



City Sanitation Plan

Ahmedabad
December 2012



Prepared for



**Ahmedabad Municipal
Corporation**



Prepared by



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The Urban Management Centre is a not-for-profit organization based in Ahmedabad, Gujarat, working towards professionalizing urban management in India and South Asia. UMC provides technical assistance and support to Indian state local government associations and implements programs that work towards improvement in cities by partnering with city governments. UMC builds and enhances the capacity of city governments by providing much-needed expertise and ready access to innovations on good governance implemented in India and abroad. UMC is a legacy organization of International City/County Management Association (ICMA) and hence is also known as ICMA-South Asia.

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Abbreviations

ADB	Asian Development Bank
AMC	Ahmedabad Municipal Corporation
AMTS	Ahmedabad Municipal Transport Service
APWA	American Public Works Association
ATIRA	Ahmedabad Textile Industry's Research Institute
AUDA	Ahmedabad Urban Development Authority
AWAG	Ahmedabad Women's Action Group
BOO	Build Operate Own
BPMC Act	Bombay Provincial Municipal Corporations Act
BRTS	Bus Rapid Transit System
C&D	Construction & Demolition
CA	Chartered Accountant
CBO	Community Based Organisation
CEPT	Centre for Environmental Planning Technology
CETP	Common Effluent Treatment Plant
CPHEEO	The Central Public Health and Environmental Engineering Organisation
CSP	City Sanitation Plan
CSR	Corporate Social Responsibility
cu.m.	Cubic Metre
EDI	Entrepreneurship Development Institute
FGD	Focussed Group Discussion
GIDC	Gujarat Industrial Development Corporation
GIS	Geographical Information System
GLI	Gandhi Labour Institute
GMFB	Gujarat Municipal Finance Board
Gol	Government of India
GPCB	Gujarat Pollution Control Board
GPRS	General Packet Radio Service
GPS	Global Positioning System
H&K	Hotels' & Restaurants' Kitchen
ha	Hectare
HH	Household
IEC	Information, Education and Communication
IIM	Indian Institute of Management
INR	Indian Rupee
ISRO	Indian Space Research Organisation
JnNURM	Jawaharlal Nehru National Urban Renewal Mission
km	Kilometre
KSSM	Kamdar Swasthya Suraksha Mandal
lpcd	litres per capita per day
MBA	Masters of Business Administration

MCD	Municipal Corporation of Delhi
MHT	Mahila Housing Trust
ML	Million Litres
MLD	Million Litres per Day
mm	Millimetre
MoEF	Ministry of Environment & Forests
MOU	Memorandum of Understanding
MoUD	Ministry of Urban Development
MSL	Mean Sea Level
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
MT	Metric Tons
NA	Not available
ND	Not defined
NGO	Non Government Organisation
NGSY	Nirmal Gujarat Shauchalay Yojana
NID	National Institute of Design
NOC	No Objection Certificate
NRCP	National River Conservation Plan
NRW	Non Revenue Water
NUSP	National Urban Sanitation Policy
O&M	Operation and Maintenance
OD	Open Defecation
OWC	Organic Waste Converter
PGR	Public Grievances Redressal
PHS	Public Health Supervisor
PPP	Public Private Partnership
PRL	Physical Research laboratory
RCC	Reinforced Cement Concrete
RDF	Refuse Derived Fuel
RWA	Residents' Welfare Association
SEWA	Self-Employed Women's Association
SI	Sanitary Inspector
SLB	Service Level Benchmarks
SMC	Sound Material Cycle
SOP	Standard Operating Procedures
SPERI	Sardar Patel Economic Research Institute
SPIPA	Sardar Patel Institute of Public Administration
SPV	Special Purpose Vehicle
sq.km.	square kilometre
sq.m.	square metre
SSI	Sanitary Sub Inspector

STP	Sewage Treatment Plant
SWD	Storm Water Drainage
SWM	Solid Waste Management
TPD	Tons Per Day
ULB	Urban Local Body
UMC	Urban Management Centre
USD	United States Dollar
USEPA	United States Environment Protection Agency
WDS	Water Distribution Station
WoW	Wealth out of Waste

Acknowledgements

Urban Management Centre appreciates the support received from Ahmedabad Municipal Corporation, in particular from Dr. Guruprasad Mohapatra, IAS, Municipal Commissioner, Mr. I K Patel, Deputy Municipal Commissioner; Mr. Tarun Lad, City Engineer; Mr. Anand Patel, Additional City Engineer, SNP Cell, Mr. Naresh Rajput, Director, SWM Department; Mr. Prashant Pandya, Deputy Director, SWM Department; Ms. Triptiben and Ms. Bhartiben. We also extend our sincere thanks to City Sanitation Task Force (CSTF) formed for the purposes of preparation of this CSP and all other AMC departments for providing valuable inputs and inputs for preparation of this report.

In addition to AMC, UMC is also thankful to the following institutions for their contributions. Mahila Housing Trust; Gujarat Urban Informal Economy Board; Gujarat Pollution Control Board (GPCB); Navsarjan, Sanand; Kamdar Swasthya Suraksha Mandal (KSSM); CEE, Ahmedabad Women's Action Group (AWAG); Excel Industries, SEWA and their member waste pickers, Abellon Clean Energy .

I would like to acknowledge UMC's Project Team who worked closely with AMC team, especially Meghna Malhotra and Anurag Anthony. Other UMC staff who worked on the process tracking of solid waste are Hemang, Shabana, Shivangi, Vinay, Ankita, Yatish and Usha.

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Disclaimer

The scope of this report is to present the results of our detailed analysis and understanding of sanitation situation in Ahmedabad Municipal Corporation (AMC) jurisdiction. Our conclusions are based upon information drawn from research of the relevant sectors, data collected from AMC, discussions with the respective departments and our own sector expertise. No representation or warranty, express or implied, is given by Urban Management Centre (UMC) or any of its respective partners, officers, employees, or agents as to the accuracy or completeness of the information, data or opinions provided to UMC by third parties.

In terms of identifying various sectoral issues contained in this document, they represent only one perspective of our understanding and our interactions with various stakeholders of the City. We have neither carried out an audit or due diligence of the City nor a viability assessment of the assets or claims made by the ULB.

In the course of our assignment, we were provided with both written and verbal information. Nothing has come to our attention to cause us to believe that the facts and the data provided by AMC are untrue or incorrect. However, no responsibility is assumed for the authenticity of the information furnished by AMC, neither verbal nor written. It is believed to be reliable and has not been surveyed or independently verified by UMC. Some of the data provided/ derived by AMC is nearest estimate based on field knowledge and not based on any scientific surveys or studies.

