WATER INNOVATION OF TAMU CITY WATER SUPPLY

DR TUN THAN TUN
AUTHENTIC GROUP OF COMPANIES

TAMU CITY

Land Border with the Republic of India
Population ; 38411 (2013) 7412 households
Temperature ; Maximum 42.5 Centigrade
Minimum 3.9 Centigrade
Annual rain fall ; Between 60 inches to 102 inches
Water Sources
Ma-hu-yar or Kan-gyi-wa chaung
width ; 110 ft to 250 ft
Depth; February to May
1 to 2 ft (shallow area)
6 to 10 ft (deepest area)
Water Quality ; Low turbidity in Summer
High turbidity with reddish color
in rainy season and up to January
Ground Water ; 2617 dig well (approx 30 to 40 ft)
tube well 7 numbers

All households rely on their own dig well

Water Scarcity Challenge encounter in April and May due to high water demand and consequently water table in the well become dry.

Proposed Tamu Water Supply Process (2015)

Sources and Intake; Mahuyar creek and pumping at the sump which is situated at the down stream of Myanmar India border bridge

Water level different; 28 ft to 31 ft higher in Rainy season than summer water level

Design Capacity; 420000 gallon per day

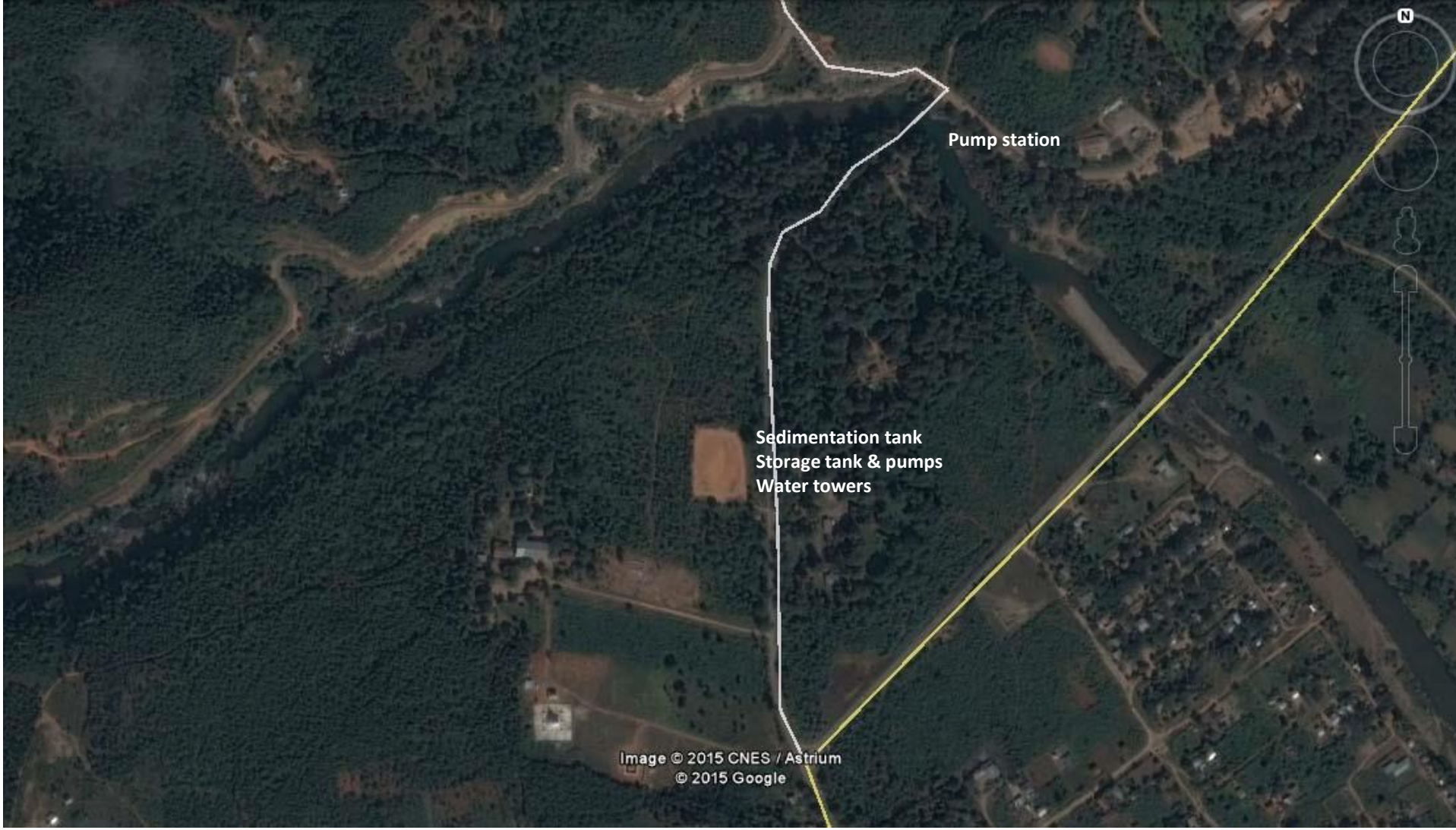
Pump capacity ; 24000 gph (12000 gallon per hour 2 pumps)

Sedimentation tanks ; Water will be pumped to the 2 sedimentation tanks of 120000 gallons capacity each, (10 hours detention time) approximately 50 to 60 ft higher than water supply area.

Storage tanks ; Water will be stored in 2 numbers of 120000 gallons after sedimentation process.

