Study on the Environmental Impact along Thingazar Creek in Mandalay City, Myanmar

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Abstract

The present work deals with the water quality and environmental impact on waste disposal channel in Mandalay City the name Thingazar Chaung. In our City, there are nine domestic waste water disposals Channel, they generally started from north to south, nearly parallel with the Ayeyarwaddy River and finally discharged into the Ayeyarwaddy river. They are as follow, (1) Shwe Ta Chaung, (2) Ngwe Ta Chaung, (3) Mingalar Myaung, (4) Columbo Myaung, (5) Nadi Myaung, (6) Payandaw Myaung, (7) Thingazar Myaung, (8) Myaunggyi and (9) Tat Myaw Chaung. Thingazar chaung is one of the important Waste disposals Channel in our City; it is about 2.95 miles long. The founder of the water cannels is Min Gyi Bo Daw Min Phayar (Badom Min) (1782-1819) to connect with Ayeyarwaddy River for daily use, transportation and communication for local people who live in our City. Thingazar Chaung located on the western part of the Mandalay City, running to the Mandalay Kandawgyi (Tetthay Inn). The name derivation of the Thingazar is the monastery name, near the starting part of the Creek. Thingazar Creek discharged 4545 m/hr of the waste water every day. Waste water disposals Channel are only for disposal waste water cannel not for use as garbage. The color, smell and quality of water in the cannel is very bad. Mandalay City Development Committee tries to upgrade Mandalay City for smart city and clean city. We would protect and maintaine Thingazar Creek with Social and Environmental conservation point of view, in there all of the people has good mindset, positive thinking ethics He always service for our City as Clean and Smart City as possible as he can.

Key words: Thingazar Creek, Environmental impact, Waste disposal channel, Mandalay City, Mandalay Kandawgyi

Introduction

The research area, deals with the water quality and Environmental impact of the waste disposal channel in Mandalay City the name Thingazar Chaung. In Mandalay City, there are nine domestic waste water disposal Channels, they generally started from north to south, nearly parallel with the Ayeyarwaddy river and finally discharged into the Ayeyarwaddy river. They are as follow (1) Shwe Ta Chaung, (2) Ngwe Ta Chaung, (3) Mingalar Myaung, (4) Columbo Myaung, (5) Nadi Myaung, (6) Payandaw Myaung, (7) Thingazar Myaung, (8) Myaunggyi and (9) Tat Myaw Chaung, all are list down with from east to west. The founder of the water cannels is Min Gyi Bo Daw Min Phayar (Badom Min) (1782-1819) to connect with Ayeyarwaddy River for daily use, transportation and communication for local people who live in our City. The name derivation of the Thingazar is the monastery name, near the starting part of the Channel. The present study area, Thingazar chaung is one of the important Waste disposals Channel in our City. He lies on a western part of the Historical Monument ancient City area, it is about 2.95 miles long, located from north to south lies nearly parallel with Ayeyarwaddy River. Thingazar Chaung passes through Aungmyaythazan, Chanayethazan, Maharaungmyay, and Chanmyatharzi Township and finally discharged to the Ayeyarwaddy River.

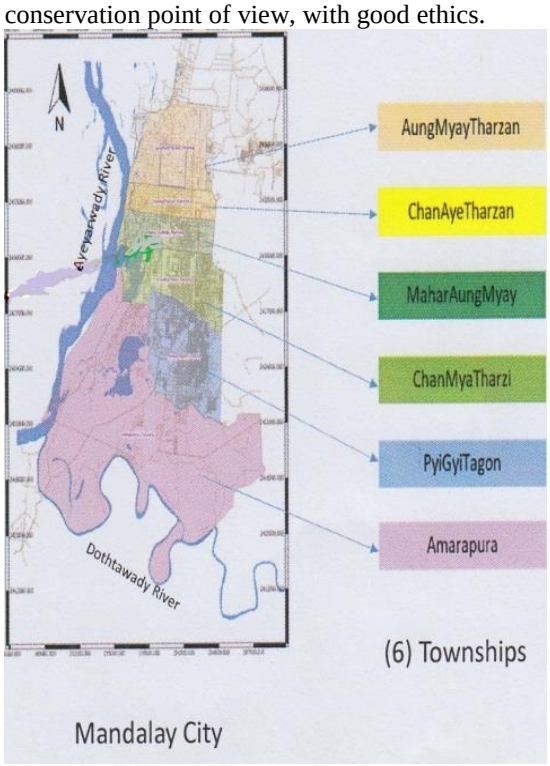
Geological background of Mandalay City

My native town, Mandalay City is located on the central low land area. Mandalay is a major city in central Myanmar with a high urban population and which lacks a central waste water management system, a solid and domestic waste disposal water process. The Eastern Part of the City is very near to the western margin of the Eastern High Land and Western Part is situated with Ayeyarwaddy River. Mandalay city is in an alluvial setting (Holocene Age) and bed rock is predominant by sand stone, silt stone and gravels.