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With this report, UMC intends to provide only professional advice to AMC on various sanitation and related issues identified herein. This report also presents recommendation on what UMC believes is the most suited solution for sanitation issues identified, amongst various other alternatives that may exist.

Preamble

Ahmedabad Municipal Corporation invited Urban Management Centre for preparation of City Sanitation Plan for AMC jurisdiction in July 2011. UMC conducted numerous visits since July 2011 for the purposes of data collection, field visits, interaction with ULB officials, citizens, focussed groups, etc. In addition to data collection, detailed site visits were conducted at the following locations to assess the status of municipal services:

- Waste collection points in residential, commercial, and special (including meat & vegetable) market areas; formal and informal open dumping sites in and around the city, etc.
- Natural water bodies including *nalas*, river, lakes, ponds, etc. to assess the environmental degradation caused due to lack of municipal sanitation services in the city.
- Public toilets, urinals and open defecation (OD) spots
- Areas facing problems of flooding, water logging, etc.
- Special areas such as railway station, Gujarat University, other campuses of large institutional areas, GIDC estates in the city, etc.
- Some select outgrowths/ contiguous settlements to the city

Other site visits included areas such as the slums, residential areas, municipal civic centres, retail and wholesale markets, health and educational institutions, etc.

The purpose of these detailed field visits was to establish a qualitative relationship between the statistical details provided by the ULB with the actual ground realities, which in many cases, were found to be in conflict with each other.

In congruence with guidelines laid by NUSP, AMC conducted the City Sanitation Task Force's first Consultation Workshop on February 21, 2012. Based on the stakeholder's feedback, their vision for development of their city over the next 25 years, and their priorities, first draft of the proposals to fulfil any gaps at AMC's end in sanitation services were then prepared and a broad sector wise investment was estimated for the next 25 years. Based on the verification of collected data by AMC, UMC conducted further studies to summarise the findings and present proposals to fill any gaps in sanitation services.

This Final City Sanitation Plan Report presents the a) sector wise assessment of AMC' sanitation services, b) stakeholder's feedback for improvement of sanitation in the city, c) proposals under this CSP for fulfilling the gaps, and e) a broad cost estimate for all the proposals.

1. Introduction to National Urban Sanitation Policy

The Government of India launched its National Urban Sanitation Policy in November 2008 with the goal of making India “community-driven, totally sanitized, healthy and liveable cities and towns”. The policy advocates that all cities would become open defecation free, all human wastes and liquid wastes will be collected and safely treated and adequate resources will be available for the operation and maintenance of the sanitation facilities.

As sanitation is a state subject, states would be required to develop state sanitation strategy that articulates its vision for accomplishing the goals of the National Urban Sanitation Policy. Cities which are responsible for sanitation will be required to develop city sanitation plans, implement and maintain the infrastructure facilities.

Sanitation is defined as safe management of human excreta, including its safe confinement treatment, disposal and associated hygiene-related practices.

While this policy pertains to management of human excreta and associated public health and environmental impacts, it is recognized that integral solutions need to take account of other elements of environmental sanitation, i.e. solid waste management; generation of industrial and other specialized/ hazardous wastes; drainage; as also the management of drinking water supply.

The Millennium Development Goals (MDGs) enjoin upon the signatory nations to extend access to improved sanitation to at least half the urban population by 2015, and 100% access by 2025. This implies extending coverage to households without improved sanitation, and providing proper sanitation facilities in public places to make cities open defecation free.

Vision

The vision for Urban Sanitation in India is:

All Indian cities and towns become totally sanitized, healthy and liveable and ensure and sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women.

1.1. Concept of Totally Sanitized Cities

A totally sanitized city will be one that has achieved outputs or milestones specified in the National Urban Sanitation policy, the salient features of which are as follows:

- Cities must be open-defecation free and provide access to toilets for poor people.
- Must eliminate the practice of manual scavenging and provide adequate personnel protection equipment that addresses safety of sanitation workers.
- All wastewater should be safely collected, treated and disposed.
- Recycle/reuse of treated wastewater for non-potable purposes should be implemented wherever possible.
- Solid waste collected and disposed safely.

- Services to the poor and systems for sustaining results.
- Improved public health outcomes and environmental standards.

1.2. Need for City Sanitation Plans

The City Sanitation Plan (CSP) is aimed at developing and maintaining a clean, safe and pleasant physical environment to promote social, economic and physical well-being of all sections of the population. It encompasses plan of action for achieving 100% sanitation in the city through demand generation and awareness campaign, sustainable technology selection, construction and maintenance of sanitary infrastructure, provision of services, O&M issues, institutional roles and responsibilities, public education, community and individual action, regulation and legislation.

The principal components of city-wide approach include:

- a) Collection and sanitary disposal of wastes, including solid wastes, liquid wastes, excreta, industrial wastes, clinical and other hazardous wastes;
- b) Storm water drainage;
- c) Cleansing of thoroughfares, markets and other public spaces;
- d) Environmental sanitation education;
- e) Inspection and enforcement of sanitary regulations;
- f) Monitoring the observance of environmental standards.

The City Sanitation Plans will be prepared after assessing the situation analysis and with wide consultation with stakeholders. The Plan will be based on the following considerations:

- To adopt a demand-based strategy and community participation in planning, implementation and management of sanitation infrastructure.
- To adopt locally suitable methods, technology and materials, and provide necessary facilitation support to the Municipal Corporation/ Municipality.
- To encourage community and private participation and define their role in creation and maintenance of the sanitation infrastructure, and thereby ensure a sense of ownership.
- To ensure coordination between various departments working in the field of water supply and sanitation, such as health, education, public health and engineering department, industry, environment, transport, pollution control board, etc.
- To ensure an optimum use of funds allocated by the 12th and 13th Finance Commissions for solid waste management.
- To coordinate various externally aided projects for their optimum results.

In the City Sanitation Plan, it has taken several steps to improve the quality of life of its urban population, with the special focus on urban poor. It has taken several steps towards this endeavour and is continuing to do so. Provision of universal access to safe drinking water and sewerage facilities is a prime need to enhance quality of life in a community, especially of the urban poor.

