Comprehensive Environmental Pollution Abatement Action Plan Ahmedabad Industrial Cluster - Gujarat

Gujarat Pollution Control Board
Gandhinagar
2010

INDEX

FOREWORD

Need of action plan is justified to control pollution in any area where pollution sources are identified, pollutants are measured, assessed and found exceeding permissible limits. To implement such action plans is a duty of any SPCB and all concerned agencies/stakeholders.

After declaration of critically polluted areas by OMs dated 13.1.2010 and 15.3.2010 of MoEF, GOI and imposing temporary moratorium for a period upto August 2010, the action plans for these specified areas (industrial clusters) are desired by the CPCB and MoEF, GOI.

In Gujarat, six areas – Ankleshwar, Vapi, Ahmedabad, Vatva, Bhavnagar and Junagadh – are identified by above OMs as critically polluted. GPCB started quick actions, expanded its infrastructure, decided and declared main points to control pollution at source, prepared action plans including these points and finalized the same in consultation with main stakeholders and issued necessary directions. These action plans were sent to MoEF on 19.4.2010. Meanwhile, by letters dated 19.4.2010 and 18.5.2010, CPCB suggested TOR to make the action plans. Accordingly the action plans are revised.

Consultative meetings were held with various stakeholders including the industries associations, CETP/TSDF operators, NGOs, CPCB and GIDC authorities, who have helped to improve the action plans.

We are thankful to the CPCB and MoEF to have recognized the wholehearted efforts by GPCB team, DoEF, GIDC, VW&EMCL industries of Vapi and all other concerned.

We are hopeful that this will serve the purpose and help various agencies/ authorities to implement and monitor the Action Plans for the six industrial clusters/ areas of the state.

We are also hopeful that the implementation of these Action Plans would bring in the positive results in other clusters also.

Place: Gandhinagar
Date: 30-10-2010

Dr.K.U.Mistry
Chairman, GPCB

Chapter-1
Introduction

Object of this chapter is to describe in brief the actions initiated by Gujarat after OM dated 13.1.2010 declaring critically polluted areas in the country.

It is worth mentioning that Gujarat is a fast developing State and has concentration of chemical units in certain areas, which have more pollution potential and hence the State has created more pollution control infrastructure also.

1. DECLARED POLICY POINTS FOR POLLUTION CONTROL (PILLARS OF ACTION PLANS):

During February to May 2010, following main points of pollution control were widely published and circulated to industries associations for further communication to their member industries. Some of these points were also published as 'Public Appeal' on 1.2.2010 and as 'General Improvement Notice' on 20.2.2010 in three leading newspapers of Gujarat. These are the points specific to nature of industries in the State and main pillars of action plans. These briefly stated points have to incorporate detailed procedure and planning for their floor level compliance and are under gradual execution by due deliberation with concerned stakeholders.

1. To measure and control discharges to ETP and CETP, each outlet of ETP and each inlet and outlet of CETP shall have standard flow meter and flow recorder. Only one authorized outlet will be allowed. SCADA system will be required for CETP.
2. Waste generation streams shall be identified from the process plant and collected separately to decide about their treatability. The collected effluent should be subjected to proper treatment method before discharging it to ETP or CETP. Big units (discharge >100 KLD) should have their own incinerator/ evaporator/ dryer/solvent distillation plant, acid handling or recovery plant etc to make the treated waste reusable or to reduce the load on ETP or CETP.
3. All units including zero discharge units should have pH correction and SS removal system, so that they cannot discharge any acidic effluent to CETP or to any unauthorized disposal point. Where spent or mixed acid is generated in large quantity, plan for its recovery or re-use or to send it to authorized place will be required.
4. By-pass system for untreated effluent, stack emission or pumping station shall not be allowed. Adequacy and efficacy certificate will be required for ETP, CETP and APCM.
5. Dual disposal modes i.e. pipeline and truck/tanker vehicle shall not be allowed to any unit. Only one safer mode of disposal should be selected.

6. All big units having more than 100 KLD discharge should have their own treatment plant to meet with the GPCB norms. They should use the technology to run their treatment plants independently.
7. CETP will be required for each industrial cluster for effluent treatment and safe disposal. No direct discharge in GIDC pipeline or any disposal point will be permitted. Narol, Jhagadia, Khambhat, Dahej, Vilayat, Sarigam, Jetpur, Junagadh, Jamnagar etc. will need CETP on this principle.
8. Interlocking system (e.g. TOC sensing, trip, alarm and safe diversion) should be provided by all big units (discharge > 100 KLD) and CETP to control their excessive hydraulic and pollution discharge.
9. More than one source of water intake will generally be discouraged. Ground (borewell) water source should be stopped if pipe water source is available. Metering system for water consumption should be implemented.
10. Domestic waste will not be allowed in industrial effluent pipeline. Septic tank, STP or separate pipeline will be required for that purpose.
11. Only authorized fuel shall be permitted to reduce air pollution. Where natural gas is available, no other fuel should be used by industry. Wood as fuel is not at all permitted. More chimney height will be required for more dispersion and dilution.
12. Proper APCM – bag filters, ESP, local exhaust ventilation, scrubber, flare, column-condenser, vent chiller etc shall be required in working condition to reduce gas emission, flying particles, dust, ash etc in air.
13. All TSDF sites will be required to follow the guidelines regarding quantity and time period of waste retention, working of incinerator, sheds for wastes segregation, leachate treatment facility, storm water drain, dyke for liquid tanks, non-acceptance of plastic waste at landfill site, fire fighting facility, information and record of all wastes at site and no dumping of unauthorized waste in active cell etc.
14. Cleaner production options will be required at CTE/CCA levels. They may be suggested also. Its implementation will be monitored.
15. Plan for reduce, recycle, reuse and recover of resources and trade wastes will be required from each industry. Plans to reduce CO_2 emission, ground water recharging, rain water harvesting, water and electricity conservation and reduction of noise, vibration and plastic wastes will also be required with CTE application. It will be monitored till CCA continuation.
16. Baseline data of land, water and air will be required with CTE application and its status report will be required with annual report to GPCB.
17. Plan to use solar or wind energy for lighting / heating purpose will be required.

18. Transportation of hazardous wastes for a longer distance or throwing at unauthorized place will not be allowed. It will be transported in authorized and covered trucks only.
19. Tree plantation plan will be required and monitored from each unit.
20. Regular monitoring of water and ambient air quality in different areas will be carried out.

2. RECENT INFRASTRUCTURE EXPANSION IN THE STATE:

To have vigorous and intensive monitoring of pollution control laws in the State and for speedy execution of action plans, following steps have already been taken in the State during last two months:

1. Five new GPCB offices are opened at Ankleshwar, Gandhinagar, Himmatnagar, Surendranagar and Porbandar. Including these, now GPCB is functioning at 18 places - (1) Gandhinagar (2) Ahmedabad, (3) Nadiad (4) Vadodara (5) Godhara (6) Bharuch (7) Ankleshwar (8) Surat (9) Vapi (10) Mehsana (11) Himmatnagar (12) Surendranagar (13) Rajkot (14) Bhavnagar (15) Jamnagar (16) Porbandar (17) Junagadh and (18) Bhuj.
2. Three new vigilance teams (Zonal Offices) are started at Surat, Vadodara and Rajkot. Now, total four such vigilance teams are stationed at Gandhinagar, Surat, Vadodara and Rajkot. These teams are equipped with new vehicles and staff.
3. Two new laboratories are started at Mehsana and Bhuj. Now, total at 9 places, GPCB has its own laboratories for sample analysis – Gandhinagar, Vadodara, Bharuch, Surat, Vapi, Mehsana, Rajkot, Jamnagar and Bhuj.
4. Fourteen new vehicles (four-wheelers) have been purchased and allotted to new offices and vigilance teams.
5. 67 new officers are being recruited to GPCB strength. Application receiving process is over and selection procedure is about to start.
6. Full time Chairman from 20.1.2010 and full-time Member Secretary from 21.6.2010 are given by the State to strengthen GPCB.
7. New four storeyed building is at the stage of completion near the existing building of Head Office at Gandhinagar. This will accommodate more and multifarious activities of pollution control from Head Office of GPCB.
8. New Sections of R&D, Cleaner Production options, training & development, environment awareness and award scheme are started at Head Office.
9. New Data Collection Forms are issued and being filled by field visits to record current status of all units. This will also reveal changes made at site.
10. New ambient air quality monitoring station is started at Chitra (Bhavnagar) on 25.6.2010 to monitor $PM_{2.5.}$

11. GPCB is actively participating in Door Darshan TV programs sponsored by MoEF, GOI, to create statewide awareness on environment and pollution control aspects.
12. On-line computer system (XGN) of GPCB has won second prize at National level for e-Governance programme in India and other States inquire to follow this.
13. Planning has been done to procure new laboratory equipments for strengthening of analysis of pollutants.
14. Barcode system for sample containers is introduced.
15. GPCB has received ISO: 9001 and ISO: 14001 certificates and training is being given to staff for internal audit of all its offices.
16. GPCB has reconstituted Technical Committee of Board Members and outside experts to discuss and decide upon the cases of the change of product mix and some typical applications from critically polluted areas.

3. Environmental Infrastructure Facilities in the State:

Comparatively, more environmental infrastructure facilities (CETP, FETP, TSDF, Incinerators, Pipe conveyance etc.) for pollution control are setup and functional in Gujarat.

Following Table provides, at a glance, pollution control facilities existing in the State:

No.	Facility	Total No.
1	ETPs	5808
2	Individual incinerators	41
3	Individual TSDF	15
4	Individual pipe conveyance to sea	18
5	CETPs	26
6	FETP	01
7	Common TSDF with incinerators	04
8	Common TSDF without incinerators	04
9	Common pipe conveyance to sea	05
	TOTAL	**5922**

31 New MoUs are done to invite more such common facilities.

SOME FACILITIES AT INDUSTRIAL CLUSTERS:

Cluster wise facilities are mentioned in respective action plan of the industrial cluster.