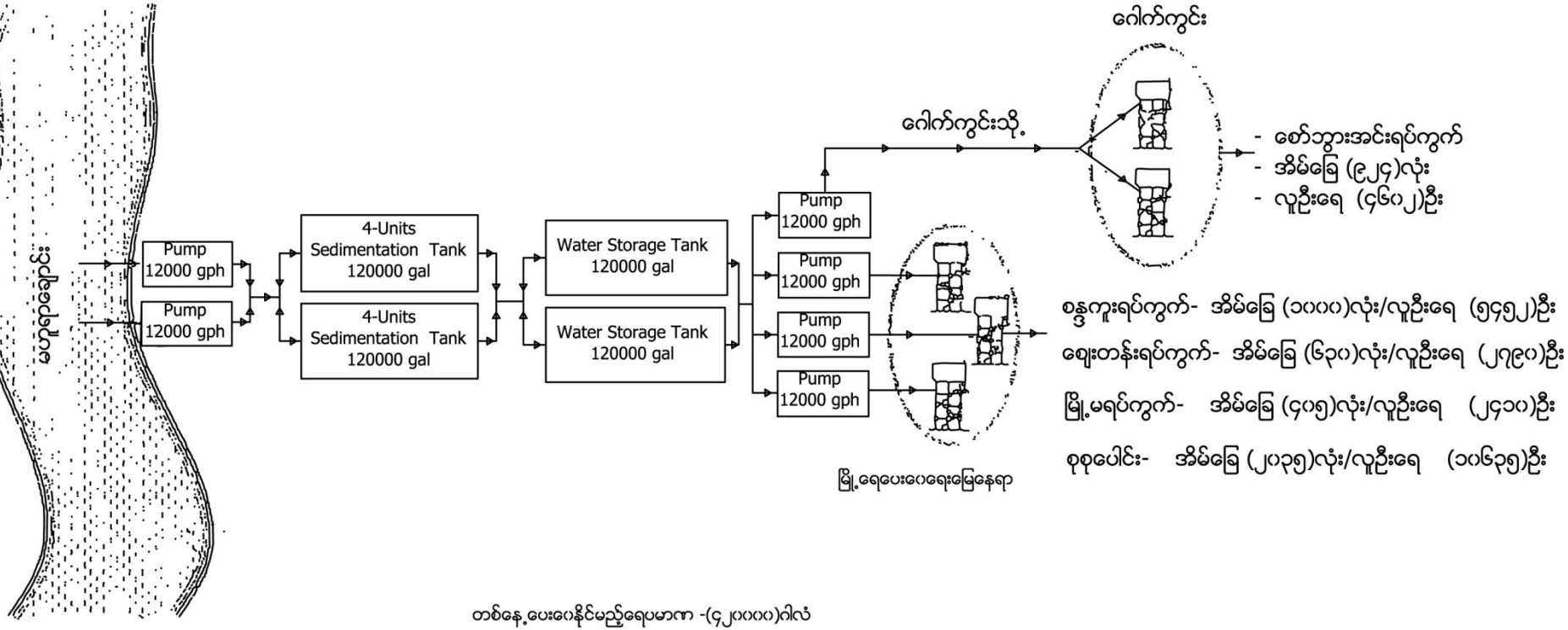
Water Supply system; 12000 gallons per hour 3 pumps will be used to lift the water to the 40 ft elevated 3 service reservoirs and one pump will convey the water to the two elevated service reservoirs near golf course.

Population of 10635 from Sandaku, Saydan and Myoma ward will be supplied by gravity from 3 elevated service reservoirs and population of 46002 will be served from 2 elevated reservoirs near golf course.



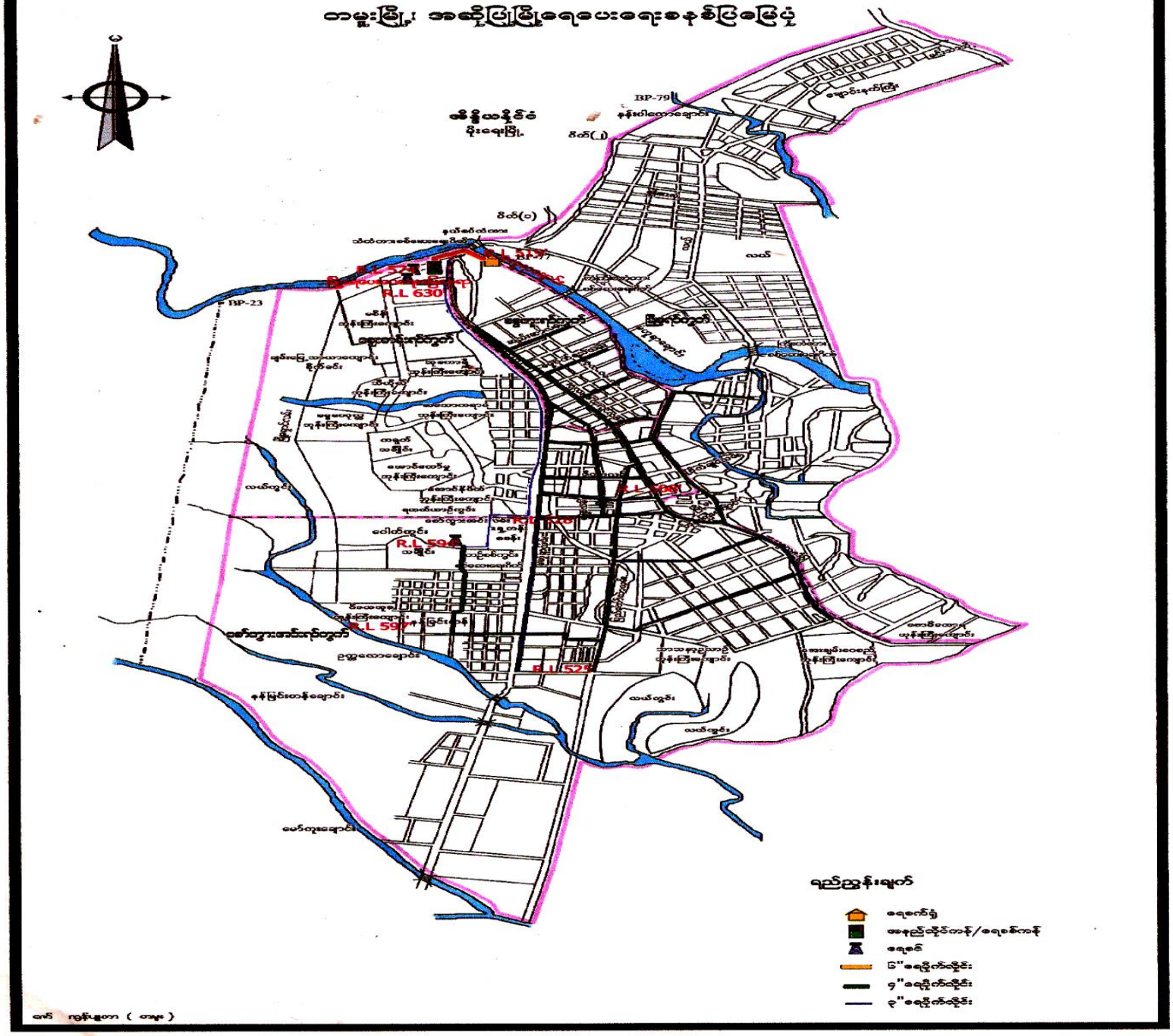
Proposed pumps at intake 12000 gph x 2 nos. to 120000 gallons 2 nos. of Sedimentation tanks Settle water will be flow to 120000 gallons 2 nos. of storage tanks; 4 nos. of 12000 gph pumps Will be used to lift the water to the 5 nos.40 ft height water towers to supply to the city of 10635 Inhabitants.