Annexure 2 Growth of Sewerage Network in Ahmedabad City



Annexure 3 Administrative Map of Ahmedabad

Sanitation Assessment Study

Ahmedabad

Administrative Map

— AMC New Boundary

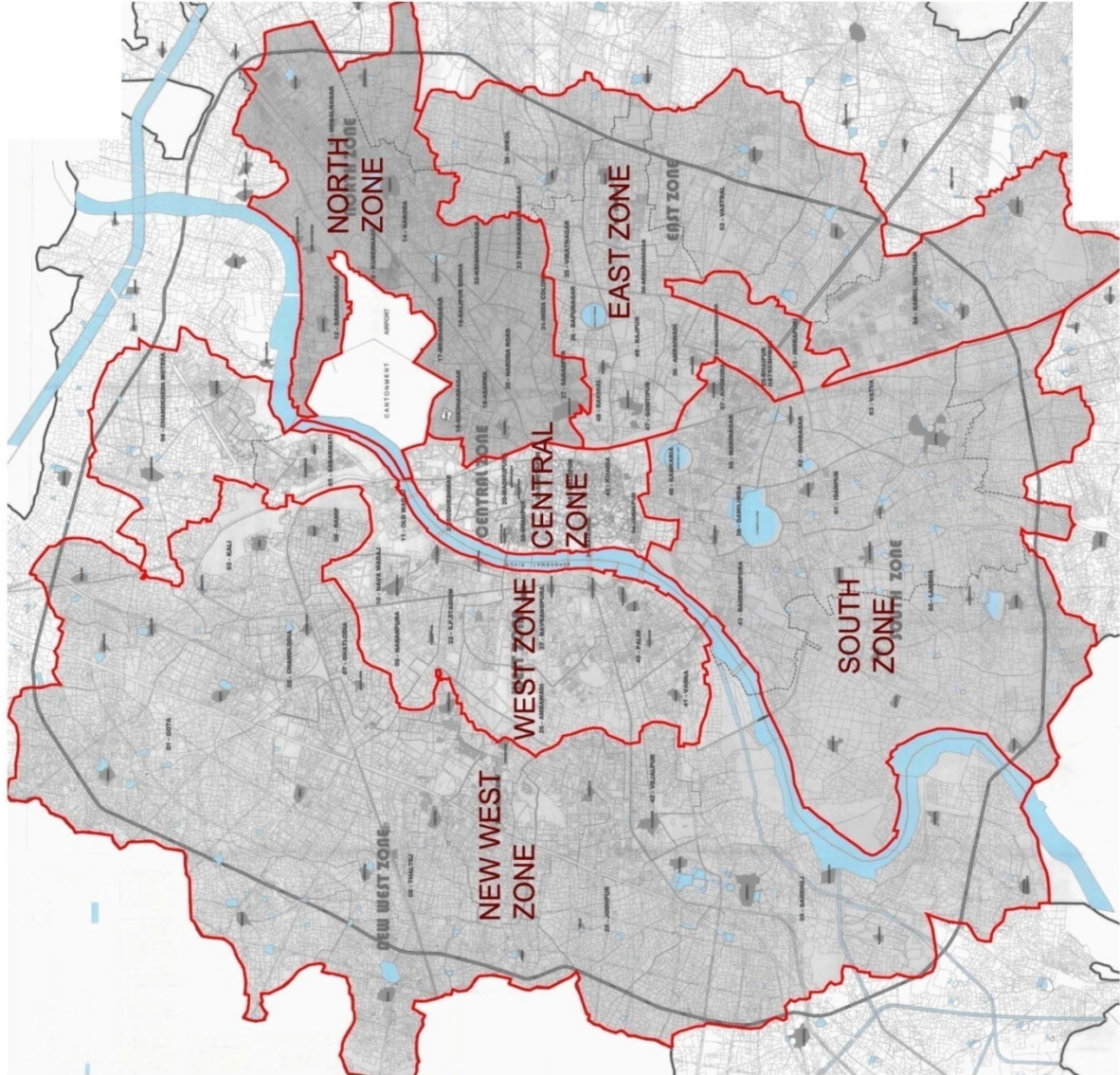


Ahmedabad Municipal Corporation

Prepared By



Urban Management Centre



The drawings are not to scale. All information provided in the maps by AMC. UMC has not conducted any independent mapping or auditing of information provided by AMC.