Chapter-2

Need and Methodology of the Plan

1. NEED OF THE ACTION PLAN :

Central Pollution Control Board (CPCB) in collaboration with Indian Institute of Technology (IIT), Delhi and other institutes formulated the concept for Comprehensive Environmental Pollution Index (CEPI) and has analyzed the environmental status of industrial clusters which were identified in consultation with Ministry of Environment and Forests for CEPI analysis. These clusters have been classified as very critically polluted having CEPI score above 80, critically polluted having CEPI score above 70.

Ahmedabad, Gujarat is having overall CEPI as 75.28, which is above the criterion for critically polluted CEPI score. This has created a need for detailed study for the critically polluted industrial cluster of Ahmedabad Gujarat in terms of extent of damage and formulation of appropriate remedial action plan enabling abatement of pollution and restoring the environmental quality of this cluster.

Gujarat Pollution Control Board (GPCB) has prepared this report keeping in view the Terms of Reference (ToR) given by CPCB. GPCB has generated and analysed the data from primary and secondary sources, which is utilized to draw action points and finalize the action plan. This action plan definitely will improve the situation in the given cluster and help in reducing CEPI score.

2. NEED AND OBJECTIVE/ SCOPE OF THE PROJECT.

Ahmedabad, Gujarat have been listed with score Air CEPI 62.75, Water CEPI 58 and Land CEPI 58 with ranking 22 in the report with overall CEPI as 75.28. Therefore a detailed Action Plan for the Ahmedabad, Gujarat for prevention and control as well as remediation of various environmental components using the best available and appropriate engineering practices is a must. A comprehensive implementation mechanism including financial, manpower and technology is required to be synchronized in a time bound manner with an efficient monitoring mechanism which is necessary for bringing CEPI Score down the line.

3. METHODOLOGY :

This report on " Development of Comprehensive Environmental pollution Abatement Action Plan for Industrial Cluster –Ahmedabad, Gujarat" is prepared based on the Terms of References (TOR) provided from the desk of CPCB Chairman vide D.O. letter no. B. 29012/ 1/ ESS/ 2010 dated May 18, 2010. GPCB has adopted methodology as mentioned in this letter. However due to time constraint, CPCB could not be involved during the survey, but it can be done during the course of review of action plan. Based on findings of the data collected, action points are drawn and comprehensive abatement plan is proposed in this report along with time frame, technological intervention, and infrastructure requirement after gap analysis. With this gap analysis and infrastructure requirement an attempt has been made for cost estimation, project model using PPP, financial outlay, and details of the scheme and present status of the project has been delineated in this report.

4. STAKE HOLDER

For the Ahmedabad industrial cluster, following are the major identified stake holders;

1. Industries, their employee and their Associations –Industries Associations
2. NGOs
3. Government bodies GPCB, GIDC, AMC, AUDA, UDD, GCPC

GPCB is in continuous consultation with above stake holders through meetings and discussion.

Chapter-3

Naroda Industrial Cluster

1. BRIEF HISTORY OF THE CLUSTER:

GIDC Estate, Naroda was established in the year 1964, with the prime objective of encouraging and spreading entrepreneurship attitude among the Trading Sector, particularly in Small Scale Industries (SSI) Sector. It is located at north east direction of Ahmedabad city at Longitude from 720 38' 58" E to 720 40' 37" E and Latitude from 230 4' 38" N to 230 5'24" N. at National Highway- 8. The Estate measures to 337 Hectors and houses 689 Plots and 426 Sheds. There are housing colonies also, to benefit the workers and owners. Presently the Naroda Estate is part of Ahmedabad Municipal Corporation have many basic infrastructure facilities like Road, Sewerage, Water Supply Line, Telephone Exchange, Post Office, Fire Station Hospitals, Canteens etc.

2. ESTATE AT A GLANCE:

A. Number of Industries: 308

Category	Small	Medium	Large	Total
Red	238	2	4	244
Orange	47	0	1	48
Green	16	0	0	16
Total	301	2	5	308

(Categorization is as per CPCB guidelines.)

B. Types of industries : Pharmaceutical Products, Dyes, Dye-Intermediates, Pigments, Fine Chemicals, Other Organic Chemicals, Inorganic Chemicals, Textile Process Houses, Rolling Mills and other Non Chemical Process Industries

C. Water source : GIDC supply

D. Water consumption :6.70 MLD

E. Wastewater generation :4.053 MLD

F. Hazardous waste disposal– 37500 MT/Year

A Map showing geographical location and Impact Zone is attached at Annexure – 7.

3. EMS PROVIDED BY THE INDUSTRIES:

A. Water: Individual industrial units have provided Primary effluent treatment plants. Treated wastewater is discharged into CETP provided by Naroda Enviro Projects Ltd for their member units located in this cluster. The treated effluent from CETPs is discharged into Mega pipeline. The details of ETP provided are as below:

Category	Small	MEDIUM	LARGE	TOTAL
Red	146	2	3	151
Orange	12	0	1	13
Green	3	0	0	3
Total	161	2	4	167

B. Air: Most of units having air pollution potential have provided cyclone, multi cyclone separator, bag filter, scrubber as APCM. Chemicals industries have provided scrubbers for the process emission. 126 Nos of industries switch over to clean fuel like CNG. The details of APCM are as below:

Category	Small	MEDIUM	LARGE	TOTAL
Red	230	3	0	233
Orange	19	1	0	20
Green	4	0	0	4
Total	253	4	0	257

C. Hazardous waste: Generated hazardous waste of individual industries are stored in hazardous waste storage facility within plant and disposed off to common TSDF site located at Odhav operated by Naroda Enviro Projects Ltd. There is no common incinerator in the Estate as waste generated in the cluster is from individual ETPs and is inorganic in nature.

4. ENVIRONMENTAL TRACK RECORD OF THE CLUSTER:

- Earlier Ahmedabad was ranked 4th in year-2001 for polluting cities based on ambient air quality. EPCA constituted as per the Supreme Court order by the MoEF, GoI, under the chairmanship of Shri Bhurelal. Board had drawn an Air Action Plan for the Ahmedabad city. Through implementation of Air action plan, it has been possible to bring down SPM and RSPM in the Ahmedabad significantly. At present Ahmedabad is ranked at 66th in the year-2008 among polluting cities based on ambient air quality.

- However, recently CPCB has declared Ahmedabad (Naroda, Odhav) as critically polluted area as per the criteria of CEPI.

5. PROBABLE POLLUTANTS:

A. Air : This industrial estate mainly comprise of dyes & dyes intermediate units, pharmaceutical bulk drugs & intermediate units and other chemical units. Hence major probable pollutants are PM, SO2, NOx, Cl2, HCl, Ammonia etc.

B. Water: based on above nature of industries, major probable pollutants are BOD, COD, Color, TDS, Ammonical Nitrogen, Phenolic compound etc.

6. MANAGEMENT OF WASTES :

A. Domestic waste water: Domestic wastewater of this cluster is discharge either into soak pit / septic tank or treated along with industrial wastewater and discharged into mega pipeline. AMC has provided five STP with total capacity of 670 MLD and are operational. Other two STP of total 310 MLD is under construction.

B. MSW: Ahmedabad Municipal Corporation has developed solid waste land fill site as per the notification. Municipal waste generated in the area is managed by AMC.

C. BMW: Healthcare units of this cluster have obtained the membership for the disposal of biomedical waste to common Bio medical disposal facility.

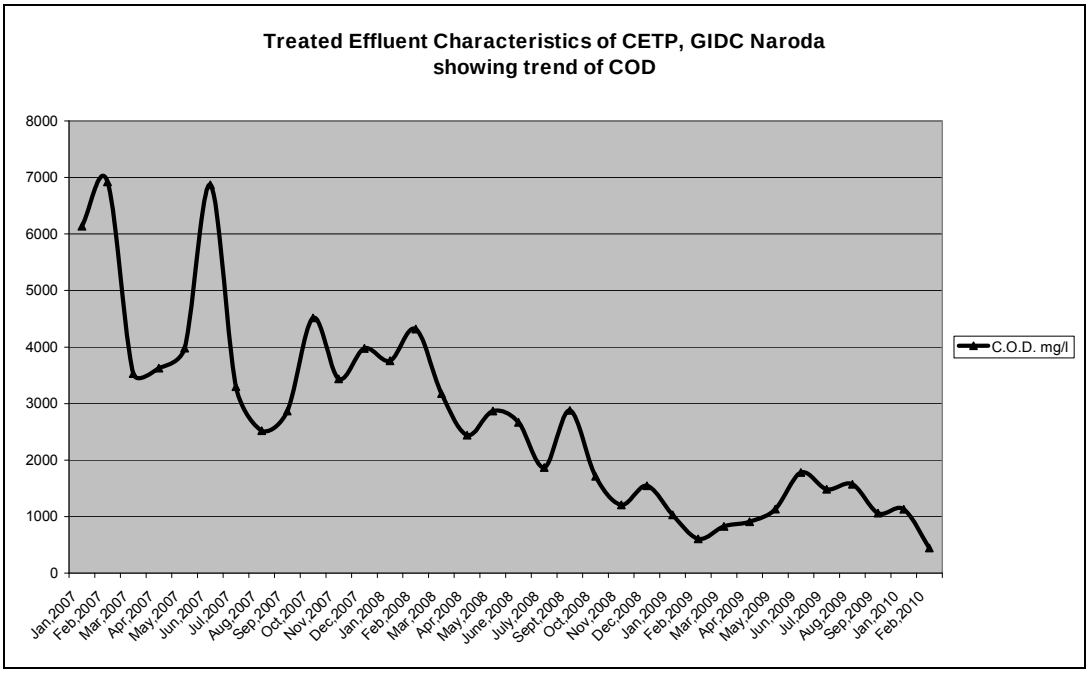
7. SURROUNDING ENVIRONMENT :

A. Flora & fauna: Being a planned industrial area there are no specific local flora and fauna in the area except planned plantation and gardens.