တမူးမြို့ မြို့ရေပေးဝေရေးလုပ်ငန်းဆောင်ရွက်မည့်စနစ်ပြပုံ။

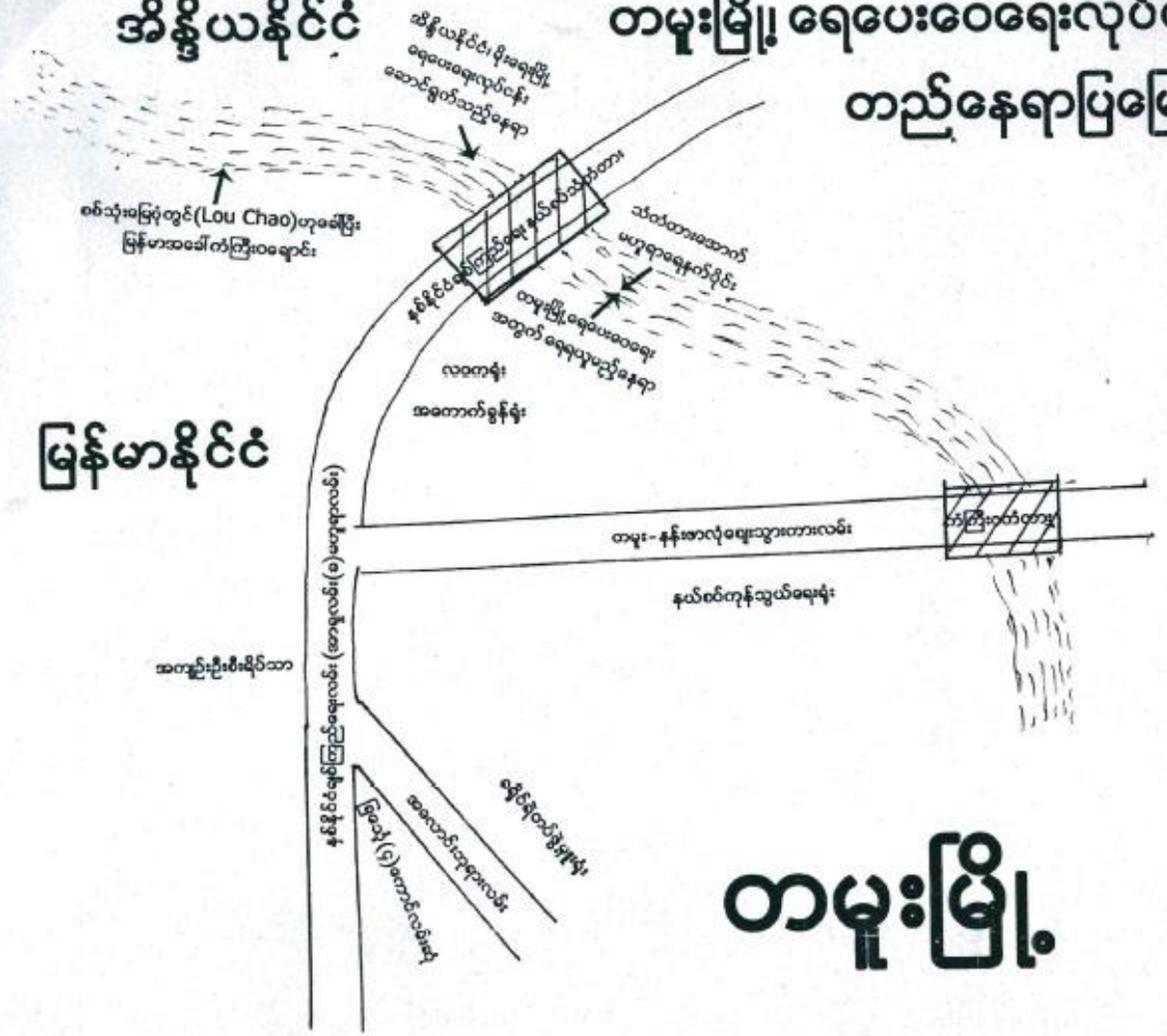


တစ်နေ့ပေးဝေနိုင်မည့်ရေပမာဏ -(၄၂၀၀၀၀)ဂါလံ

တမူးမြို့ အဆို့ပြုမြို့ရေပေးစနစ်ပြမြေပုံ

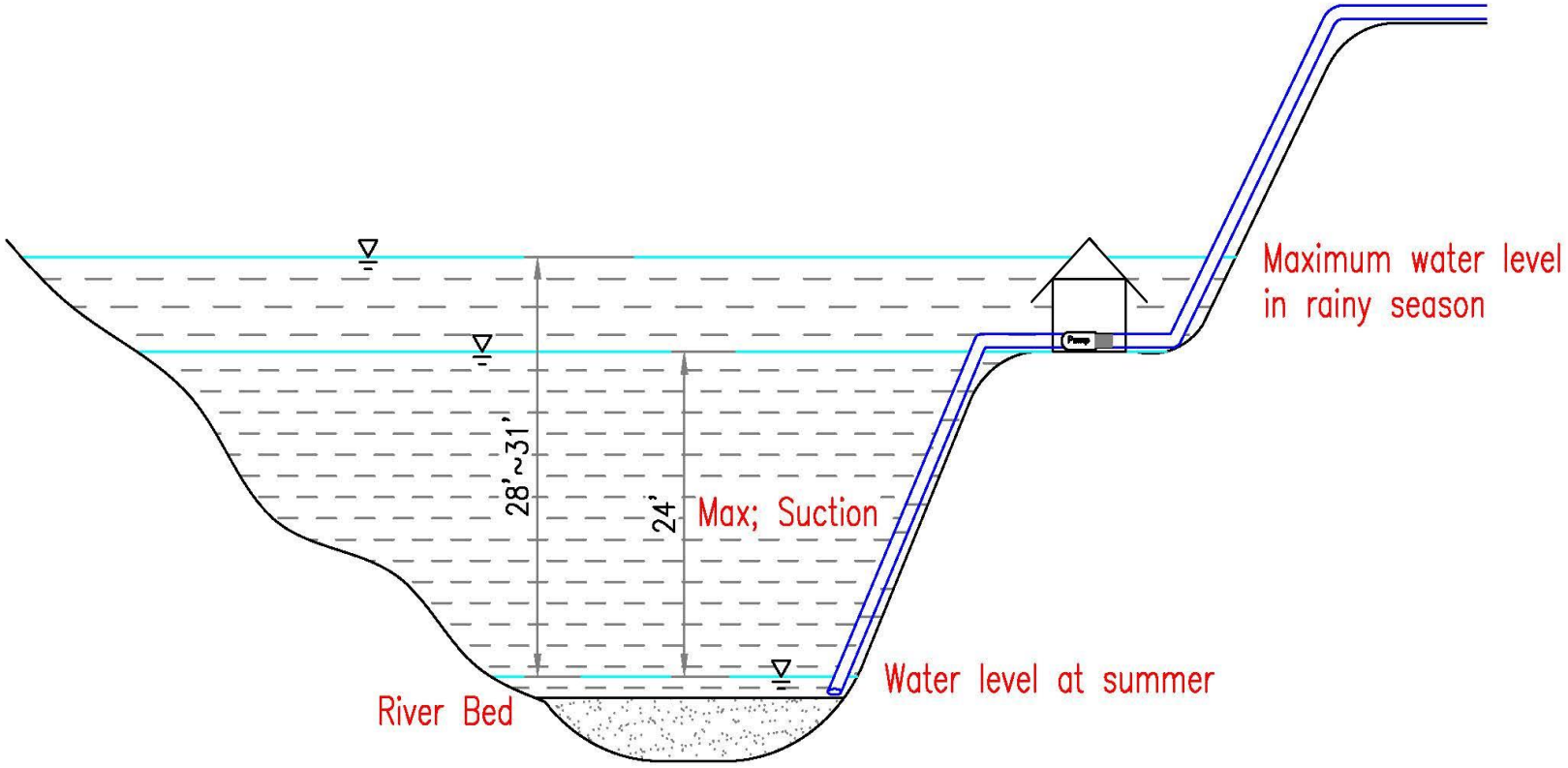


တမူးမြို့ ရေပေးဝေရေးလုပ်ငန်းဆောင်ရွက်မည့် တည်နေရာပြမြေပုံကြမ်း



Dry Intake of India side. Pumps are installed at the middle of the intake tower.

Proposed Pump Station (28/12/2014)



AUTHENTIC WATER & WASTEWATER CO.,LTD			
Project Name	TAMU WATER SUPPLY PROJECT		
Drawing Title	Proposed Pump Station		
Designed By	Dr.TTT	Drawn By	YMO
Scale:	1:100	Date	10.03.2017

Issue of the proposed Direct intake pump station will be encountered of flooding in the rainy season water level.

How to solve this issue ?

Construct a Dry Intake higher than India side ?

Costly & take time to construct

Water level rise up to 30 to 31 feet at the width of 120 ft of the creek under the bridge in rainy season.

How's about the water level at the twice width of the bridge?