Annexure 4 Existing Sewerage Network Map of Ahmedabad

Sanitation Assessment Study

Ahmedabad

Sewerage Network Map

- Water Body
- Area covered with Sewerage Network
- Roads
- AMC New Boundary



Ahmedabad Municipal Corporation

Prepared By

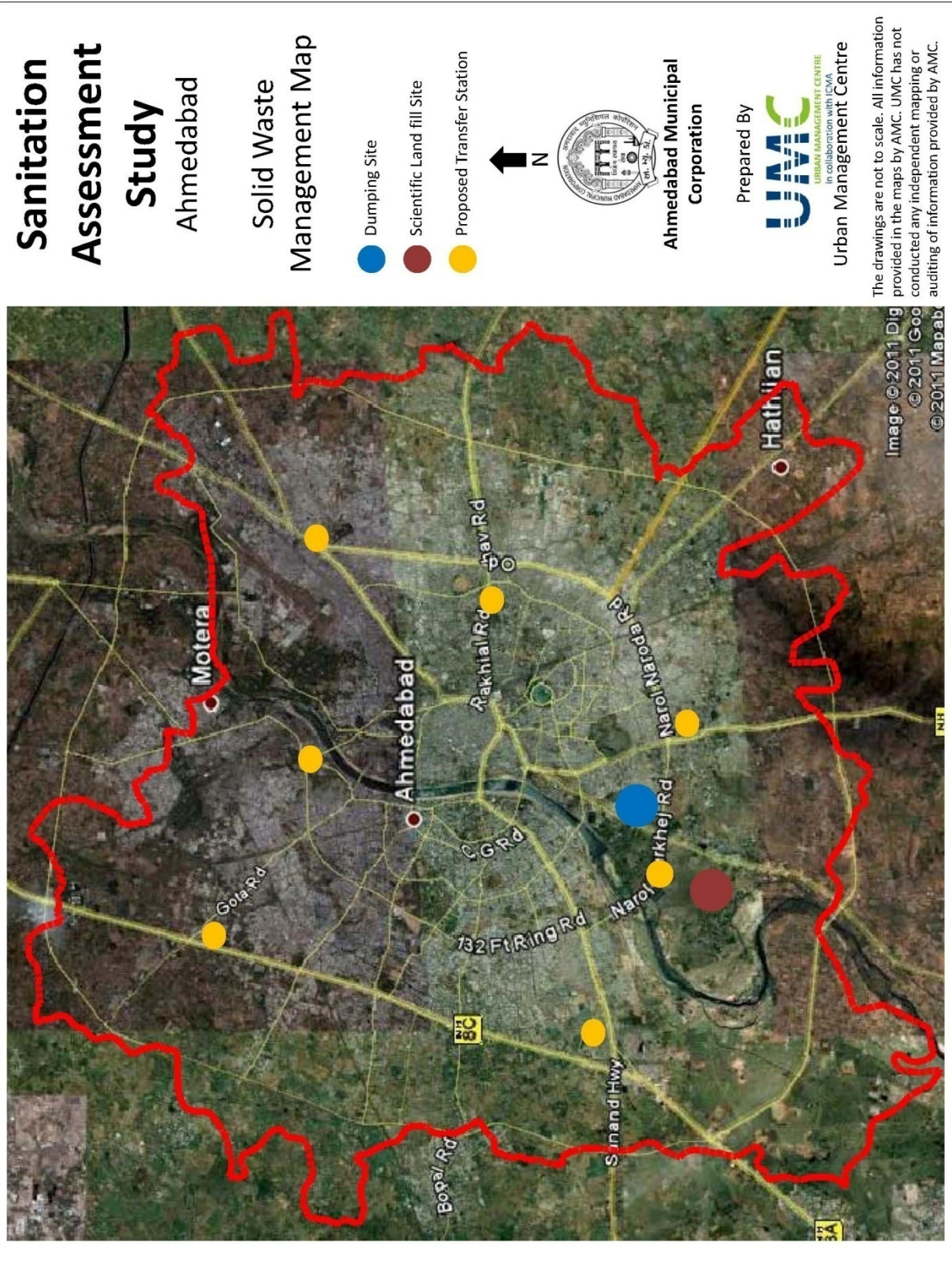


Urban Management Centre



The drawings are not to scale. All information provided in the maps by AMC. UMC has not conducted any independent mapping or auditing of information provided by AMC.

Annexure 5 Map showing Solid Waste Management Key Installations



Annexure 6 Slum Location Map of Ahmedabad

Sanitation Assessment Study

Ahmedabad

Slum Location Map

- Slum location
- AMC New Boundary
- Roads

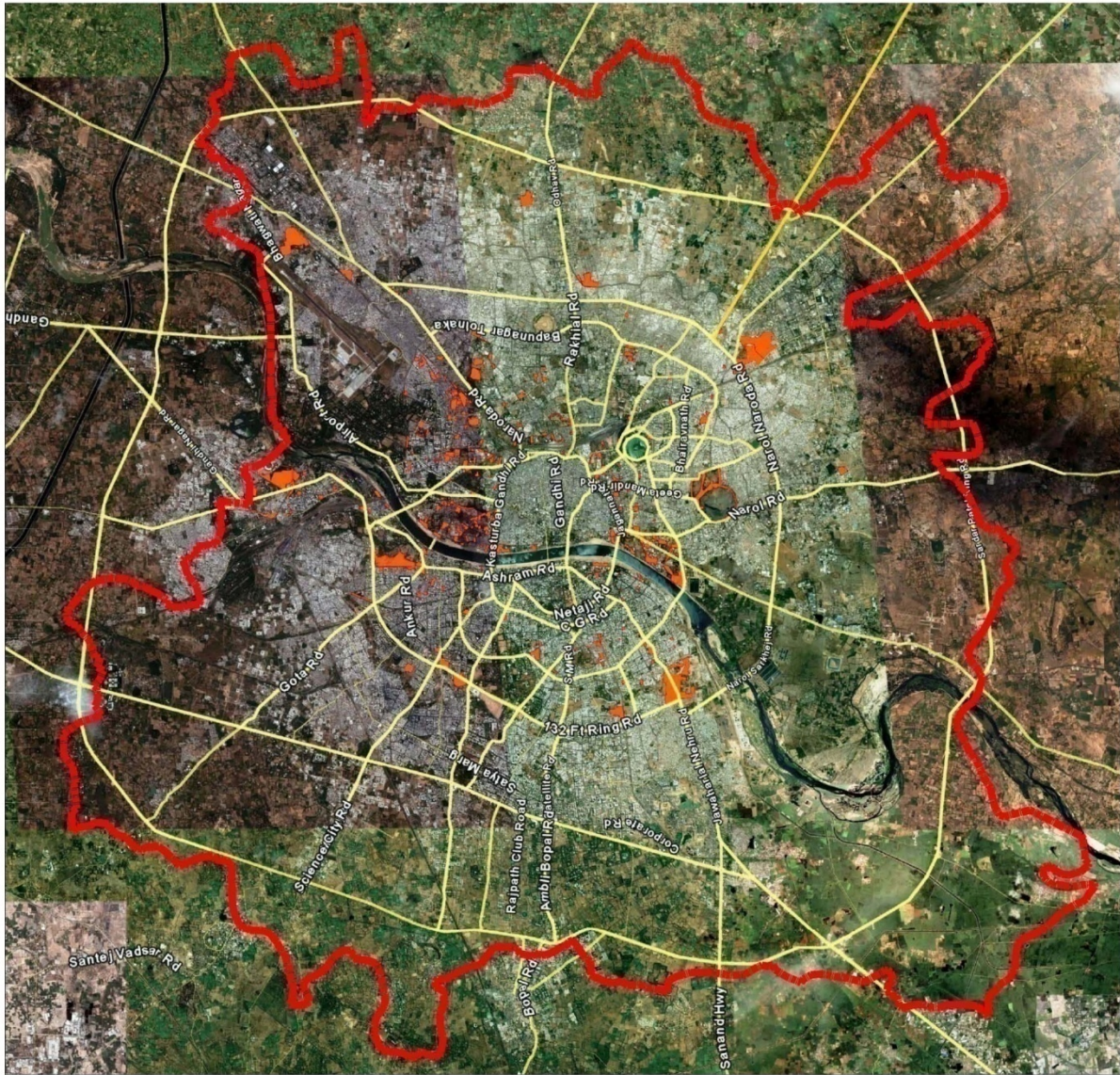


Ahmedabad Municipal Corporation

Prepared By



The drawings are not to scale. All information provided in the maps by AMC. UMC has not conducted any independent mapping or auditing of information provided by AMC



Annexure 7 Coverage of Ahmedabad's Ranking in MoUD's National Sanitation Ranking 2009

A'bad down in the dumps

City Rated 19th Among 25 Cities Surveyed For Cleanliness

AMC IRKED

The poor rating has irked AMC authorities, who have now questioned the adopted methodology to rate the different cities. On the rankings, a senior AMC official said, "The ranking does not give the real picture of the city. AMC authorities have initiated lot of measures including emphasis on construction of more public toilets than pay & use toilets in the city. The solid waste management plan of the city under JNNURM will start showing its results in next six months when the project will be implemented fully."



DRINKING WATER IS SAFE

The drinking water supplied by AMC has been rated safe and passed the stringent laboratory tests conducted by the rating agency. Eighty per cent of the sample municipal water has passed the tests, said professor Madhu Bharti of CEPT University.