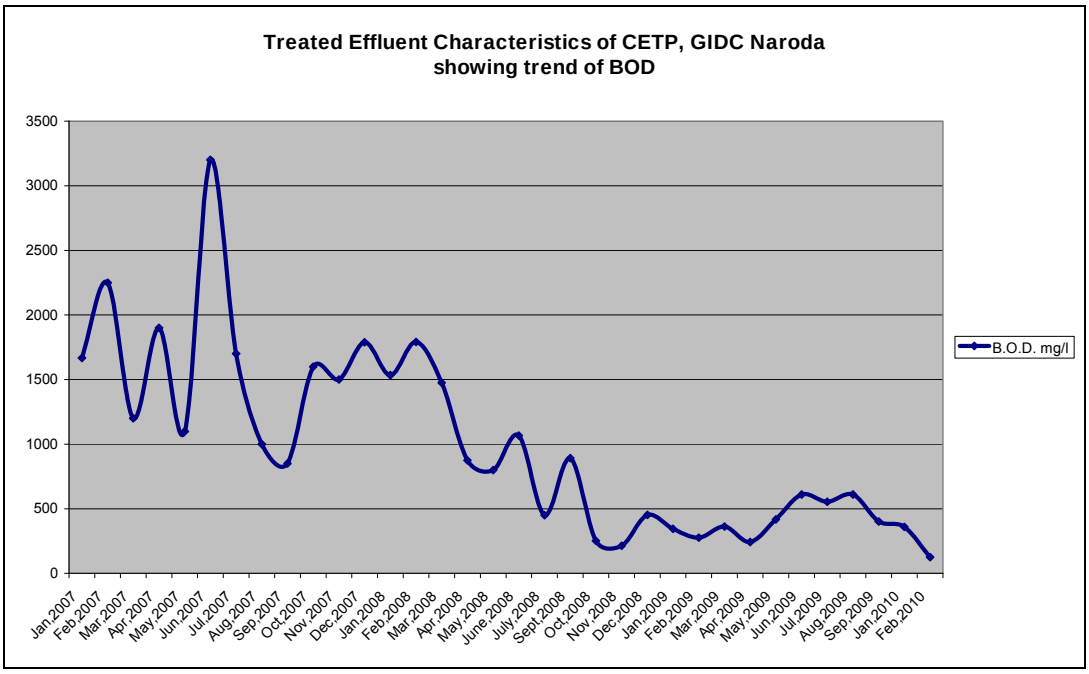
B. Eco geological features: Kharicut canal passes through GIDC Naroda. Mega pipeline for conveyance of treated wastewater starts from GIDC, Naroda.

8. ENVIRONMENTAL STATUS :

A. Water: There is single outlet of the estate into the Mega pipeline through CETP. Board is regularly collecting the samples of treated waste water of CETP. The Analysis Report of the last 3 years is compiled and shown below in graphical representation, which indicates considerable improvements in quality of treated wastewater discharged. The results of the same are also attached as Annexure – I.



(Refer Annexure - I)



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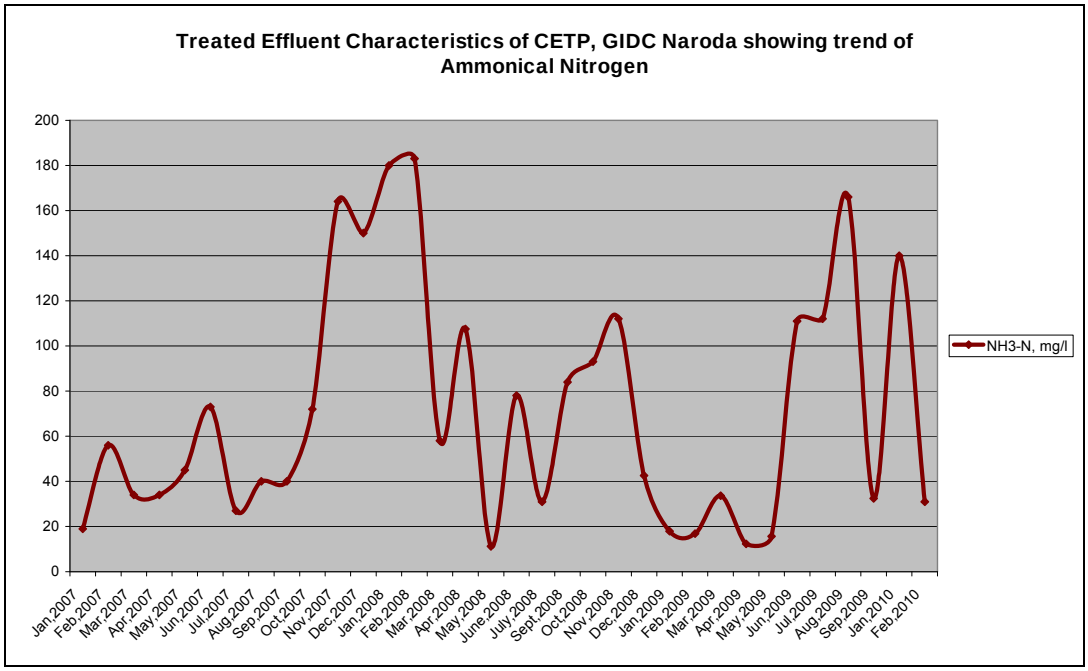
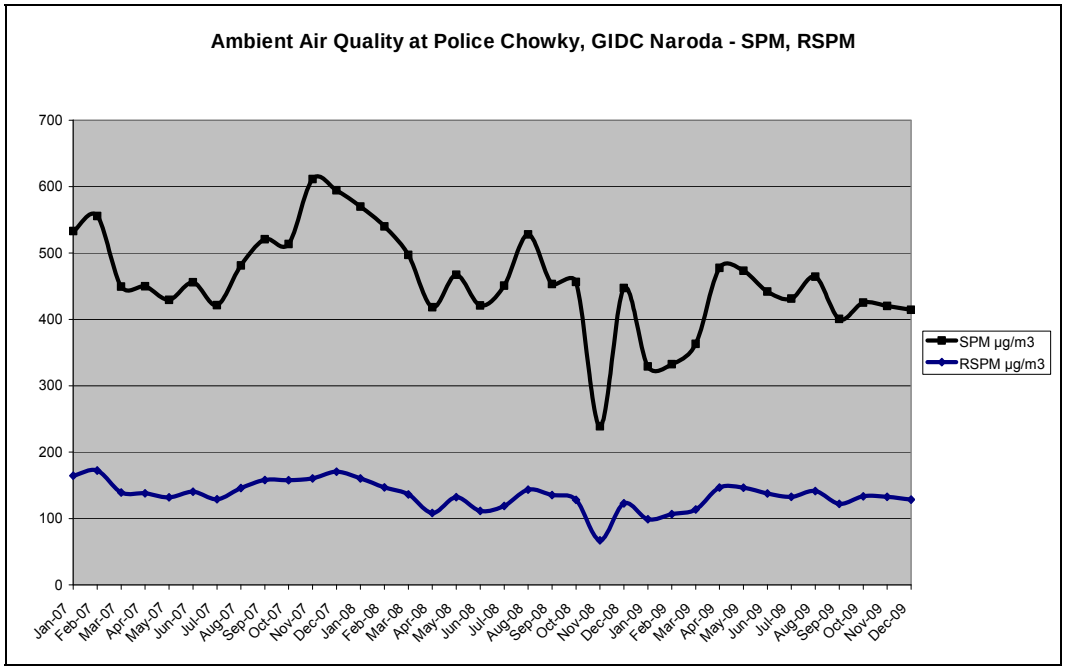
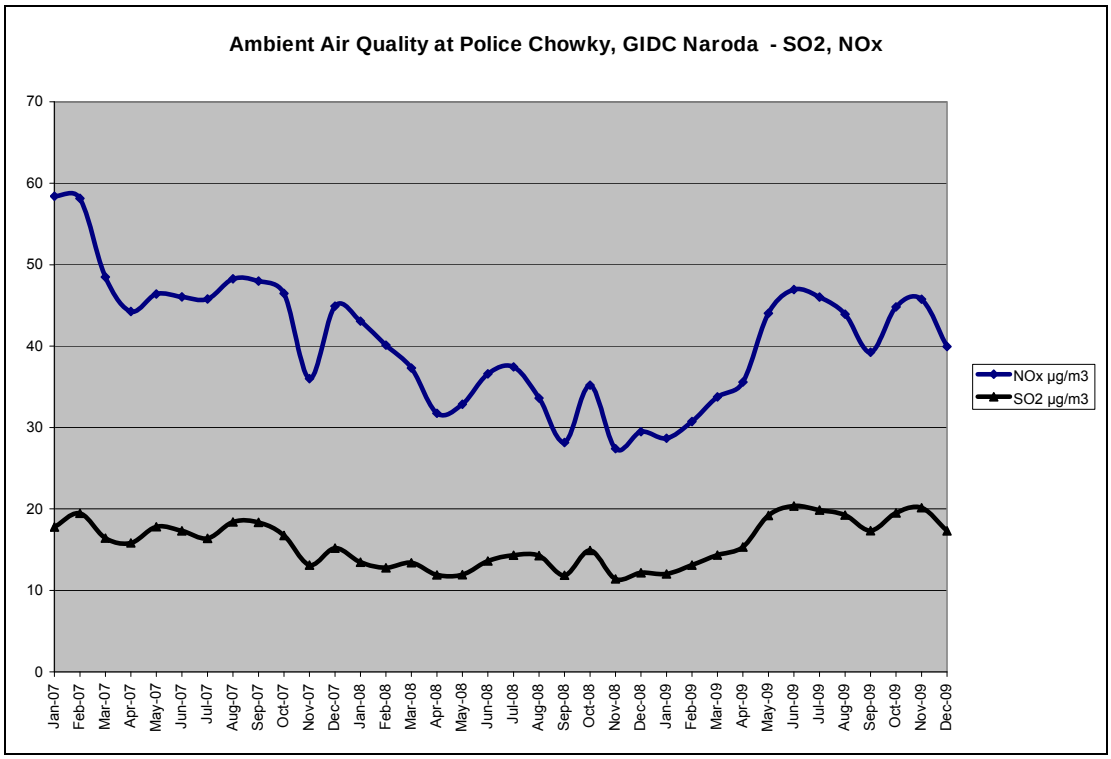


(Refer Annexure - I)

B. **<u>AIR</u>**: Board is regularly measuring the Ambient Air Quality of the industrial estate. The Analysis Report of the last 3 years is compiled and shown below in graphical representation, which indicated that there is considerable improvement in ambient air quality. Total 109957 Nos. of all kinds of vehicles has been converted in to clean fuel like CNG/LPG. The results of the same are also attached as Annexure – II.