WATER ANALYSIS RESULT FORM

Client : ကိုအောင်ကိုဦးတမူး။ Received Date : 8.6.2015

Source of water : Raw Water Analysis Date : 8.6.2015

Sr	Item	Unit	Sample Water Result	WHO Guide Line
1	Colour (True)	Pt/Co	Nil	15 Unit
2	Turbidity	FTU	Nil	<5 FTU
3	pH Value		7.68	6.5-8.5
4	Total Dissolve Solids	p.p.m (mg/L)	147	500
5	Total Alkalinity (as $CaCo_3$)	p.p.m (mg/L)	230	-
6	Aluminium (Al)	p.p.m (mg/L)	Nil	0.2
7	Alkalinity (P) (as $CaCo_3$)	p.p.m (mg/L)	Nil	-
8	Bicarbonate (as $CaCo_3$)	p.p.m (mg/L)	230	-
9	Carbonate (as $CaCo_3$)	p.p.m (mg/L)	Nil	-
10	Calcium Hardness (as $CaCo_3$)	p.p.m (mg/L)	72	-
11	Chloride (Cl)	p.p.m (mg/L)	13	200
12	Conductivity	micro s/cm	301	1000
13	Copper (Cu)	p.p.m (mg/L)	Nil	1
14	Total Hardness (as $CaCo_3$)	p.p.m (mg/L)	126	100
15	Hydroxide (as $CaCo_3$)	p.p.m (mg/L)	Nil	-
16	Iron (Fe)	p.p.m (mg/L)	0.01	0.3
17	Magnesium (Mg)	p.p.m (mg/L)	15	50
18	Magnesium Hardness(as $CaCo_3$)	p.p.m (mg/L)	54	-
19	Manganese (Mn)	p.p.m (mg/L)	0.009	0.1
20	Sodium Chloride (Nacl)	p.p.m (mg/L)	21.45	-
21	Sulphate (So_4)	p.p.m (mg/L)	Nil	200

Rate of flow into the sump about 5 gallons per second. Sub flow at 1 foot below the bed of the creek can be calculated about 432000 gallons per day

There are three methods of developing streams and rivers and obtaining clean river water:

1. **Intake through infiltration wells and galleries;**
2. **Direct intakes connected to mechanical pumps; and**
3. **Direct intakes using gravity flow.**

Intakes can provide sufficient water to a water supply system but there are special considerations which must be recognized for effective planning.

Rivers and streams generally have a wide seasonal variation that will affect the location of intakes and the quality of water drawn by them. During the wet season, water is abundant. However, flooding may occur which could destroy the intake and steps must be taken to protect it in the high water season.

Infiltration Gallery

- Infiltration Galleries (IG) or wells can be constructed near perennial rivers or ponds to collect infiltrated surface waters for all domestic purposes. Since the water infiltrate through a layer of soil/sand, it is significantly free from suspended impurities including microorganisms usually present in surface water. Again, surface water being the main source of water in the gallery/well, it is free from arsenic. If the soil is impermeable, well graded sand may be placed in between the gallery and surface water source for rapid flow of water.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If sedimentation alone used to clarify The raw water , very fine particles won't be settled in 10 hours detention times. Furthermore, settling sludge to be remove Will be another challenge regarding with Sludge pumping out .