Times of India, Thursday May 13, 2010

Kumar Manish | TNN

Ahmedabad: Ahmedabad may have been declared a mega city, but its sanitation is yet to live up to the label.

Open defecation is seen as one of the banes of this city, contributing to its low ranking in a national city rating under the National Urban Sanitation Policy (NUSP) conducted by Union ministry of urban development.

professor and head, department of housing, CEPT University, Madhu Bharti said, "The ratings will motivate the cities to do better in improving sanitation facilities. These are indicators for city governance to wake up and take necessary action for robust sanitation management in place."

"Major public awareness, incentives policy for cleanliness and strict monetary fines should also be adopted by the civic body to maintain the proper hygiene and sanitation facilities in the city. AMC can take a leaf out of the improved sanitation facilities in Surat after the city was hit by plague and floods," added Bharti

"Water quality in water bodies in Nikol and Chandola has high bacterial contamination and low levels of oxygen, while Sabarmati riverfront project and Kankaria lakefront development has improved on its water quality", she said.

Three agencies — Centre for Environmental Planning & Technology (CEPT) University, Ahmedabad, AC Nielsen, Development & Research Services Pvt Ltd, New Delhi, were involved to assess the status of sanitation in the cities.

Director of UMC-ICMA which was also involved with CEPT University in rating exercise, Manvita Baradi, said, "The sanitation facilities in urban slums in the city are in deplorable conditions, either the public toilets facilities are non existing or not user friendly."

"The city needs a ward level sanitation action plan to improve the situation on ground and also regular monitoring of municipal waste disposal system," said Baradi.

Rank	City	Marks Scored
1	Chandigarh	73.48
2	Mysore	70.65
3	Surat	69.08
9	Rajkot	56.11
19	Ahmedabad	50.28

Ahmedabad was ranked 19th among 25 major cities on cleanliness, in the country. Also, the city scored poorly in universal access to toilets for all and in proper wastewater treatment, recycle & reuse of municipal solid waste, and in treatment and safely disposal of total solid waste generation in the city.

Even cities like Jamshedpur, Bidhannagar in Kolkata, Kanpur and Shillong in Meghalaya have fared better than Ahmedabad in sanitation parameters in the survey.

Surat and Rajkot beat Ahmedabad to fare among top ten clean cities in the country. The rating task was conducted across 423 urban conglomerates across the country to create awareness on hygienic conditions in urban areas.

On the Ahmedabad ratings,

Times of India, Thursday May 13, 2010

3 Gujarat cities in India's 'best sanitised' list

Rajkot stood at 9th rank while Ahmedabad was at 19th spot

DNA Correspondent, AHMEDABAD

Three Gujarat cities have been named among the best sanitised cities in the country by the union government. Diamond city Surat, which was hit by a terrible plague in 1994, has been ranked as the third best sanitised city in the country, while Rajkot and Ahmedabad have been ranked 9th and 19th, respectively.

The ratings are a part of the National Urban Sanitation Policy aimed at making Indian cities and towns more sanitised, healthy and liveable. The ratings are meant to recognise the good performers and to encourage other cities to follow similar sanitary practices.

Topping the list is Chandigarh, followed by Mysore on the second spot and Surat in third place. New Delhi Municipal Council and Delhi Cantonment complete the top five. Rajkot also made it to the top-10 and is ranked ninth, while Ahmedabad, Gujarat's economic capital, has been ranked 19th on the sanitation parameter. But the other cities in the state did not do too well.

Gandhinagar has been ranked 160th, lower than Mehsana (128), Porbandar (145), Nadiad (153), Bhavnagar (154) and Bharuch (155), while Vadodara was ranked even further below at 232nd place.

Manvita Baradi of Urban Management Centre (UMC), one of the organisations that along with Cept conducted the sanitation survey in cities in Rajasthan and Gujarat said it is a matter of pride for Gujarat that three cities from the state have found a place among top 25 sanitised cities in country.

According to Baradi, the recognition will result in the top cities getting priority in sanitation projects from the union urban development ministry.

For a better, cleaner life

Topping the list is Chandigarh, followed by Mysore on the second spot

The ratings are part of the National Urban Sanitation Policy aimed at making cities and towns more sanitised, healthy and liveable

According to the Urban Management Centre, the recognition will result in top cities getting priority in sanitation projects from the union urban development ministry

A'bad needs to improve, p2

DNA. 12 May 2010

'A'bad needs to improve solid waste management'

Surat's USP is maintenance and monitoring of system to keep city clean

NIYATI RANA

Ahmedabad, regarded as one of the fastest growing cities in Gujarat and the leader in solid waste management practices, was jolted when the Union ministry ranked it 19th among better sanitised cities in India. The city civic body has been seen as a leader in solid waste practice, but it has been found

to lag behind Surat and Rajkot in Gujarat. Manvita Baradi of Urban Management Centre (UMC) — which had conducted the survey for identifying better sanitised cities in Gujarat and Rajasthan, along with CEPT — said that Ahmedabad needs to improve upon solid waste management.

"The main setback for Ahmedabad comes in its denizens' habit of littering. We also found that solid waste management and disposal is not very satisfactory in Ahmedabad. Probably, the situation is like this because a lot of new areas have been merged with the AMC, causing drainage

'The lesson from Ahmedabad is that only developing a system, i.e. public toilets, is not important; propagating its use is equally important'

and sanitation problems," said Baradi. She added, Ahmedabad has public toilets but its use is nominal, making it useless in maintaining hygiene. Open defecation is

thus seen in Ahmedabad.

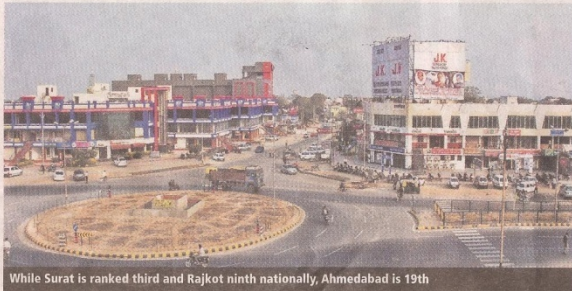
She said that the AMC has done a lot of cosmetic work and actual development has been left behind. Praising Surat's solid waste system, Baradi said it has not only developed a good management system but has also maintained and monitored it. "Surat civic body has made it a point to fine denizens if they flout norms and maintain a system to keep city clean. The lesson from Ahmedabad is that only developing a system, i.e. public toilets, are not important; propagating its use is equally important," said Baradi.