(Refer Annexure - II)



(Refer Annexure - II)

C. <u>Hazardous Waste</u>: The industrial units of GIDC, Naroda are member of common TSDF and presently there is no illegal hazardous waste dumping.

9. <u>ENVIRONMENTAL ISSUES:</u>

A. <u>Water environment</u>-

- The entire quantity of effluent generated from this area is discharged into mega pipeline through CETPs. Effluent flows through underground internal collection system to treatment plant and ultimately to mega pipeline (specially laid to convey industrial effluent only). There is only one outlet in the estate.

- Earlier there was direct discharge of effluent by industrial units into Khari cut canal. There is no direct discharge of effluent into Khari cut canal after High Court directives and subsequent vigilant actions by GPCB. But due to illegal disposal of sewage, there is excess hydraulic load in the Industrial Effluent Conveying Pipeline i.e. Mega Pipeline due to which there is occasional overflow at several places which finally reaches Khari cut canal. Hence presently polluted effluent is observed in Khari cut canal.
- The entire quantity of effluent generated from this area is discharged into CETP.

B. Air Environment:

- In view of recent notification of MoEF regarding amendment in Ambient Air Parameters, it is observed that the ambient air quality of this area is not meeting with the norms. There are problems of gaseous air emissions from the Industrial Estate at times when APCM are not operated efficiently. Directions and closers are also issued to such polluters.

C. Soil Environment:

- Hazardous waste generated from the Naroda estate is disposed off to common TSDF site. No specific soil environment problem has been noticed.

D. Occupational Health:

As per the information available from the office of the Director of Industrial Safety & Health, Ahmedabad and office of the National Institute of Occupational Health (NIOH), Ahmedabad, they have stated that no incidence of death due to pollution or occupational disease or poisoning is recorded in their office.
Occupational health centers are provided by MAH units in this cluster to monitor health of the industrial workers. Primary health centers are provided in each industrial cluster.

E. Identification of key indicators for action point

- The major action points are basically decided on basis of waste water quality being discharge into River Sabarmati
- The air action plan is formulated based on EPCA format which was decided by the Supreme Court directive.

10. EXISTING ENVIRONMENT INFRATRUCTURE:

A. CETP :

- **Design Basis**:

CETP is operated and managed by Naroda Enviro Projects Ltd. which is located at Plot No-512 - 515, Phase I, GIDC Estate, Naroda, Ahmedabad. It is commenced in Oct 1999. The capacity of CETP is 3 MLD. This CETP receives wastewater from industrial units of Dyes and Dyes intermediates, pharmaceuticals, Chemicals. CETP is collecting effluent from their industrial units by u/g RCC Hume pipes. In some part of estate where pipeline is not laid down and from units generating concentrated effluent, dedicated tankers are transferring effluents to CETP. After treating effluent in CETP, finally it is discharging into Mega pipe line.

The CETP inlet norms applicable to the member units in respect of the quality of the effluent are as under:

- BOD 1200 mg/l
- COD 3000 mg/l
- SS 300 mg/l

Details of CETP :

Capacity of CETP		3 MLD
Screen chamber	1 no	1.0 m X 1.0 m X 1.0 m
collection sump	1 no	5.5m X 5.5m X 3.0m
oil and grease tank	1 no	14.0m X 3.5m X 2.5m
Equalization tank	3Nos	24.0m X 12.0m X 3.5m
flash mixer	1 no	2.0 m dia. X 2.0m
Chemical preparation tank	4 Nos	2.0 m dia. X 2.5m
Chemical dosing tanks	3 Nos	1500 Liters each
Clariflocculator	1 No	14.0 m dia. X 3.5m
Aeration tanks (diffused aeration)	2 Nos	31.0 m dia X 5.6m each
Secondary clarifiers	2 No.	23.0 m dia X 3.5m
Treated water sump	1 No	14.0 m X 7.0m X 3.5m
Primary sludge sump	1 No.	5.0 mX 3.0m X 3.0m
Sludge drying thickener	1 No.	6.0 m dia. X 3.0m
Sludge drying beds (For secondary sludge)	10 Nos.	11.0 m X 7.0m
Decanter for the primary sludge	1 No.	18 M3/hr

- **Performance evaluation of CETP** :

  This board is regularly carrying out monitoring of CETP which indicates that CETP is not meeting the specified norms.

- **Stage-wise modification/upgradation of CETP:**

  CETP has installed additional diffusers, an additional aeration tank of 22 lac lit. Capacity, one RCC tank of 22 lac lit capacity for the collection of sewage along with existing units.

- **Factors of Performance Improvement of CETP**

  1. Vigilant and rigorous monitoring by GPCB
  2. Member units have upgraded their individual ETP and operating them better
  3. Implementation of cleaner production
  4. In case of expansion of units and new units coming up, CETP inlet norms are made stringent instead of the current norms.
  5. Instead of isolation, filtration and tray drying process for dyes, spray drying was encouraged by GPCB and is adopted by the units and which has reduced load on CETP.

B. <u>TSDF for solid waste disposal:</u>

Naroda Enviro Projects Ltd has developed TSDF site at Survey No. 286-298, GIDC Odhav, Ahmedabad. They are accepting hazardous waste from all the units generating hazardous waste in this cluster. Hazardous waste consists of ETP sludge, Incineration Ash, Iron Sludge, and Gypsum Sludge etc. received from the member industries is disposed off in the pit developed. This site is consists of two Cells. Cell-1 is already filled and it is closed as per the guidelines of CPCB. Around 4 lacs MT of haz waste is already dumped in to TSDF site. At present Cell-2 is under operation. Leachate is collected in the well is sends to CETP for further treatment.

C. Mega pipeline for treated effluent:

Mega pipeline of 27 kms is provided for treated effluent of industrial cluster Vatva, Naroda, Odhav and Narol. Mega Pipeline from Naroda to Pirana has carrying capacity of 90 MLD.
Due to illegal connections of domestic waste pipelines of @ 2000 housing societies into mega pipeline and excessive discharge from units in Narol estate, mega pipeline overflow sometimes.

To disconnect domestic waste pipelines of housing societies from mega pipeline, AMC has laid 22 km (work of 20 km is completed) trunk line and by the end of Deceber,2010, when this work will be completed, these illegal connections will be separated and overloading on mega pipeline will be reduced.

D. STPs by Ahmedabad Municipal Corporation:

Separate storm water collection and conveying system and separate Sewage Treatment Plants (STPs) are run by Ahmedabad Municipal Corporation as under:

No.	Capacity (MLD)	Location
1	106	Old Pirana STP near Behrampura
2	126	Old Vasna STP, Narol-Sarkhej Highway
3	182	New Pirana STP, Narol-Sarkhej Highway
4	76	New Vasna STP, Narol-Sarkhej Highway
5	70	East Zone AUDA STP at Vinzol
6	240	West Zone AUDA STP at Gyaspur
7	180	New Pirana STP Narol-Sarkhej Highway

11. ENVIRONMENT INFRATRUCTURE NEED:

A. Effluent conveyance pipeline – For conveyance of effluent, Mega Pipeline already exists to convey industrial effluent of Naroda, Odhav, Vatva and Narol Area.

B. There is a need for environmental infrastructure for domestic sewage that is presently being disposed off into Mega Pipeline. This will reduce hydraulic load on Mega Pipeline and problem of overflowing of Mega Pipeline will be solved.

12. MONITORING PROTOCOL:

Currently GPCB carries out regular water quality monitoring under GEMS, MINAR and regular monitoring program and ambient air quality monitoring in the area under SAMP and NAMP. At present samples from 13 Nos of the surface water quality monitoring station are collected. 08 Nos of the ambient air quality monitoring station are operated and samples are collected regularly as per the CPCB protocol. All the CETPs & TSDF in the area are monitored and samples are collected regularly. Sample from the River Sabarmati at Miroli is regularly collected to know the water quality of the river after the outfall of the Mega pipeline. Industrial units located in the area are monitored under Water Act, Air Act and E P Act as per the CPCB guidelines.

Additionally one continuous ambient air quality monitoring station has been made operational recently at Maninagar, Ahmedabad to monitor the ambient air quality.

13. DRAWING OF ACTION POINTS:

GPCB has conducted series of meetings with the stakeholders, NGOs and State Government agencies to have inputs from them for collection of required data. Based on field survey and monitoring data available with the GPCB, primary details are collected. These details include: Demarcation of geographical boundary, physical verification of pollution sources, environmental concern, demographical details, eco geological features, sensitive receptors and details on environmental infrastructure facility/ technology. Action plan based on this, suggests the various activities/concern, remedial actions, agency responsible along with the time frame for various environmental components. The points specifically highlighted are restriction of water consumption/ wastewater generation, upgradation of individual ETP, modification/upgradation of CETP, stringent CETP inlet and outlet norms, strengthening of APCM, use of cleaner fuel, control on fugitive emission, green belt development, proper hazardous waste management and cleaner production and cleaner technology for the reduction of the waste at source.

See Chapter – 6 for details of action plan.

Chapter-4

Odhav Industrial Cluster

1. BRIEF HISTORY OF INDUSTRIAL CLUSTER.

The Odhav Industrial Estate was established by Gujarat Industrial Development Corporation in the year 1981 in the eastern direction of Ahmedabad City on Ahmedabad - Mehmadabad state highway to accommodate small and medium scale industrial units.

Odhav GIDC is spreading over 127 hectares consisting for 525 Sheds. Presently the Odhav Estate is part of Ahmedabad Municipal Corporation have many basic infrastructure facilities like Road, Sewerage, Water Supply Line, Telephone Exchange, Post Office, Fire Station etc.

2 ESTATE AT A GLANCE :

a) Total Number of industries- 219

b) Type of industries

Category	Small	Medium	Large	Total
Red	177	2	6	185
Orange	17	0	0	17
Green	17	0	0	17
Total	211	2	6	219

This categorization is as per CPCB guidelines

c) Products manufactured: Pharmaceutical Products, dyes, dyes intermediates, pigments, fine chemicals, other organic chemicals, inorganic chemicals, textile process houses, rolling mills and other non chemical process industries.

d) Water supply : GIDC supply

e) Water consumption – 1.70 MLD

f) Effluent generation – 1.20 MLD

g) Hazardous wastes generation – 31500 MT/Year (including landfill, incinerable & recyclable)

A Map showing geographical location and Impact Zone is attached at Annexure – 8.

