

Mithi River Regeneration

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Abstract :

MITHI River in Mumbai city is a confluence of tail water discharged off in Powai and Vihar lakes. Mithi River originates from Powai and meets The Arabian Sea at Mahim Creek flowing through residential and industrial complexes of Powai, Saki Naka, Kurla and Mahim over a distance of about 17.84 km. This river is treated like an open drain by the citizens who discharge raw sewage, industrial waste and garbage unchecked. Besides this, illegal activities of washing of oily drums, discharge of unauthorized hazardous waste are also carried out along the course of this river. The organic waste, sludge and garbage dumping has reduced the water carrying capacity of the Mithi river. The water with mixture of sewage and Industrial waste is a threat to marine life and the river is showing signs of total loss of such support system. Preliminary survey indicates that the pollution levels have reached an alarming stage. **Govt. of India** intends to take action and plan the control of pollution in Mithi river and bring back the quality to its best uses. To assess probable load of pollution in the Mithi river and plan to improve the quality of water in the river as well as its carrying capacity, a reconnaissance survey is proposed by Maharashtra Pollution Control Board (MPCB). Our plan is to build an underground canal system beneath the road adjacent to Mithi River at minimum cost and to reduce its pollution and to control the water pollution caused by people living in that area, also to disallow the water-borne diseases to spread.

KEYWORDS: *Mithi River, unauthorized hazardous waste, organic waste, Maharashtra pollution control board (MPCB), water pollution.*

INTRODUCTION:

26 JULY 2005: heavy downpour in Mumbai. A “tropical depression” wedged itself over the central-northern suburbs, and above the Mithi River. By the end of the first week, the official death toll was 500, though many put it close to 1,000. Mithi River attracted city’s attention. Consequently, Mithi restoration plan came out for implementation under MRDPA5 created specifically for its development. Remedial efforts and reforms of government have given the river an optimism that life will bloom again and the river will get its identity back. Maharashtra pollution control

Board (MPCB) surveyed Kherani Road area in Saki Naka. Officers were greeted by large volumes of poisonous wastes and plastics choking open storm water drains and foul smelling waters flowing onto the street in several places. The survey found hundreds of illegal units involved in cleaning plastic, recycling lead from batteries and manufacturing dyes - all processes that give out harmful effluents. To make a start, MPCB issued show cause notices to a handful of worst offenders and later backed it up with summons to a hearing. None of the respondents appeared at the hearing. When MPCB officials went back to the site, they realized that the fly-by-night operators had shifted base out of their earlier shack

and now possibly worked from another gala in the same market place. Unable to deal with small time crooks, the MPCB passed the buck to the Brihan Mumbai Municipal Corporation (BMC). The corporation however was not able to demolish the structures as the shacks themselves were legal while the operators carrying out illegal operations were tenants. A mere technicality and lack of interdepartmental co-ordination is poisoning the lives of thousands in Saki Naka till today even. Scores of such cases are pending before the judiciary where the defaulters fight for time and the administrators appear laidback. The river meanwhile rots. Illegal hutments proliferate along the banks of the Mithi, particularly in its middle reaches.

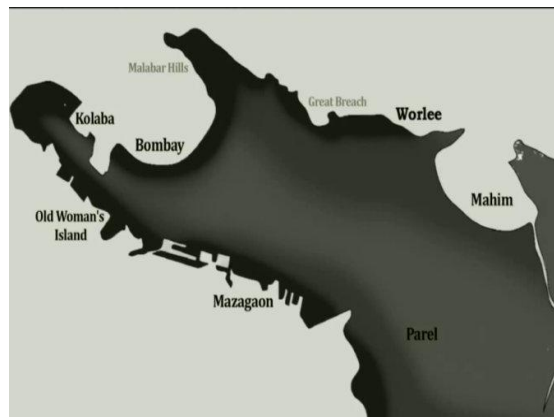
The river has been squeezed tight on both sides. Devoid of a flood plain, the littlest unforeseen rainfall causes chaos. The river needs desperately to be widened, and for that the slums will have to go.

RECLAMATION ON MITHI RIVER:

The seven islands Kolaba, Bombay, Old Womans Islands, Mazagoan, Worlee Mahim, Parel were brought together by doing reclamation and the present financial capital of our country Mumbai was formed.