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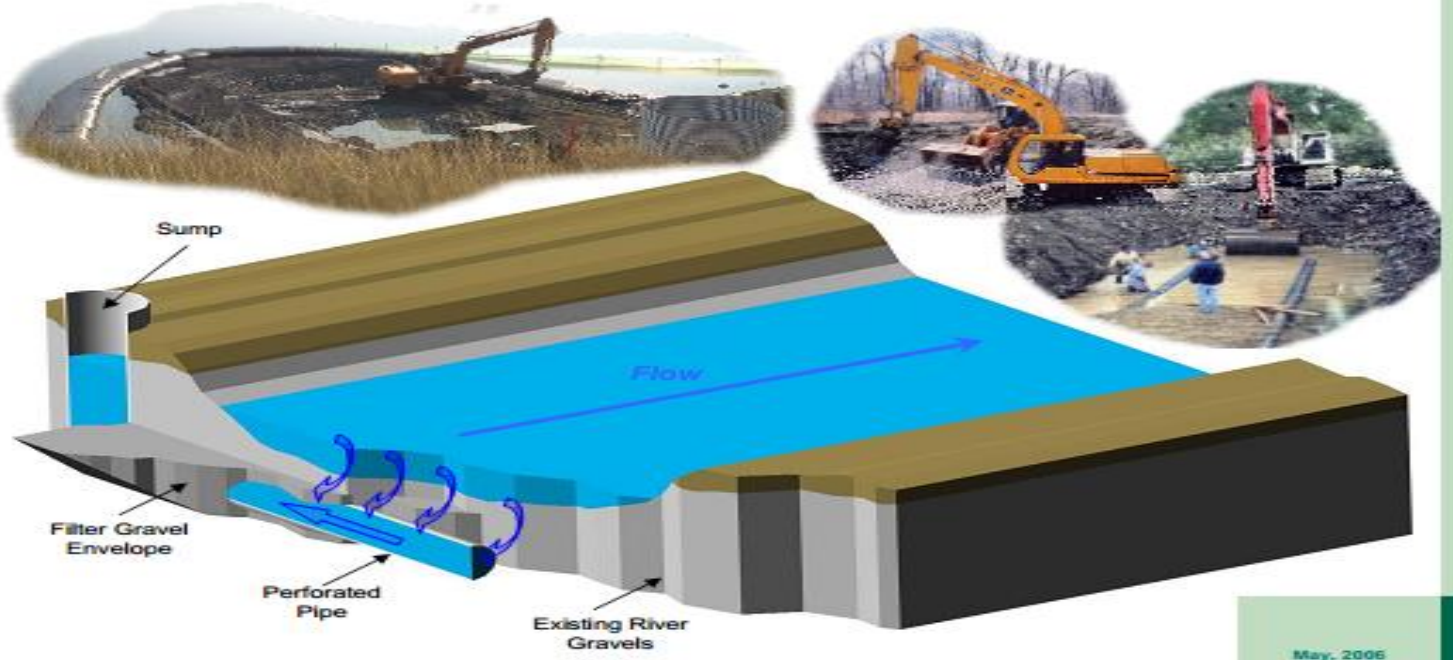
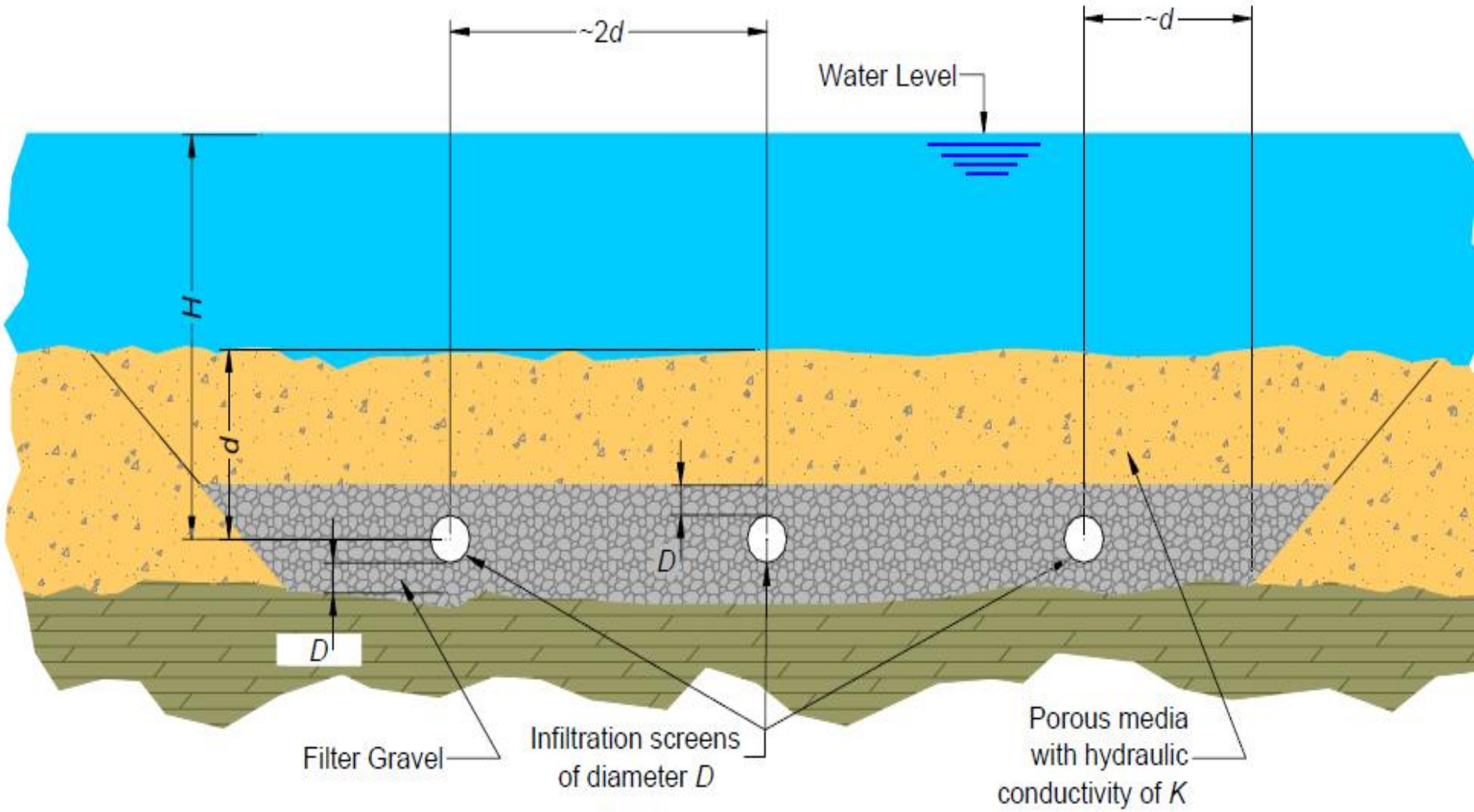
DIVERSION OF WATER FROM SURFACE-WATER SOURCES THROUGH INFILTRATION GALLERIES