3. EMS PROVIDED BY THE INDUSTRY :

A) Water: Individual industrial units have provided Primary effluent treatment plants. Treated wastewater is discharged into CETP provided by Odhav Enviro Projects Ltd and Odhav Green Enviro Projects Association for their member units located in this cluster. The treated effluent from CETPs is discharged into Mega pipeline. The details of ETP provided is as below

Category	Small	Medium	Large	Total
Red	64	1	0	65
Orange	1	0	0	1
Green	2	0	0	2
Total	67	1	0	68

B) Air: Most of individual units having air pollution potential provided multi cyclone separator, water scrubbers and acid/alkali scrubbers as an APCM. 63 Nos of industries switch over to clean fuel like CNG. The details of APCM is as below

Category	Small	Medium	Large	Total
Red	110	0	2	112
Orange	5	0	0	5
Green	2	0	0	2
Total	117	0	2	119

C) Hazardous waste: Generated hazardous waste of individual industries are stored in hazardous waste storage facility within plant and disposed off to common TSDF site of Naroda Enviro Project Ltd located at Odhav.

4. ENVIRONMENTAL TRACK RECORD OF CLUSTER:

- Earlier Ahmedabad was ranked 4th in the year-2001 for polluting cities based on ambient air quality. EPCA constituted as per the Hon'ble Supreme Court order by the MoEF, GoI, under the chairmanship of Shri Bhurelal. Board had drawn an Air Action Plan for the Ahmedabad city. Through implementation of Air action plan, it has been possible to bring down SPM and RSPM in the Ahmedabad significantly. At present Ahmedabad ranked at 66th in the year-2008 among polluting cities based on ambient air quality. Thus, the air quality of Ahmedabad is improved.
- Recently CPCB has declared Ahmedabad (Naroda, Odhav), as critically polluted area as per the criteria CEPI.

5. PROBABLE POLLUTANTS:

A. Water: This cluster mainly comprise of dyes, chemicals & engineering units. Hence major probable pollutants are BOD, COD, Colour, TDS, Ammonical Nitrogen, Phenolic compound etc.

B. Air: This cluster mainly comprise of dyes, chemicals & engineering units. Hence major probable pollutants are SPM, SO2, NOx, HCl, Cl2, NH_3.

6. MANAGEMENT OF WASTE

A. Domestic waste water : Domestic wastewater of this cluster is discharge either into soak pit / septic tank or treated along with industrial wastewater and discharged into mega pipeline. AMC has provided five STP with total capacity of 670 MLD and are operational. Other two STP of total 310 MLD is under construction.

B. BMW: Healthcare units of this cluster have obtained the membership for the disposal of biomedical waste to common Bio medical waste disposal facility.

C. MSW -Ahmedabad Municipal Corporation has developed solid waste land fill site as per the notification. Municipal waste generated in the area is managed by AMC.

7. SURROUNDING ENVIRONMENT

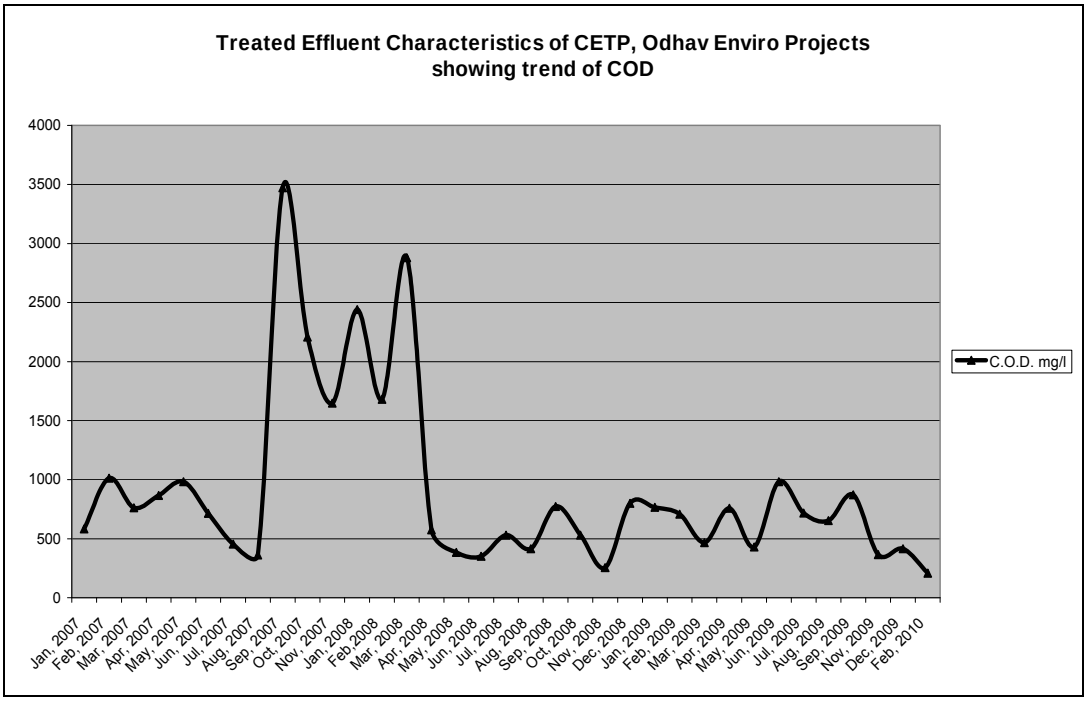
A. Population residing in the area: 370 housing tenements.

B. Flora & fauna: Being a planned industrial area there are no specific local flora and fauna in the area except planned plantation and gardens.

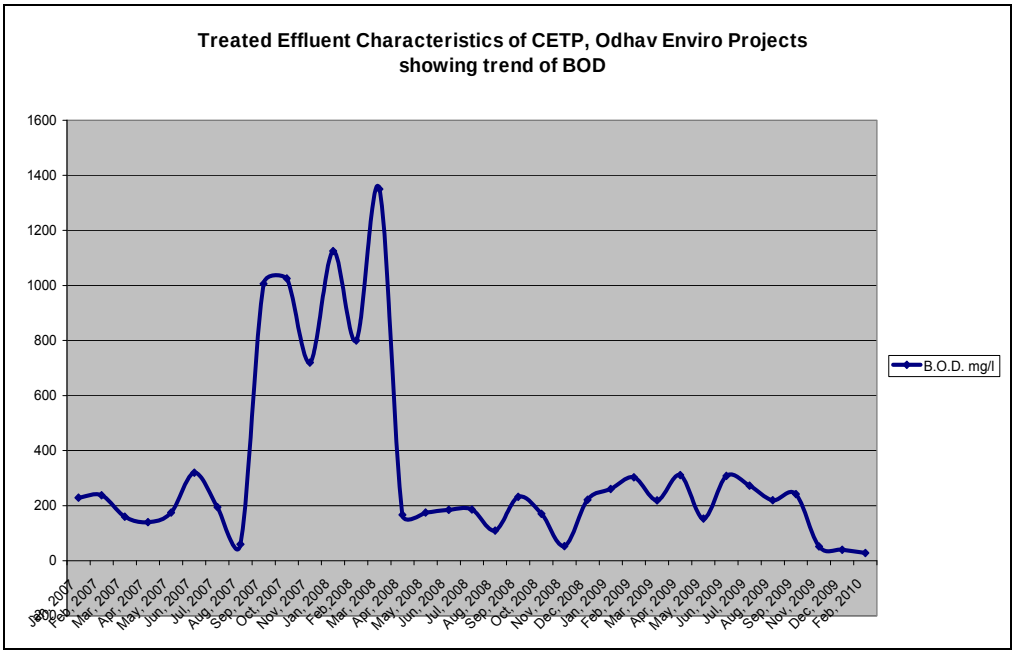
C. Eco geological features: Kharicut canal passes through GIDC Odhav. Effluent conveyance system – mega pipeline passes through this area.

8. ENVIRONMENTAL STATUS

(A) **Water**: Board is regularly collecting the samples of treated waste water of CETP. The Analysis Report of the last 2 years is compiled and attached herewith, which indicates considerable improvements in quality of treated wastewater discharged. The results of the same are also attached as Annexure – I.



(Refer Annexure - III)



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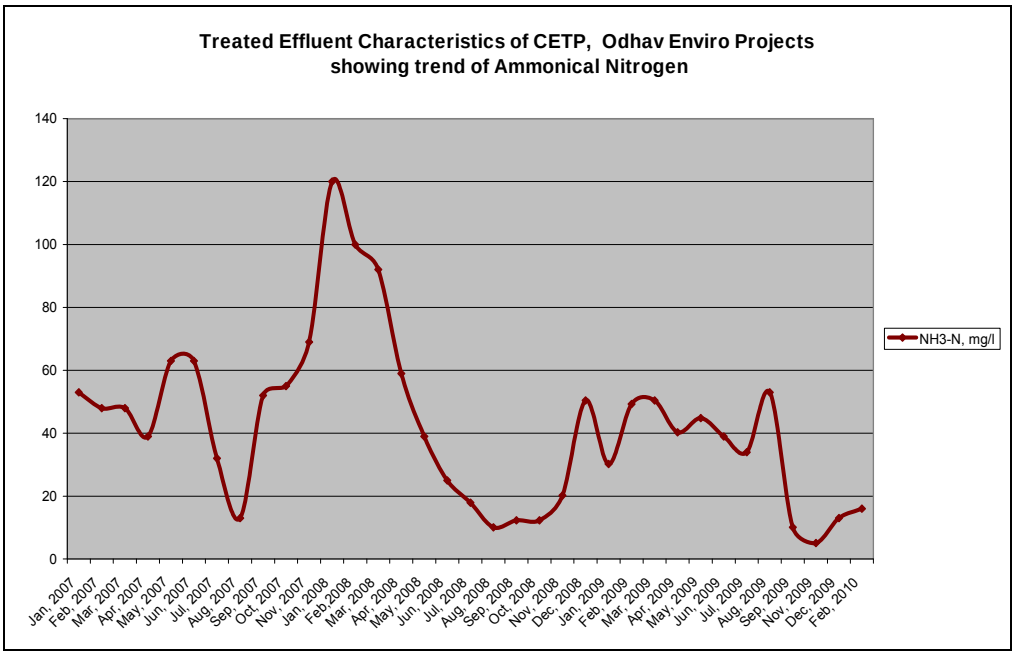