Seven islands



Seven islands brought together

DAMAGE DUE TO THE RIVER:

Transport statistics of the city

52 local trains damaged.
37,000 rickshaws & 4,000 taxis spoilt.
900 BEST buses damaged.
10,000 trucks and tempos stranded.
1000 peoples lose lives during floods in every year.
Railway tracks get damaged.

For the first time ever, Mumbai's domestic and international airports (including Chhatrapati Shivaji International Airport, Sahar and Juhu aerodrome) were shut for more than 30 hours due to heavy flooding of the runways, submerged Instrument Landing System equipment and extremely poor visibility. Over 700 flights were cancelled or delayed. The airports reopened on the morning of 28 July 2005. Within 24 hours of the airports becoming operational, there were 185 departures and 184 arrivals, including international flights. Again from early morning of 31 July, with increase in water logging of the runways and different parts of Mumbai, most of the flights were indefinitely cancelled.

Rail links were disrupted, and reports on late evening of 30 July indicated cancellation of several long distance trains till 6 August 2005.

The Mumbai-Pune Expressway, which witnessed a number of landslides, was closed the first time ever in its history, for 24 hours.

According to the Hindustan Times, an unprecedented 5 million mobile

And 2.3 million MTNL landline users were hit for over four hours.

According to the .in registrar (personal communication), the .in DNS servers in Mumbai had to be reconfigured because the servers were not operational.

The financial cost of flood was unprecedented and it caused a stoppage of entire commercial, trading, and industrial activity for days. The floods caused a loss around Rs. 450 Crores. Impact of the floods was manifested in a variety of ways.

People living in near the region of river directly throw the garbage into the river and small scale industries, factories dump garbage into the river which has made it a dumping yard.

Harmful water borne diseases gets spread because of the sludge which gets formed in river. Water remains clogged in certain places because of sludge formation.



Present state of Mithi river

GOVERNMENT MEASURES:

The Brihan Mumbai Storm water Disposal System (BRIMSTOWAD) is a project planned to overhaul Mumbai's water drainage system. The estimated budget for implementing the project is Rs. 12 billion (approx. 300 million US dollars) as of August 2005. Such a high-budget project would require funds from the Central Government. The drainage system failed in Mumbai.

In 1990, a project costing approximately 600 crores rupees was proposed by UK based consultants hired by BMC. But the project was rejected by BMC on the grounds that it was too costly.

The government has spent 1.43 billion in 1998 for increasing the carrying capacity of drainage systems and as well as to set up pumps inside the system for increasing the discharge through drains which previously used to flow by gravity. But the project was cancelled because the project cost had gone up by 12 billion in 2005.

The city drainage system is around 100 years old. It comprises 480 km of closed drains and 29,000 storm-water drains that discharge water and sewerage into outfalls through pumping stations. However, these drains have proved ineffective during rains.

Pumping out water continuously from low-lying areas: There are 17 low-lying areas in Mumbai, including Maratha Mandir (Bombay Central), Mahalaxmi railway track, Phitwala Lane (outside Elphinstone station), Parel TT, Dharavi, Milan subway and Khar subway. Actually culverts were converted into these subways for easy flow of traffic. These areas need to be isolated from other drains and water should be pumped out from here with large pipes.

All the above measurements were taken by the Indian government since 2002 but the disaster like 25th July, 2006 happened. Here rises the need of our topic.

THE IDEA:

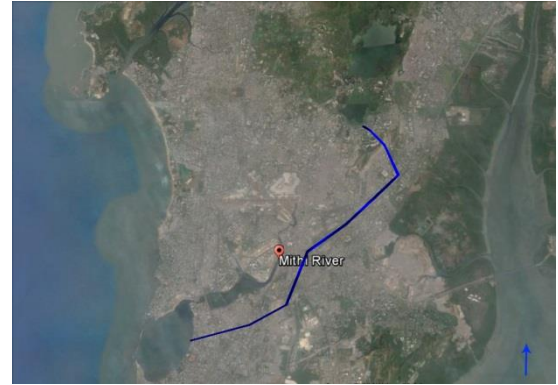
We are planning to build a tunnel system beneath the Mumbai city so that flow of Mithi River can be controlled and can be directly sent to the sewage treatment plants or the Arabian Sea. If the tunnel system is constructed then the tidal flow can be controlled and loss of many people can be saved since the river will flow underground the people will not dump any garbage into the river and water borne diseases can be prevented. The small scale industries and factories will also not be able to throw harmful chemical waste and dumping of their garbage's can also be prevented, thus water pollution can also be avoided.