May, 2006

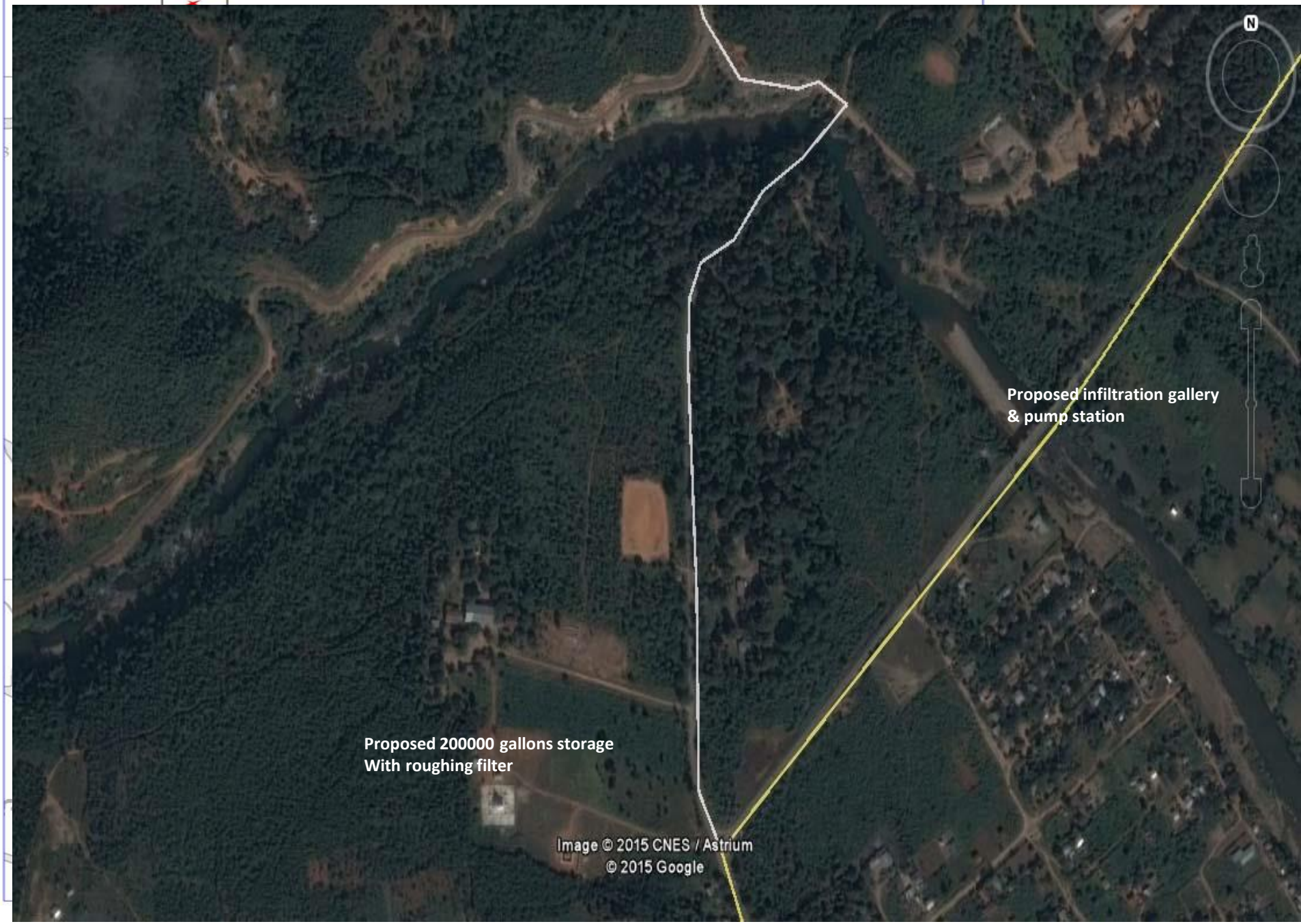
Canada



Infiltration Gallery - Definition Sketch

Infiltration Gallery Design

- There are basically two types of gallery designs:
- Open trench, and
- Buried conduits
- Open trench type of gallery was used on Kiritimati but has been changed to buried conduit under the current AusAid funded water project.
- Buried conduits has been proved to be the most effective type.


Proposed infiltration gallery
& pump station
Proposed 200000 gallons storage
With roughing filter
Image © 2015 CNES / Astrium
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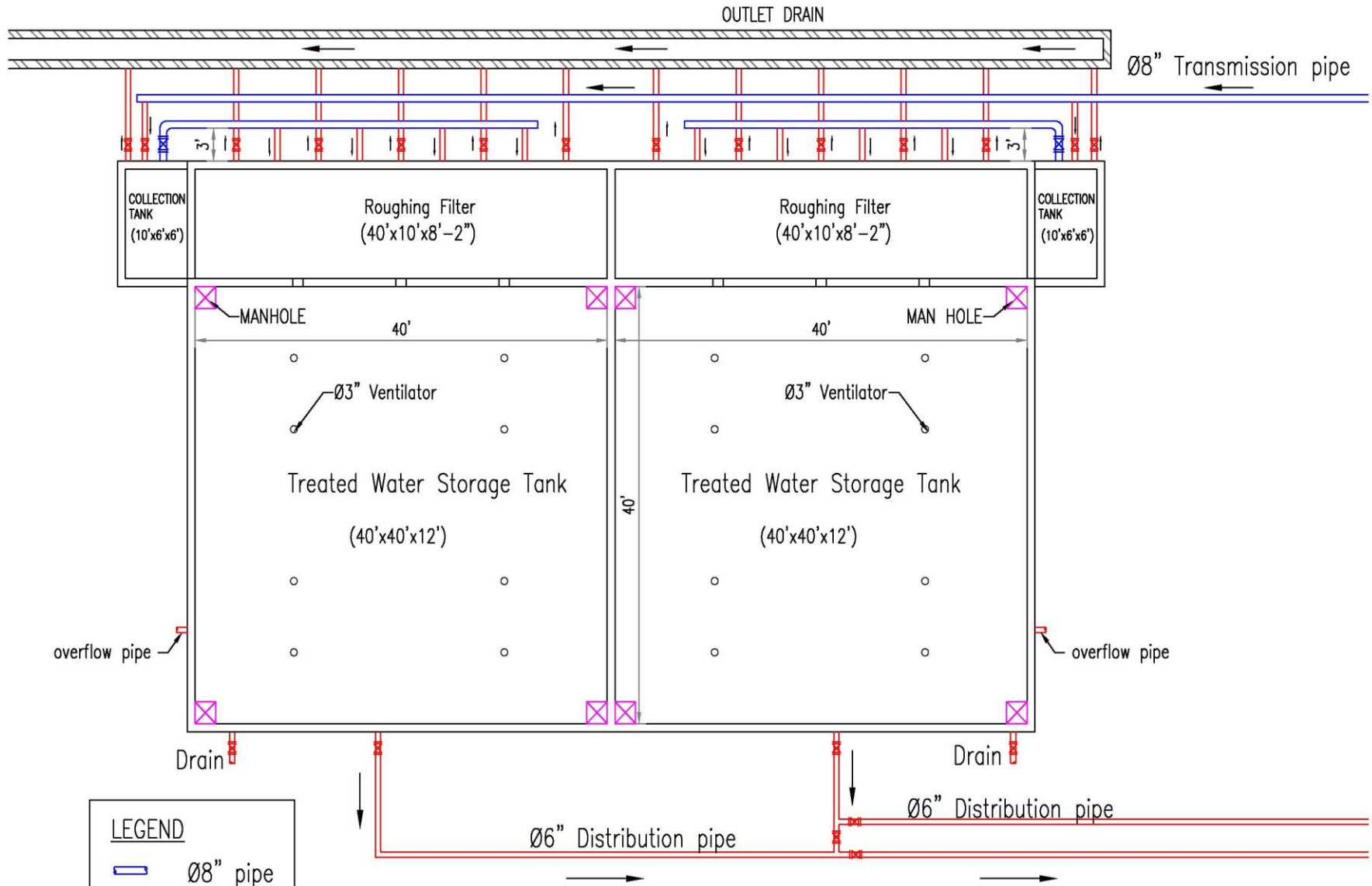
TREATMENT SYSTEM AND TREATED WATER STORAGE TANK