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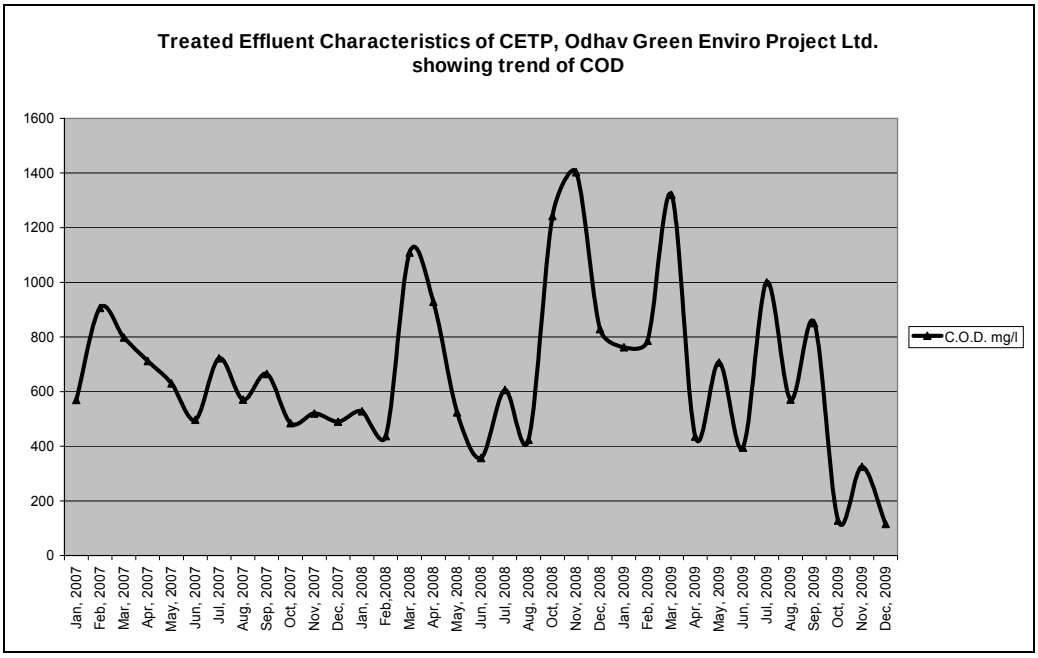
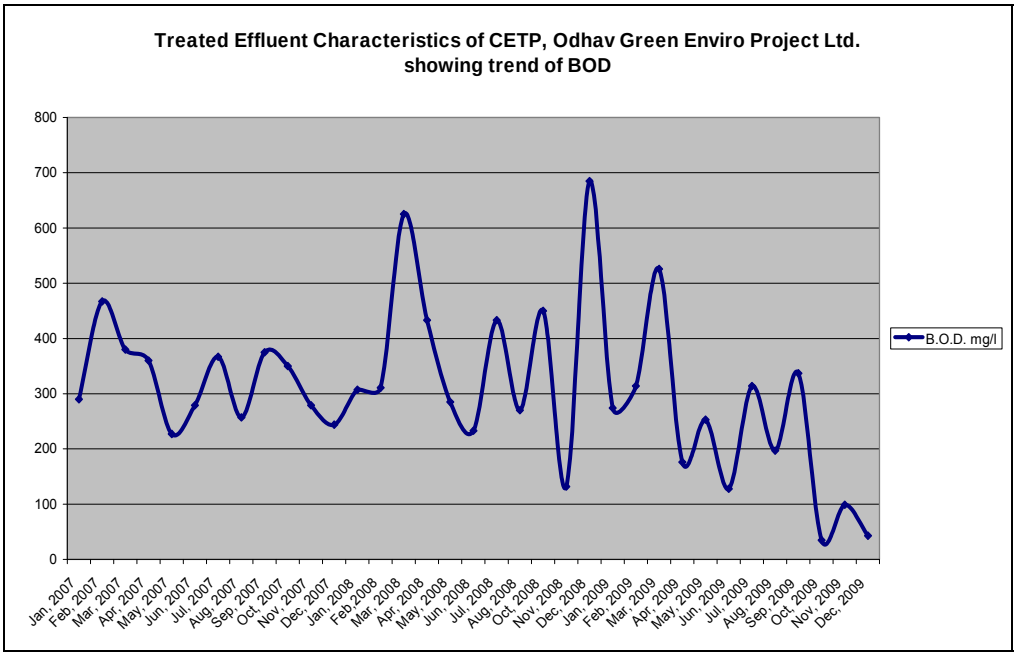


(Refer Annexure - IV)



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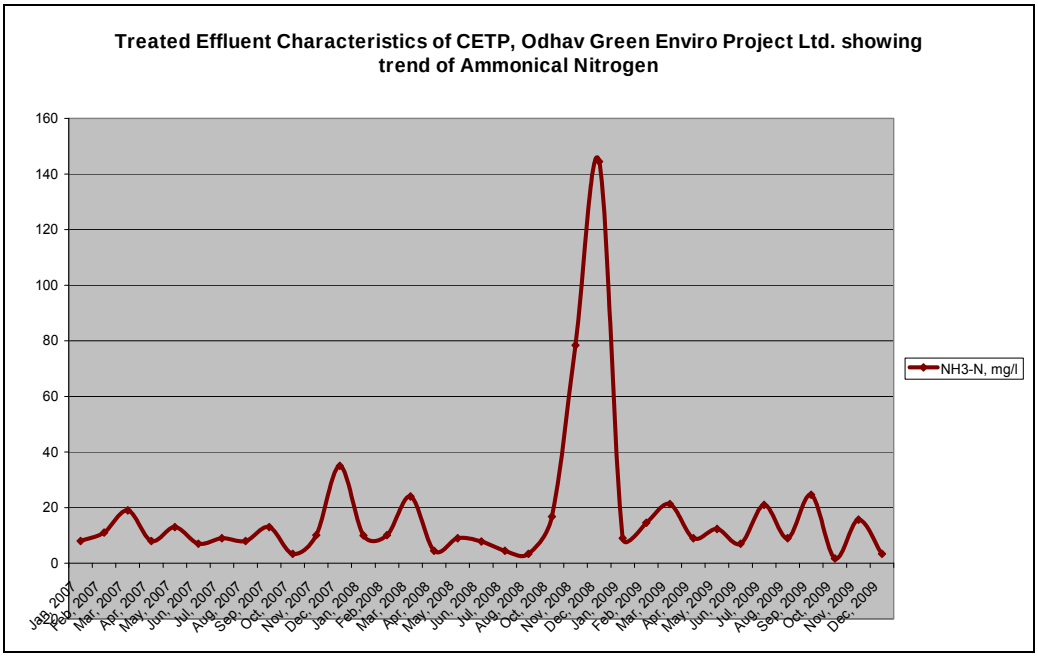
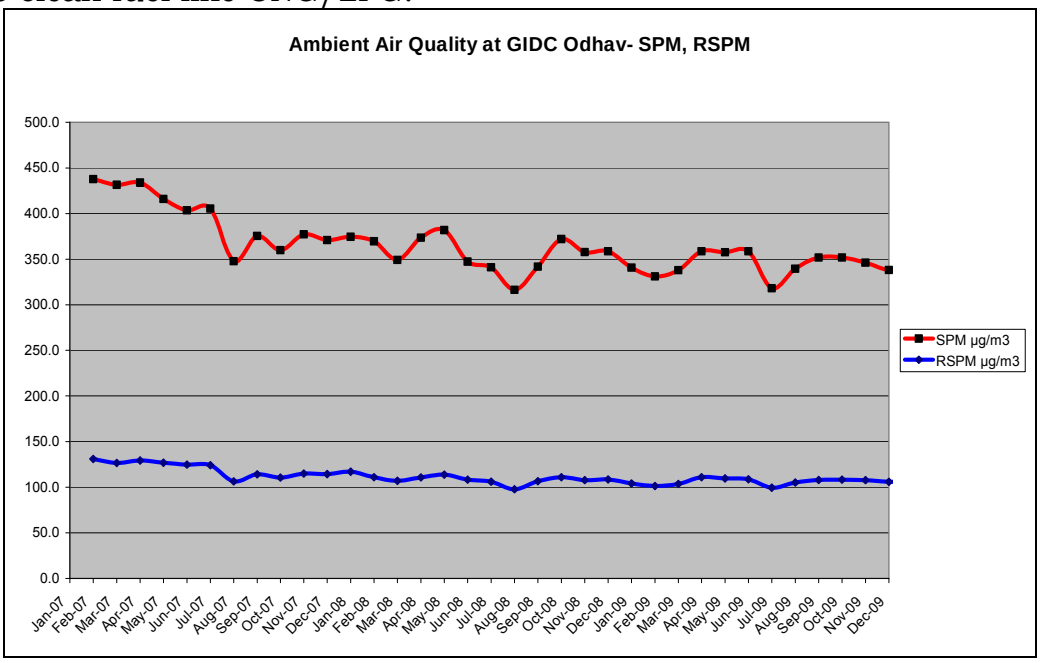


(Refer Annexure - IV)

(B) Air: Board is regularly monitoring the Ambient Air Quality of the industrial estate. The Analysis Report of the last 3 years is compiled and attached herewith. It indicated that Ambient Air Quality of the area is not meeting the latest amended norms. Total 109957 Nos. of all kinds of vehicles has been converted in to clean fuel like CNG/LPG.