CITY

| AM | THURSDAY, MAY 13, 2010 11

Ahmedabad needs to 'clean up'

Just having public or pay-and-use toilets is not enough; they have to be well-maintained too: CEPT prof who rated city for sanitation



While Surat is ranked third and Rajkot ninth nationally, Ahmedabad is 19th

DHWANI PATHAK

Ahmedabad ranked 19th among best sanitised cities in the country. It was beaten by Surat which ranked third and Rajkot which stood 9th in the list. The survey was conducted in 423 class-I cities. Garbage collection, cleanliness and sewage management were some of the

criteria that was taken into consideration said Prof Madhu Bharti of CEPT university. The varsity was one of the three agencies who conducted the survey for the National Rating and Award Scheme for Sanitation for Indian Cities. Bharti says, "This survey has set a benchmark. It will act as indicator to a city's growth." It was calculated out on the basis

of three parameters: output indicators, process indicators and outcome indicators.

Bharti says, "The first indicator talks about the services available. This carried 50 marks. It factors in the number of people who defecate in the open (5-8% in Ahmedabad), how sewage is managed and treated. The amount of littering that takes place (Surat trumped Ahmedabad and Rajkot here)."

'COLLECT GARBAGE MORE THAN ONCE IF NEEDED'

She continues, "If more waste is generated at a particular collection centre, it has to be cleaned more than twice a day. There cannot be a blanket concept for all."

Process indicators is about proper documentation. "We are doing better in this but

are not as good as Surat," she says.

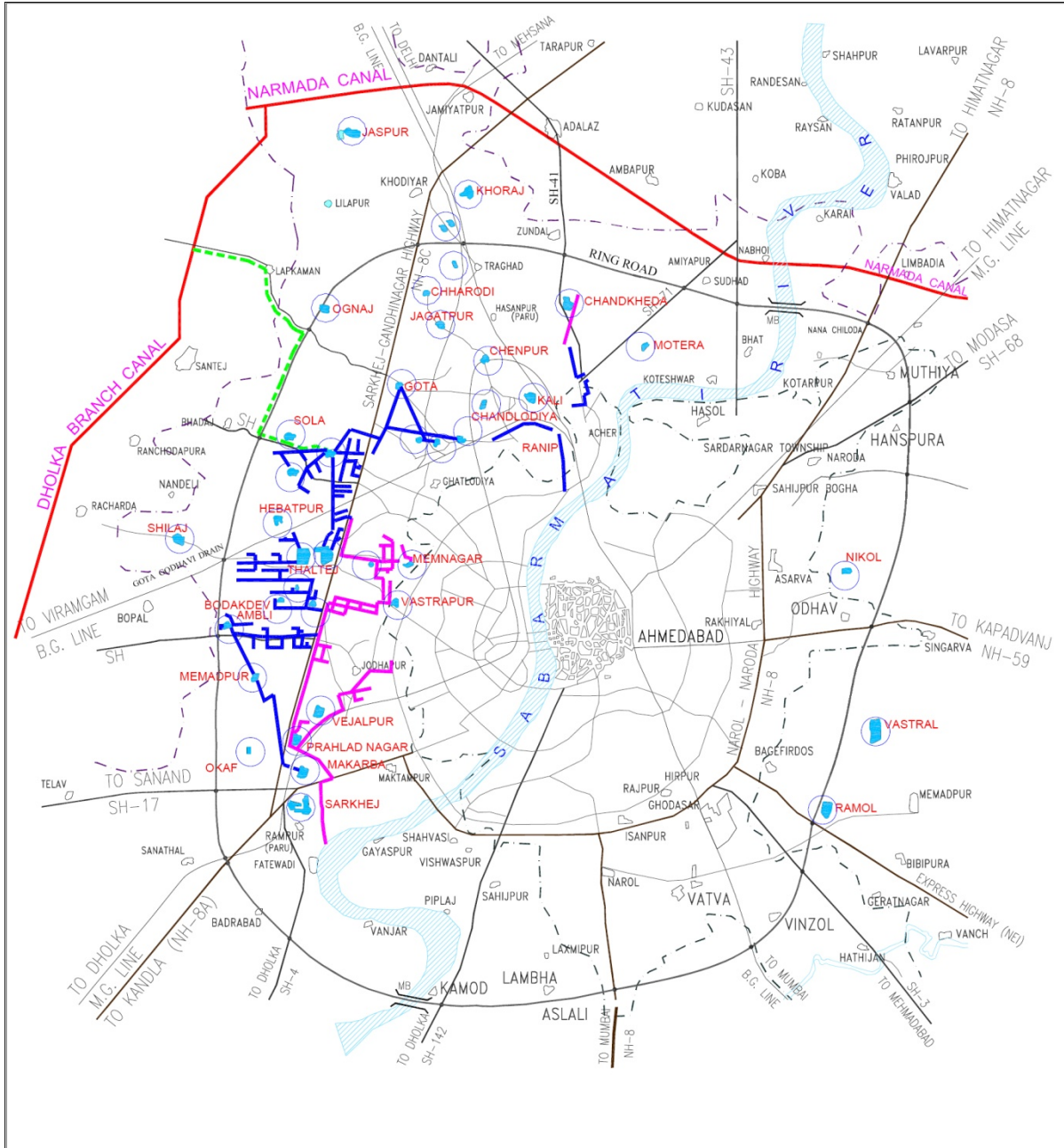
The outcome indicator is about the quality of water. This is not only about the drinking supply but also surface waterbodies. "We collected 25 samples including those from Vastrapur lake and Kankaria lake," says Bharti. Mehsana got lucky in this third category as it does not have any surface waterbody and automatically per-

formed well.


"Just having public or pay-and-use toilets is not enough, it has to be well-maintained too," she adds.

The professor believes the survey should have more common grounds. "Bigger cities performed better than smaller ones as they have more experts. Chandigarh, Jamshedpur and Rourkela will obviously do better as they are design cities."