EXECUTION:

The path selected in map is of 10Km approx and it will be digged for diversion of traffic till the designed depth box culvert structure will be constructed underground in which one side pipe line will be placed and

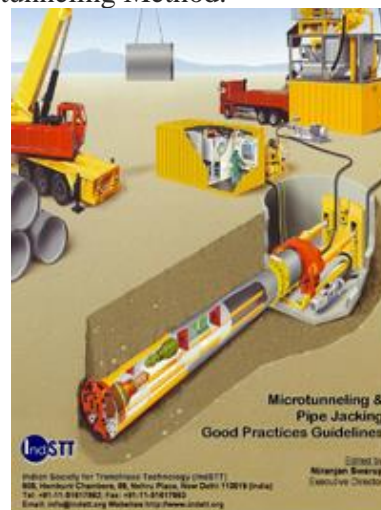
sufficient amount of space will be left for maintenance and accessing pumps. Pumps will be placed at certain distances to control the discharge also if any pipeline is damaged or burst, the water can be stopped using pumps and the repair work can be done. Also pumps will help us to control the discharge at the end of the pipeline where the water will be allowed to enter the Mahim creek without disturbing the residential area. Also to avoid any flood possibilities.



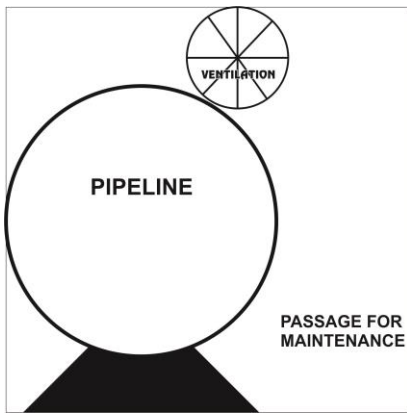
Our route of constructing the tunnel

CONSTRUCTION:

Prestressed culverts will be placed underground and pipelines will be provided within them. Huge pipelines which can withstand the river flow will be used. The culvert will consist pumps attached to the pipes. The method used for tunneling will be Microtunneling Method.



Microtunneling Machine



Our designed structure

COSTING:

Bituminous Road:-

Rate -2Cr./Lane/Km- 6 Lanes

Costs- 12 Cr./Km = 252 Cr. Approx.

8meter dia. pipe :-

Rate -18 Cr./Km

18 Cr. x 21Km = 378 Cr. Approx.

Cost of culvert including their application:- 380 Cr.

Total Budget :- 1010 Cr. Approx.

ADVANTAGES:

- If the underground tunnel will be constructed then water pollution will be decreased.
- Each year government spends crores of rupees to widen the path of the river, but if that amount of money is utilized in our project then it would help to save a lot amount of our country.
- Largest slum of the world can be eliminated and conditions in that area can be improved for future development.
- The project will be one time investment.
- The project will provide employment.
- Floods can be controlled.
- Number of lives can be saved.
- The project will replace the 100 years old drainage system of Mumbai city and we will be one step closer to our Prime Minister's goal "GREEN INDIA CLEAN INDIA."

CONCLUSION:

If this project is considered and sanctioned by the government, then a new era of future development will begin. As the government will be able to focus more on other aspects as well as a lot of money of our country will be saved. Because all money utilized in our project will be one time investment and sustainability of the tunnels will be more than enough for coming 100 years. This project will serve as a boon for coming years. This is a concept project whose sanctioning will depend on government.

TUNNEL DESIGN:

Design discharge- 12846 mld.
Diameter of pipe proposed- 8m
Slope- 1 in 2000
Material used- cement concrete
Max. velocity achieved- 2.96 m/s.
Min velocity achieved at 2m depth- 2.057 m/s.
Min velocity achieved at 1m depth- 1.51 m/s.

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- **Mithi River Development and Protection Authority.**
- **Maharashtra Pollution Control Board (M.P.C.B.).**