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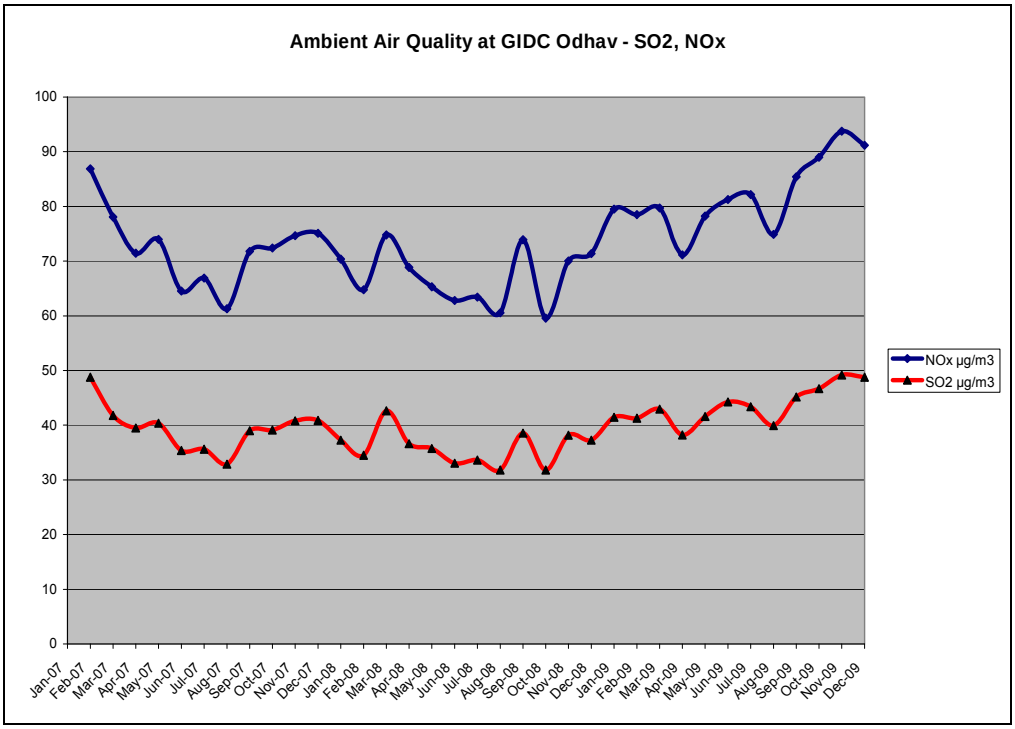

(Refer Annexure - IV)

(c) **<u>Hazardous Waste</u>**: The industrial units of estate are member of common TSDF and presently there is no illegal hazardous waste dumping.

9. <u>ENVIRONMENTAL ISSUES</u>

A. <u>Water environment</u>-

- The entire quantity of effluent generated from this area is discharged into mega pipeline through CETPs. Effluent flows through underground internal collection system to treatment plant and ultimately to mega pipeline (specially laid to convey industrial effluent only). There is only one outlet in the estate.
- Earlier there was direct discharge of effluent by industrial units into Khari cut canal. There is no direct discharge of effluent into Khari cut canal after Hon'ble High Court directives and subsequent vigilant actions by GPCB. But due to illegal disposal of sewage, there is excess hydraulic load in the Industrial Effluent Conveying Mega Pipeline due to which there is occasional overflow at some places which finally reaches Khari

cut canal and hence presently polluted effluent is observed in Khari cut canal.

B. Air Environment:

In view of recent notification of MoEF regarding amendment in Ambient Air Parameters it is observed that the ambient air quality of this area is not meeting with the norms.

C. Soil Environment:

Hazardous waste generated from the cluster is disposed to common TSDF site. No specific soil environment problem has been noticed.

D. Occupational Health:

As per the information available from the office of the Director of Industrial Safety & Health, Ahmedabad and office of the National Institute of Occupational Health (NIOH), Ahmedabad, they have stated that no incidence of death due to pollution or occupational disease or poisoning is recorded in their office.
Occupational health centers are provided by MAH units in this cluster to monitor health of the industrial workers. Primary health centers are provided in each industrial cluster.

E. Identification of key indicators for action point:

- The major action point are basically decided on basis of waste water quality being discharge into River Sabarmati
- The air action plan is formulated based on EPCA format which was decided by the Hon'ble Supreme Court directives.

10. EXISTING ENVIRONMENTAL INFRASTRUCTURE:

CETP:

A) The Odhav Enviro Projects Ltd, GIDC, Odhav

Odhav Enviro Projects Ltd. (OEPL) at GIDC Odhav is operating CETP for collection, conveyance, treatment and disposal of effluent generated by the industrial units (60 members) situated at GIDC Odhav. The designed capacity of CETP is 1.2 MLD. The details of CETP are as follows:

Details of CETP:

Name of unit	**Effective volume m3**	**Size in meter**
Capacity of the CETP	1.2 MLD	
Equalization tank	3611	6.6*26.4 Dia
Flash mixer	18.75	2.5*2.5*3
Clarifloculater	157	2*10 Dia
First stage aeration tank	2406	4.5*26.1 Dia
First stage secondary clarifier	157	2*10 Dia
Second stage aeration tank	404	4.5*10.7 Dia
Second stage secondary clarifier	157	2*10 Dia
Second stage secondary Intermediate storage tank	31.4	2.5*4 Dia
Pressure sand filter	-	-
Activated carbon filter	-	-
Plate & frame type filter press	52 plates	
Sludge drying beds for primary sludge		7*4.3
Sludge drying beds for secondary sludge		6*5

The CETP inlet norms applicable to the member units in respect of the quality of the effluent are as under:

- BOD 1200 mg/l
- COD 3000 mg/l
- TSS 300 mg/l
- Oil & grease 20 mg/L

B) <u>The Odhav Green Enviro Projects Ltd., GIDC, Odhav</u>

Odhav Green Enviro Projects Association (OGEPA), GIDC, Odhav is operating CETP to treat effluent generated from M/s Neptune Textiles Mills P. Ltd. and M/s. Samir Synthetic Mills. The designed capacity of CETP is 1 MLD (Present inflow into the CETP is about 500 KL/d.) The details of CETP are as follows:

Name of unit	Size in meter
Capacity of CETP	1 MLD
Inlet Chamber	1*1*1
Diffused Aeration tank	10.9*9.7*4.2
Secondary Clarifier	7.7 dia *2.45
Intermediate Holding tank	50 KL
Pressure sand filter	1.5* 2 dia
Activated carbon filter	1.5* 2 dia
Treated effluent collection tank	30 KL
Plate & frame type filter press	0.65*0.65*4.5
Sludge Drying Beds	3.4*2*1.2

CETP inlet norms applicable to the member units in respect of the quality of the effluent are as under:

- BOD : 300 mg/l
- COD :1000 mg/l
- TSS : 300 mg/l
- Oil & grease : 20 mg/l

Performance of CETP:

This Board is regularly carrying out monitoring of CETP and the graphical representation of the Analysis Reports is already shown earlier. As seen in the graphical representation there is improvement in performance.

Stagewise modification / upgradation of CETP –

In October 2002 they have started taking domestic sewage at the inlet of CETP for better treatability, In 2007-08 –modification in clariflocculator (primary treatment) and in January 2009 – Commissioning of diffused aeration system in second stage aeration tank.

Factors of Performance Improvement of CETP

- Vigilant and rigorous monitoring by GPCB
- Member units have upgraded their individual ETP and operating them better and mixing of sewage with effluent.
- Implementation of cleaner production

11. ENVIRONMENTAL INFRASTRUCTURE NEED :

A. Effluent conveyance pipeline – For conveyance of effluent Mega Pipeline already exists to convey industrial effluent of Naroda, Odhav, Vatva and Narol Area.

B. There is a need for environmental infrastructure for domestic sewage that is presently being disposed off into Mega Pipeline this will reduce hydraulic load on Mega Pipeline and problem of overflowing of Mega Pipeline will be solved.

12. MONITORING PROTOCOL:

Currently GPCB carries out regular water quality monitoring under GEMS, MINAR and ambient air quality monitoring in the area under SAMP and NAMP. At present samples from 13 Nos of the surface water quality monitoring station are collected. 08 Nos of the ambient air quality monitoring station are operated and samples are collected regularly as per the CPCB protocol. All the CETPs & TSDF in the area are monitored and samples are collected regularly. Sample from the River Sabarmati at Miroli is regularly collected to know the water quality of the river after the outfall of the Mega pipeline. Industrial units located in the area are monitored under the Water Act, the Air Act and the E P Act as per the CPCB guidelines.

Additionally one continuous ambient air quality monitoring station has been made operational recently to monitor the ambient air quality.

13. DRAWING OF ACTION POINTS :

GPCB has conducted series of meetings with the stakeholders, NGOs and State Government agencies to have inputs from them for collection of required data. Based on field survey and monitoring data available with the GPCB, primary details are collected. These details include: Demarcation of geographical boundary, physical verification of pollution sources, environmental concern, demographical details, eco geological features, sensitive receptors and details on environmental infrastructure facility/ technology. Action plan based on this, suggests the various activities/concern, remedial actions, agency responsible along with the time frame for various environmental components. The points specifically highlighted are restriction of water consumption/ wastewater generation, upgradation of individual ETP, modification/upgradation of CETP, stringent CETP inlet and outlet norms, strengthening of APCM, use of cleaner fuel, control on fugitive emission, green belt development, proper hazardous waste management and cleaner production and cleaner technology for the reduction of the waste at source.

See Chapter – 5 for details of action plan.

Chapter-5

New Initiatives

RECENT INITIATIVES BY GPCB FOR POLLUTION CONTROL IN AHMEDABAD AREA :

1. We have reconstituted Technical Committee of Board Member and outside experts to discuss and decide upon the cases of the change of product mix and some typical applications from critically polluted areas.

2. To increase vigorous monitoring, vigilance teams and separate Regional Office are formed under the leadership of Senior Environmental Engineer for Ahmedabad area.

3. For problem of overflow of Mega Pipeline due to excess flow from Narol Industrial Area, separate additional pipeline is being laid and new CETP is being setup by Ahmedabad Textile Processors Association in Narol Industrial Area to resolve the issue.

4. Novel Spent Acid Management - centralized industrial waste exchange and by product recovery facilities is operational since March-2010 and handling about 250 MT of spent acid per day.