Annexure 8 Lakes Interlinking Project, AUDA



LEGEND	NATIONAL HIGHWAY	OTHER ROAD	AMC LIMIT	PROPOSED LAKE DEVELOPMENT
RING ROAD	MAJOR BRIDGE	RAILWAY LINE	AMC LIMIT	PROPOSED PIPELINE FORM NARMADA CANAL TO SOLA LAKE
STATE HIGHWAY	MB	AMC LIMIT	AUDA LIMIT	STORM/INTER LINKING PIPELINE PROPOSED TO BE LAID
		NARMADA CANAL		LAID

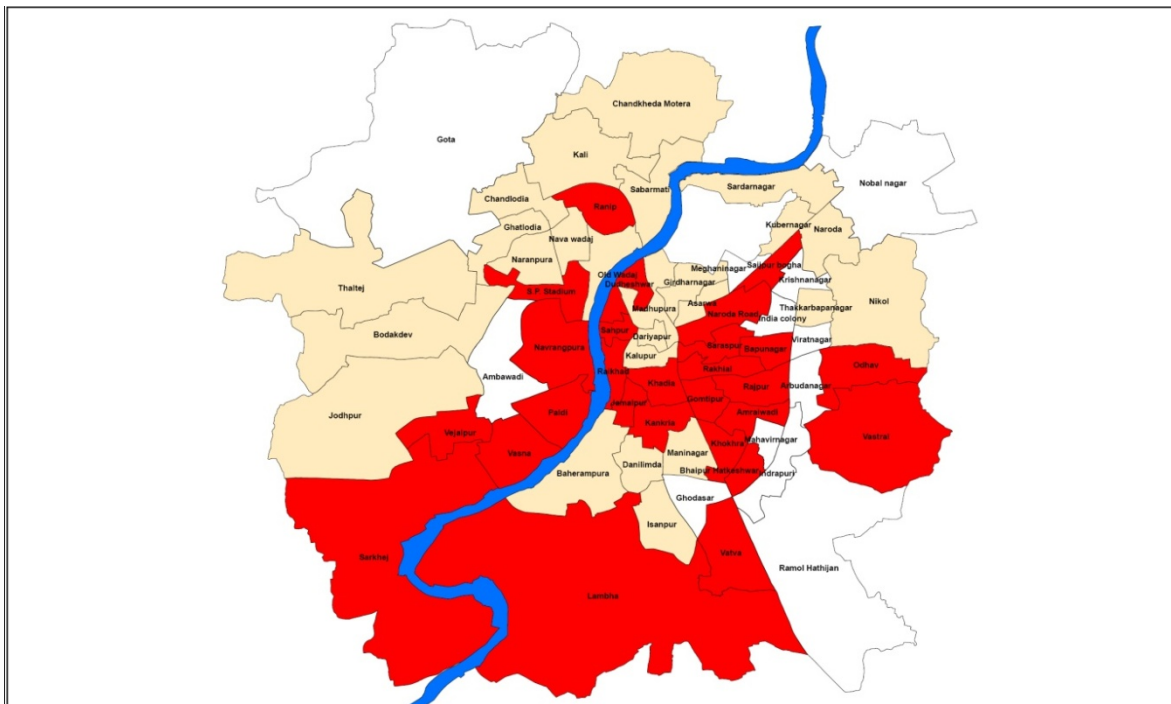
MAP NO:	Drawing Title PROPOSED LAKE DEVELOPMENT & INTER LINKING PIPE IN URBAN AREA ON OUTER PERIPHERY OF AHMEDABAD	Prepared By: CENTER FOR ENVIRONMENTAL PLANNING & TECHNOLOGY	
	Project: AHMEDABAD CITY DEVELOPMENT PLAN (2006-2011)	Map Adopted From: Multi Mantech International Pvt. Ltd.	
		Prepared for: Ahmedabad Municipal Corporation	

Source: (CEPT_University, 2006)



Source: UMC

Annexure 14 Wardwise Trend of Gastroenteritis, Jaundice, Typhoid & Malaria Cases in Ahmedabad



Trend of Gastroenteritis Cases per lakh Population: 2008-10

Thematic Maps For AMC Health Department

Prepared For :
Ahmedabad Municipal Corporation (AMC)

Prepared By:
Urban Management Centre (UMC)



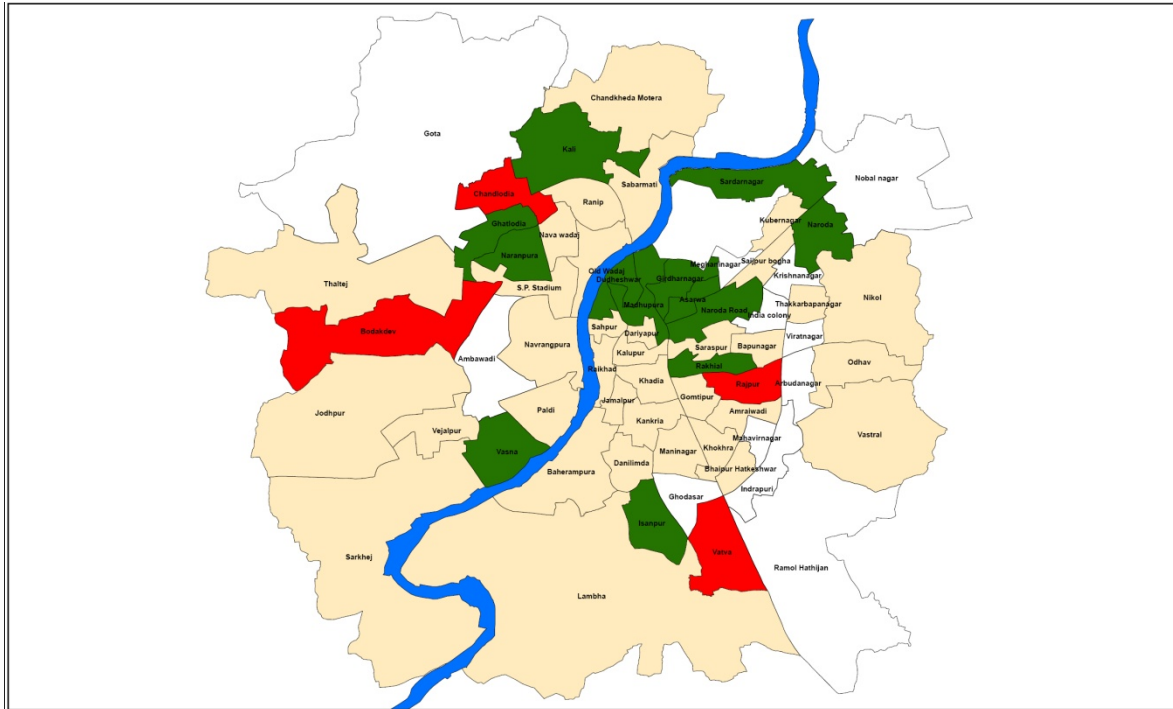
All Data Presented in the Maps is Based on
Indoor Cases From Reporting Units of AMC



Map not to Scale

Legend

- Sabarmati River
- Consistent Increase
- No Trend
- ND



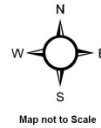
Trend of Jaundice Cases Per Lakh Population - 2008-10