Objective of study

The first ambition of my present research is to know the founder of the water cannels is Min Gyi Bo Daw Min Phayar (Badom Min) (1782-1819). The second objective is all of the water cannels are made by the order of Bo Daw Min Phayar, to connect with Ayeyarwaddy River for daily use, transportation and communication for local people who live in our City. Thingazar Creek in now is separate with Ayeyarwaddy River and arrived as domestic waste water disposals channel and flood discharged cannel. The third ambition is to measure and record the water quality along the water cannel. People who live in our city must be understood

to take care for all water channels as environmental conservation point of view, with good ethics.



Scale: 1inch = 1 mile

Figure 1. Location map of Mandalay City (Source; from Water and Sanitary Department, Mandalay City Development Committee)

The following questions are needed for the present research. (1) How the domestic waste water did discharge Mandalay City? (2) What did the waste water quality of Mandalay City? and (3) How did we control, upgrade and maintain for domestic and industrial waste water environment?

Research method

For this research works, mainly important data are taken from Water and Sanitary Department, Mandalay City Development Committee. Moreover water quality measuring data are collected by the volunteer participation with the Vei International, Water Management Project Team.

Thingazar Chaung in Aungmyaythazan township

The starting part of Thingazar Chaung from 22 Street, between 90 and 91 streets nearly from Yaw Atwin Won U Phoe Hlaing Gravestone Campus, Aungmyaythazan Township, north western part of our city. The name derivation of the Thingazar is the monastery name, near the starting part of the Channel. It runs from north to south, within 22 and 26 streets between 90 and 91 streets, Aungmyay-thazan Township. In the ancient time of the Kong Bong Dynasty, King Bo Daw Mintayargyi try to use the Channel is continue from Irrawaddy River for taking and carrying various kinds of rice, beans, peas, crop, vegetables, merchant traditional boats and timber enterprise for transportation and trading for merchendizer. Now Thingazar Creek is separate from Ayeyarwaddy river and arrive to waste disposal channel and very large flood plain area. The starting area is also wide basin name as Alebaung Quarter, very populated area. Chanthagyi Quarter, Shwelongnyunt Quarter, Pwe Gone Quarter and Palaing Quarter are the name as derive from the water boat craft from Ayeyarwaddy River to the Thingazar Chaung. Now he is separated from the Ayeyarwaddy River and arrive as domestic waste water Channels and flood water discharged creek in raining season. The starting part of the Creek is very populated area, common people who live in this area work with Black Smith, Gold Smith, Gold Purifying, Peanut oil and sugar oil industries. So many waste produced from these industries are flow to the Thingazar Chaung. Therefore colour and smell of the water in the starting part of the Creek is very bad. Now Mandalay City Development Committee tries to maintain to upgrade the water quality along the water channel.

Figure 2. Starting part of Thingazar Chaung

Table 1. Water quality and bedrock in the Aungmyaythazan Township

1	Bed rock	dominant with sand-stone and siltstone
2	Water Temperature	30.14 °C
3	PH Value	8.5
4	Electro Conductivity	0.87
5	Turbidite	195
6	Salinity	0.4

Figure 3. Surface Areator on the water cannel of the starting part of Thingazar Chaung

Table 2. Water amount in the canal (dry season)

Location	Aungmyaythazan Township
Width	8.22 m
Depth	3.5 m
Water flowing rate	1400 m^3/hr
Apparatus Surface Areator	8
- Litter Trap	1

(Source : Water and Sanitary Department, Mandalay City Development Committee)

Thingazar Chaung in Chanayethazan township

Thingazar Chaung continues across between 26 and 35 streets between 90 road and 91 road Chanayethazan Township, the middle part of the channel. This area is the middle part of the western zone of our city. Populations are developed all the time. Very large quarter Chanthaya Pagoda and Quarter, Htinwinletywe Quarter, Daewon West Quarter and Paikkyun Quarters are situated on this area. Various kinds of beans, peas, crop and rice are buying, selling, cleaning, grinding, packing and transporting all around the Country. So this campus are well developed every seasons and Thingazar Chaung in this part suffered many kinds of damaged all the time. Very large buildings of groundnut classifying industries, Many peanut grinding industries, automatically rice polishing and groundnut oil producing factories are operated (24 hours) all the time. Therefore unlimited numbers of solid and liquid waste disposal water flow into the Thingazar Chaung.