PLAN

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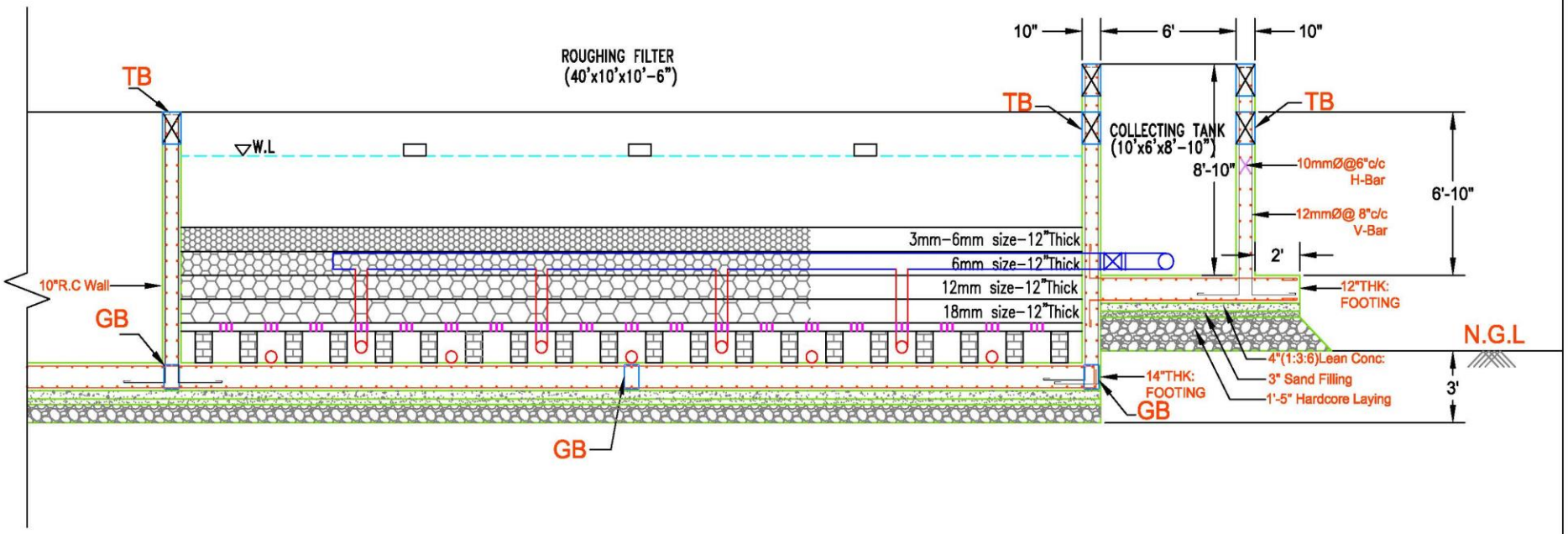
Project Name	TAMU WATER SUPPLY PROJECT		
Drawing Title	TREATMENT SYSTEM-2		
Designed By	TTT	Drawn By	HAM
Scale:	1:150	Date	3.11.2016



SECTION
Scale 1:100

AUTHENTIC
WATER & WASTEWATER CO.,LTD

Project Name	Tamu Town Water Supply Project		
Drawing Title	Roughing Filter & Collection Tank		
Designed By	UMA	Drawn By	HAM
Scale:	As Shown	Date	10.03.2017

If the natural alluvium is not sufficiently permeable to allow an infiltration gallery based on the in-situ hydraulic conductivity of the alluvium to be feasible (due to unreasonable size), it may be possible to create an infiltration gallery entirely from non-native material that has a higher permeability than the natural alluvium.

There are hundreds of water treatment technologies available, so choosing the right one for each community takes some know-how.

Innovation is a process of problem solving. In its broadest sense, innovation means doing things in new ways. When conditions change and routines no longer work, humans experiment and learn. In a narrower sense, innovation means developing new ideas into new products or processes

WE NEED TO INCREASE EFFICIENCY OF WATER SECTOR PERFORMANCE FOR POVERTY ALLEVIATION AND SUSTAINABLE DEVELOPMENT IN MYANMAR

THANK YOU FOR YOUR KIND ATTENTION