7 September **2013**.

36: Right to adequate food and water

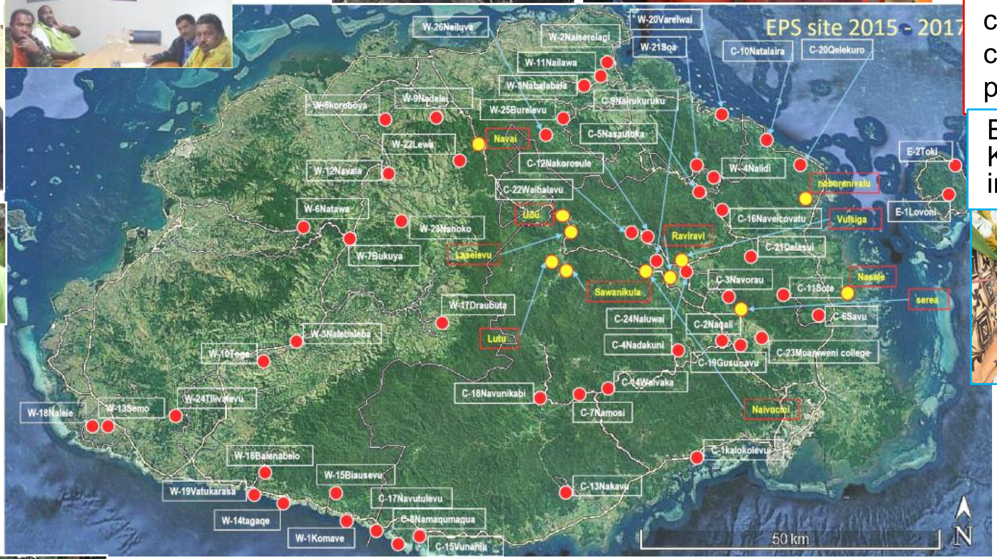
the right of every person to have adequate food of acceptable quality and to **clean and safe water in adequate Quantities**.

Cleaner Water Project by EPS (Ecological Purification System: Wise Use of Natural Phenomena) for Rural People in Fiji

Villagers helped EPS project.

2 pilot sites :Kalokolevu and Navatuvula of 2013 project. EPS project completed 2015 fiscal year : 46 villages . Another 12 villages were completed until May 2016. Total village sites were completed 60 (58 + 2 pilot sites) until June 2016. **98 villages were completed until Jan. 2018.**

EPS project started from Kalokolevu and Navatuvula in 2013



EPS Engineer Meeting 2015

JICA short Expert N. NAKAMOTO 2014-2018 Oct. Nov. *8 times: each about 1 month Only.*

JICA Volunteer Hide EGUCHI 2015-16

JICA staff K. OHARA

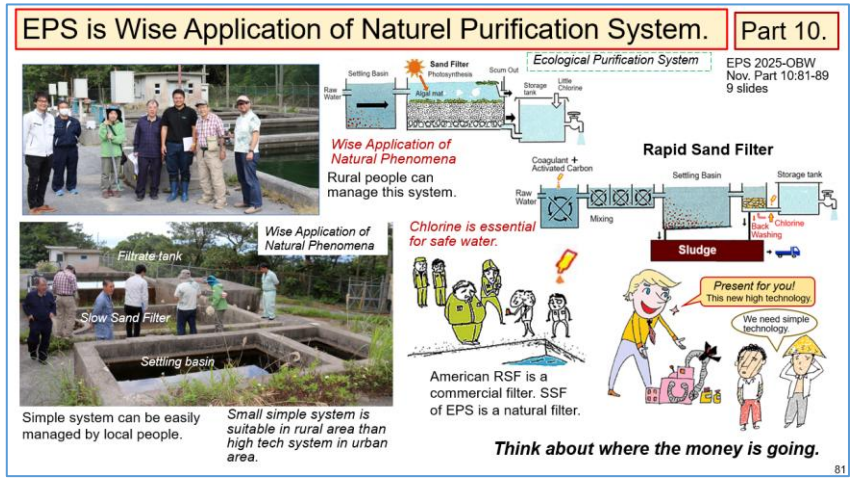
JICA Volunteer Isamu SHIOIRI 2017-18

JICA staff A. KANI

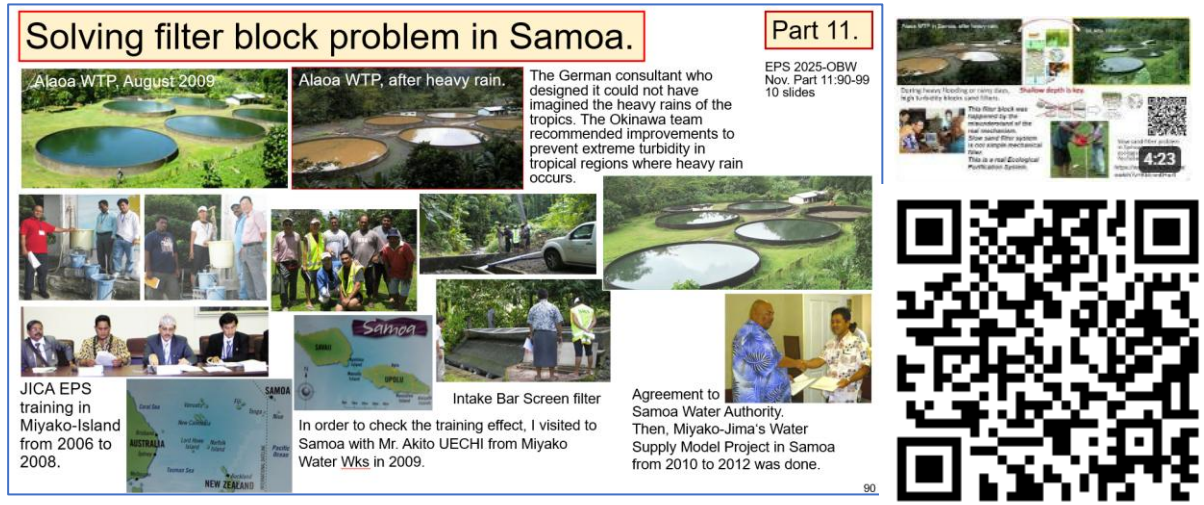
98 EPS plants were completed until Jan. 2018.
Project was supported by Fijian government and JICA assisted only advice.

JICA president visited Kalokolevu on April 7. 2018

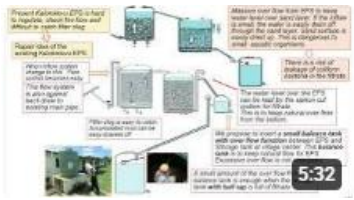
This Fijian EPS project for rural people **still continues** until now by Fijian government in **2025**.



https://youtu.be/2r8MWh6q5PA



https://youtu.be/v82qaSSzE9c



https://youtu.be/IKk3yQBghYE