Figure 4. Middle part of Thingazar Chaung

Table 3. Water quality and bedrock in the Chanayethazan township

1	Bed rock	Mostly siltstone and silt gravel
2	Water Temperature	29.87`C
3	PH Value	7.5
4	Electro Conductivity	1.38
5	Turbidite	89
6	Salinity	0.7

Figure 5. Surface Areator on the water cannel

Table 4. Water amount in the canal (dry season)

Location	Chanayethazan Township
Width	8.22.m
Depth	3.5m
Water flowing rate	1400m^3/hr
Apparatus Surface Areator	8
Litter Trap	

(Source: from Water and Sanitary Department, Mandalay City Development Committee)

Thingazar Chaung in Maharaungmyay township

Thingazar Chaung in Maharaungmyay Township area is arriving nearly to the finishing part, located between 35 Street and 45 Street within 87 roads and 90 road. In this area Thingazar Channel meander near the corner of 38 streets and 89 roads. Masoeyaintaikthit Sarthintaik Monstery is situated on the western part of the Channel. Gemstone market and Gemstone cutting, polishing shop, the name as Maharaungmyay Gemstones Market and Maharaungmyay Football Stadium is located on the eastern part of the meander channel. Well-developed Quarters such as Thanhlyetmaw quarter, Seinpan Quarter and Samon Quarter are profession with leather cleaning, leather polishing industries.

Very populate campus with common people and urban developed area. All gemstone cutting, polishing industries and leather polishing industries produced large amount of waste disposal water, they all flowing to the Thingazar Chaung. So, Mandalay City Development Committee try to upgrade along the Thingazar Chaung as relaxation and development zone, therefore along the eastern and western part are upgrade as nearly recreations area. On the surface of the water level water circulation fans are set up and circulated of water and oxygen arrived to the floor of the whole water body. Thingazar Chaung across the corner of 45 street and 87 road, the Creek arrive to flow to Tatmyaw Inn or Mandalay Kandawgyi (Tetthay Inn).

Figure 6. Finishing part of Thingazar Chaung

Table 5. Water quality and bedrock in the Chanayethazan township

1	Bed rock	Mostly sand stone, gravel and silt stone
2	Water Temperature	30.12`C
3	PH Value	7.6
4	Electro Conductivity	1.19
5	Turbidite	101
6	Salinity	0.6

Figure 7. Surface Areator on the water cannel

Figure 8. Surface Areator on the water cannel.

Table 6. Water amount in the canal(dry season)

Location	Maharaungmyay Township
Width	9.m
Depth	5.8m
Water flowing rate	1300m^3/hr
Surface Areator	18
Litter Trap	1

(Source: Water and Sanitary Department, Mandalay City Development Committee)

General information about the 9 domestic waste water channels in Mandalay City

In Mandalay City, there are nine domestic waste water disposal Channels, they generally started from north to south, nearly parallel with the Ayeyarwaddy river and finally discharged into the Ayeyarwaddy river. They are as follow (1) Shwe Ta Chaung, (7.14 miles). (2) Ngwe Ta Chaung (4.7 miles), (3) Mingalar Myaung, (0.96 miles), (4) Columbo Myaung (3.57), (5) Nadi Myaung (5.78), (6) Payandaw Myaung (7.01), (7) Thingazar Myaung (2.95), (8) Myaunggyi (1.76) and (9) TatMyaw Chaung (2.79) all are list down with from east to west.

Figure 9. Finishing part of the Thingazar Chaung, Mandalay Kandawgyi (Tetthay Inn)

Fig. 10

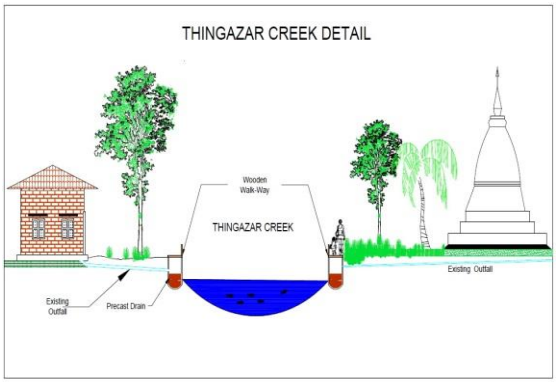
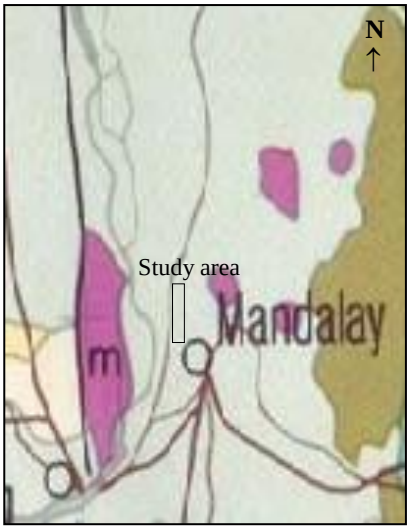