Thematic Maps For AMC Health Department

Prepared For :
Ahmedabad Municipal Corporation(AMC)
Prepared By :
Urban Management Centre(UMC)

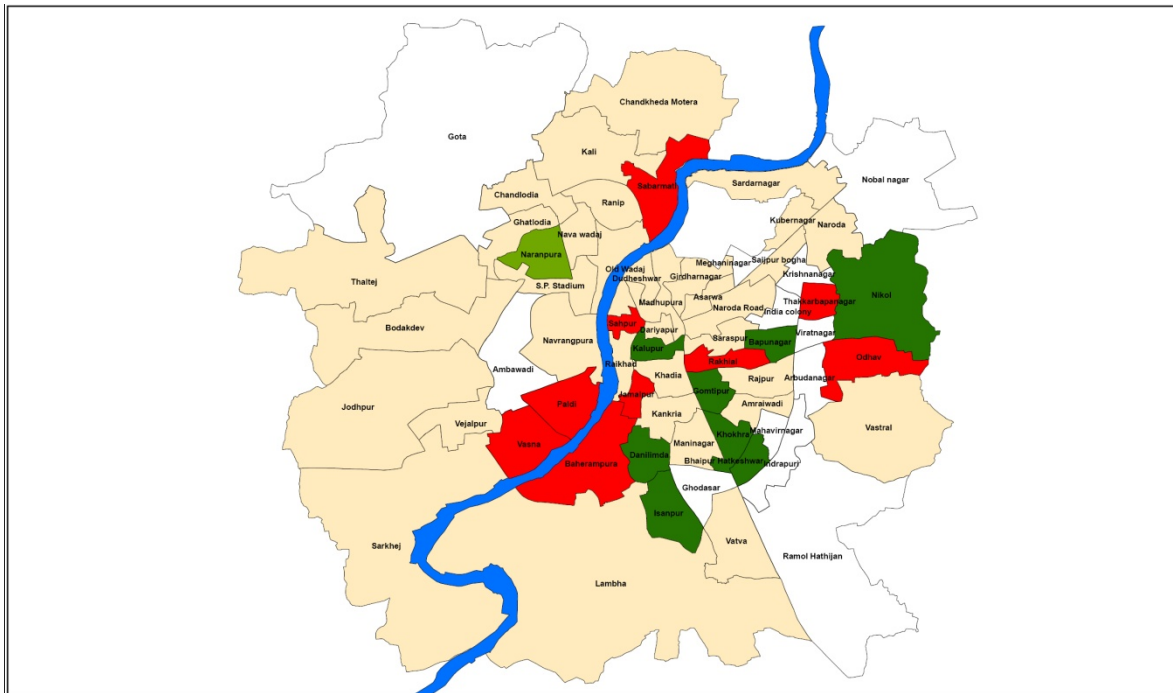


All Data Presented in the Maps is Based on Indoor Cases From Reporting Units of AMC



Legend

- Sabarmati River
- Consistent Increase
- Consistent Decrease
- No Trend
- ND



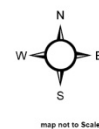
Trend of Typhoid Cases Per Lakh Population - 2009-11

Thematic Maps For AMC Health Department

Prepared For :
Ahmedabad Municipal Corporation(AMC)
Prepared By :
Urban management Centre(UMC)

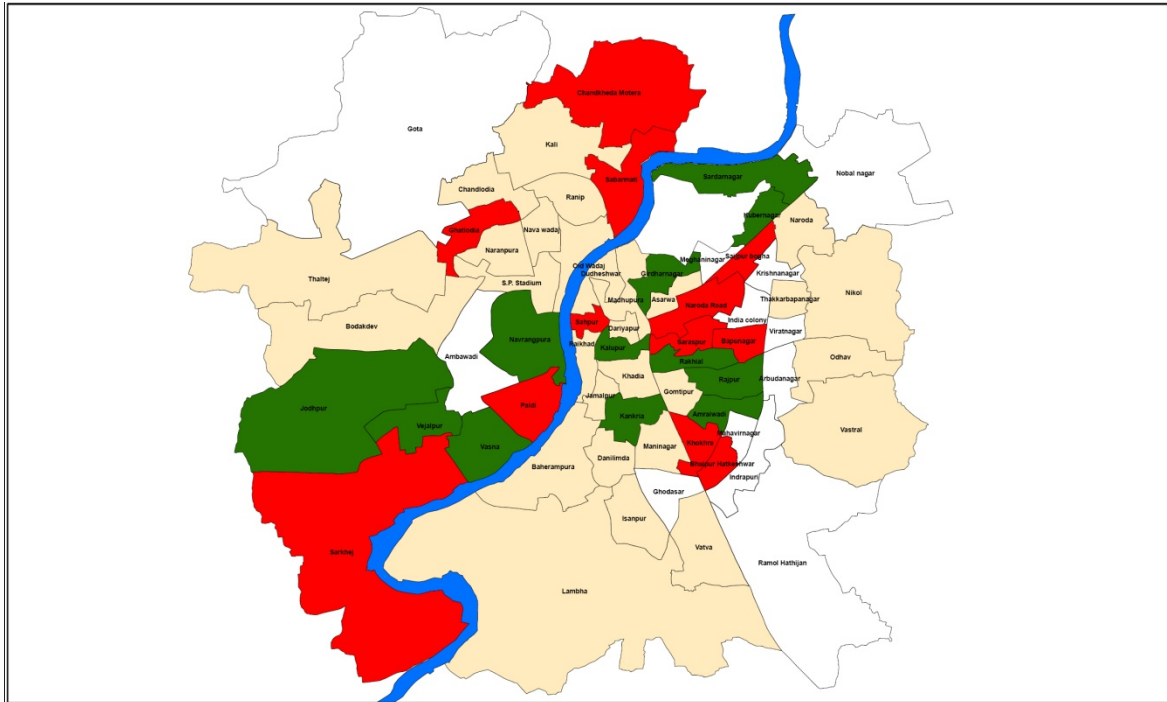


All Data Presented in the Maps is Based on Indoor Cases From Reporting Units of AMC



Legend

- Sabarmati River
- Consistent Increase
- Consistent Decrease
- Consistent Zero Case
- No Trend
- ND



Trend of Malaria cases Per Lakh Population - 2008-10

Thematic Maps For AMC Health Department

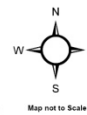
Prepared For :
Ahmedabad Municipal Corporation(AMC)



Prepared By :
Urban Management Centre(UMC)



All Data Presented in the Maps is Based on
Indoor Cases From Reporting Units of AMC



Legend

- Sabarmati River
- Consistent Increase
- Consistent Decrease
- No Trend
- ND



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