Fig. 11

Figure 10 & 11. Project for Thingazar Creek Development Plan (Source: Water and Sanitary Department, Mandalay City Development Committee)



Scale 1" =1 mile

Explanation

Alluvium – Holocene Age

Figure 12. Geological map of the study area (Source: Myanmar Geosciences Society, 2014)

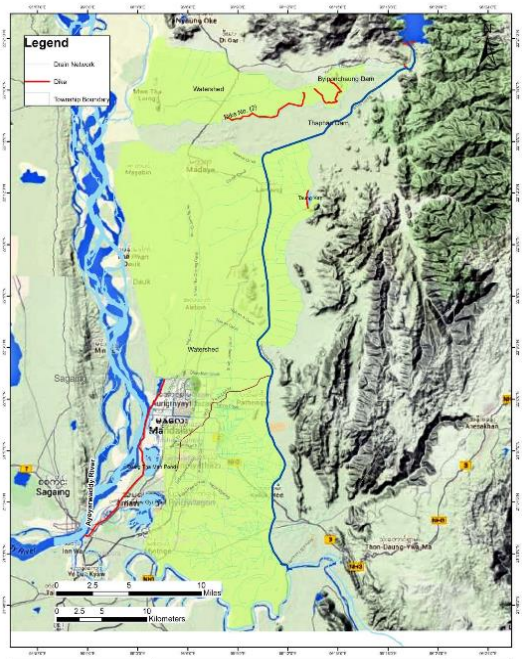


Figure 13. Landsat map of the Mandalay City (Source from Water and Sanitary Department, Mandalay City Development Committee)

Discussion

The first target for making Thingazar Creek is to take rice, peas, beans, various kinds of crop and timber from the Ayeyarwaddy River easily. The Second ambition is for use transportation and communication. (Source; from Hsu Nget, Bodaw Kyain Sar, 2020). The third vision is to easily use fresh water all of the people who live in our city readily and not give for any salary or tax charges. Unfortunately, amazing good ideas of

the first founder of the cannel (Bo Daw Min Phayar) are completely destroyed in the present day. Thingazar Chaung in present day is cut out from the Ayeyarwaddy River and now arrives only for domestic waste water disposal Channel and flood discharged area. Mandalay City Development Committee tries to upgrade Thingazar Chaung with deeply heart and hand as a relaxation area. We must protect and maintain to Thingazar Chaung with good mindset for environmental conservation point of view for our next generation.

Conclusion

The present research is to know the founder of the water cannel is Min Gyi Bo Daw Min Phayar (Badom Min) (1782-1819) for used as daily use, transportation and communication for local people who live in our City. Amazing good ideas of the first founder of the cannel (Bo Daw Min Phayar) are completely destroyed in the present day. Now Thingazar Creek is cut out from the Ayeyarwaddy River and arrives only for domestic waste water disposal Channel and flood discharged area in the raining season. The name derivation of the Thingazar is the monastery name, near the starting part of the Creek. Thingazar Creek discharged 4545 m/hr of the waste water every day. The colour, smell and quality of water in the cannel is very bad. Mandalay City Development Committee tries to upgrade Mandalay City for smart city and clean city. Waste water has been identified as the largest water quality problem in urban cities in most of Southeast Asia, but very little information exits on effects in Myanmar. Thingazar Creek pass across very populated area (western part) of Mandalay City and finally arrive to Mandalay Kandawgyi (Tetthay Inn). Mandalay Kandawgyi is developed as recreation zone now. So, people who live in Mandalay City must be take care for Thingazar Creek. Mandalay City Development Committee tries to upgrade Mandalay City for smart city and clean city. Waste water disposals Channel are only for disposal waste water cannel not for use as garbage. Water quality along the canal are so bad, we would protect and maintained Thingazar Creek with Socio-Economical and Environmental conservation point of view; in there all of the people have good mindset, positive thinking ethics.

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