5. All the Industrial Units obtaining EC from SEIAA have been imposed stringent norms.

6. Khari cut canal cleaning work is completed. Partial lining work of the Canal has also been completed. Initially the Canal was not approachable but the same has been improved and now it is clean and approachable. Beautification work of the Canal and adjacent areas is being taken up by AMC in time bound manner.

7. Naroda Enviro Project Ltd. has recently signed MOU with Forest Department to develop nursery in in 8000 Sq. Mts. Where 2 lacs sapling will be developed every year and distributed in and around the estate.

8. Irrigation Department has started supplying Narmada Canal Water to Khari cut canal under River Interlinking Plan.

9. The Industrial Units in the Area have carried out activities under Cleaner Production Initiatives.

For State level infrastructural expansion and recent initiatives, please see Chapter – 1 of Introduction.

Chapter-6

Action Plan

DRAFT ACTION PLAN

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
WATER						
1	Magnetic flow meter and flow recorder at final outlet of ETP & CETP.	To control overflowing of mega pipeline, it is necessary to control the discharge of excessive quantity of w/w from the industrial units (i.e. the w/w discharge should be as per CCA condition). To check the quantity of w/w being discharged it is proposed that in the 1st phase the units having effluent quantity > **25** m3/day and all CETPs should provide Magnetic Flow	Identification of units having effluent quantity > **25** KLD.	GPCB, Concerned industries, CETP, Industrial Association	Already identified & verification by 15.07.2010	To be borne by the concerned industry. Association may assist individual units
			Industrial Association will issue the circular to their members to provide the standard flow meter. GPCB will also issue notice to such units.	Concerned industries, CETP, Industrial Association, GPCB	31.7.2010 (Short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
		Meter at the final outlet. Flow recorder is necessary to know the cumulative flow during any period.	Magnetic flow meter required to install at final outlet of ETP by large scale units effluent quantity > **25** KLD and CETP. **Installation of flow meters at the outlet of all ETPs connected to CETP.**	Concerned industries, CETP	31.10.2010 (Short Term)	
2	Water consumption from non permitted sources (eg. Borewell, tanker etc.) or more than permitted quantity	It is observed that many industrial units have no proper control over water consumption which not only increase the overall w/w generation but also tends to w/w disposal mismanagement. There-fore, it is necessary to direct unit to restrict water	Identification of source of water i.e. tanker, bore well etc. for its authenticity.	Concerned industries, Industrial Association, GIDC , GPCB	31.8.2010 (Short Term)	-
			Issue direction to stop the unauthorized use of water by the industries.	Concerned industries, Industrial Association, GIDC , GPCB .	31.10.2010 (Short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
		consumption as per the quantity mentioned in CCA application and to also to direct GIDC to seal the non permitted bore wells.	Direction to seal the non permitted bore well, tankers	GIDC/ Concern agency	31.12.2010 (Short Term)	
3	Sealing of unauthorized discharge other than regular discharge of effluents.	All industrial units shall be directed to operate only one outlet through flow meter for effluent disposal so that unauthorized discharge can be checked. The Concerned authority shall disconnect / seal such unauthorized discharge.	Concern authority will be asked to identify unauthorized outlet.	Concerned industries, Industrial Association, GIDC, GPCB.	Ongoing process and will be made more vigorous	Expenses, if any, to be borne by the unit having unauthorized outlet.
			All industrial units will be asked to submit notarized undertaking to GPCB with a copy to respective association stating that there is no unauthorized outlet.	Concerned industries	31.8.2010 (Short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
4	Zero discharge units – not to have Drainage connection or any outside discharge.	GIDC/ AMC shall be asked to disconnect the drainage connection (if any) to the industrial units which are issued CCA with zero discharge condition. Careful monitoring shall be carried out to avoid any illegal discharge.	Inventorisation of the units having consent under Water Act for zero discharge.	Industrial Association, GPCB	31.7.2010 (Short Term)	Expense to be borne by the defaulter unit.
			Review the condition specifically for multi products/ H- acid, VS manufacturing units.	GPCB	31.12.2010 (Short Term)	
			Drainage connection to be disconnected of zero discharge units and certified by GIDC/AMC and checked by GPCB.	Concerned industries, Industrial Association, GIDC, GPCB.	31.12.2010 (Short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
			All zero discharge units will be asked to submit notarized undertaking to GPCB with a copy to respective association stating that there is no unauthorized outlet and observing zero discharge.	Concerned industries	30.9.2010 (Short Term)	
5	Identification of unauthorized connection to GIDC drainage line OR Mega pipeline	Intensive monitoring shall be carried out of the units, which are located on the bank / adjacent to mega pipeline / kharicut canal.	Unauthorized connection in drainage line to be checked and disconnected by competent authority and verified by GPCB.	AMC, GIDC, Industrial Association, GPCB	Ongoing process	Expense to be borne by the defaulter unit.

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
6	Identification of non-biodegradable effluent	For better treatability at ETP/ CETP, units having non-biodegradable effluent shall be identified and shall be directed to segregate the said stream and to install appropriate and effective treatment units like multiple effect evaporator, RO system, incinerator etc	Identification of the streams having Non-biodegradable effluent containing refractory COD, toxicants like Ammonical Nitrogen where treatability not possible.	Concerned industries, Industrial Association, CETP, GPCB	31.8.2010 (Short Term)	Common incinerator may be installed for non-biodegradable effluent Cost may be worked out by respective association on PPP mode within one year.
			The units manufacturing pesticides, dyes intermediates, bulk drugs will be asked to study their present treatability of effluent and accordingly segregate non-biodegradable streams.	Concerned industries	31.12.2010 (Short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
			A time bound action plan required to be submitted to install multiple effect evaporator/RO system/ Incinerator System/ New technology including cleaner production and cleaner technology by concerned industries.	Concerned industries	30.11.2010 (Short Term)	
			Commissioning of above proposal	Concerned industries	31.3..2011 (Long Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
7	Reduction of pollution load on CETP & upgradation of CETP	It is observed that CETP inlet and outlet norms are not meeting with the prescribed norms.	Based on the data available review the present inlet norms of the CETP for the units generating effluent more than 25 KLD. Stringent the inlet norms of the same.	GPCB,	31.7.2010 (Short Term)	PPP mode
		The performance evaluation of CETP indicates quality of effluent discharge is not as per the specified norms, which clearly indicates the CETP requires up gradation/modification	CETP authority shall study their treatability of effluent from prominent agency.	CETP authority	30.9.2010 (Short Term)	
			Based on the recommendation of agency, CETP authority shall upgrade CETP.	CETP authority	31.03.2011 (Long Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
8	Checking of illegal discharge of Acidic/ highly polluted effluent	Units manufacturing dye-intermediates are generating spent acid of low concentration which is required to manage properly. Necessary directions shall be issued to the spent acid generating as well as acid using industrial units to become member of NOVEL for proper management of spent acid	Movement of spent acid shall be regularized by single point purchase system. Acidic/ highly polluted effluent which is discharged illegally to be checked by GPCB as well as Industrial Association on routine basis	NOVEL, Industrial Association, GPCB	Ongoing process	-
9	To stop tray drying and salting process	Generation of high TDS stream wastewater, which disturb the functioning of the CETP.	Identification of the unit having tray drying and salting process	Concerned industrial units, GPCB	30.9.2010 (Short Term)	-
			Setting up of common spray drying facility or identification of spare capacity with existing spray dryer	CETP, VIA	31.3.2011 (Long Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
			Complete phase out of tray drying and salting process	Concerned industries	30.6.2011 (Long Term)	
10	Upgradation of drainage system	CETP receives partially treated w/w through drainage. Hence frequent problems of drainage chocking are observed resulting into overflow of manholes/ seepage etc. concerned agency for the drainage shall be directed for proper maintenance	**The scheme for upgradation of drainage system to remove the problem of choking of drains should be prepared by 31st December, 2010 and adequate measures suggested in scheme should be implemented.**	INDUSTRIAL ASSOCIATION, GIDC, AMC	31/12/2010	Scheme in this regards may be prepared by the concerned authority for financial help under the government policy, if any.

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
11	To study impact on health within and surrounding population	Probable health risk within and vicinity of 2 kms from the cluster.	To carryout health impact assessment study To carryout health impact assessment study w r to Blood Test, Lung Function, Cell Rupture With Sputum Test, Blood Pressure Test	Concern industrial Association through NIOH/DISH	31.12.2010 (Short Term)	PPP Mode
AIR						
1	Strengthening of air pollution control measures	Air Action Plan for Ahmedabad City is under implementation. The industrial units shall be directed to upgrade APCM to meet the amended Ambient Air Quality Norms.	Industrial units consuming solid fuel like coal, agro waste, etc. required to upgrade air pollution control system by installing bag filters so that ambient air in the nearby area meet with the revised norms of PM.	Concerned industries, GPCB	30.09.2010 (Short Term)	To be borne by the concerned industry. Association may assist individual units

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
			Air pollution control system attached to process is required to be checked for adequacy and if needed upgrade the same by adopting efficient absorbing media.	Concerned industries, GPCB	30.09.2010 (Short Term)	
			Total 102 Bag filters & 6 ESPs had been installed by the industries as APCM. Modification & upgradation of installed Bag filters and ESP.	Prominent agency	31.12.2010 (Short Term)	concerned industries

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
2	Adoption of cleaner fuel	Gas infrastructure agency has created an infrastructure for industrial gas supply. The industrial units shall be asked to convert their boilers for gas usage.	**Usage of gas in industries should be ensured based on the techno-economic feasibility study which should be completed before 31st December, 2010 and use of gas in industry should be ensured within one year**	Concerned industries, Gas Company, GPCB	Reasonable	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
3	Plantation in the industrial estate	Concerned authority shall be asked to provide adequate green belt in the periphery as well as wherever possible within the estate.	Considering the present plantation as baseline datum, five years plan for plantation of industrial estate to be submitted by the GIDC/ Association in consultation with Forest department.	Industrial Association, GIDC, Forest dept.	30.09.2010 (Short Term)	
4	Restriction on using un authorized fuel.	Use of unauthorized fuel like petcock, shall be stopped. The industrial units shall be directed to use the fuel as per the consented condition	Industrial units shall use authorized fuel as consented and shall not use any unauthorized fuel.	Concerned industries, GPCB	31.12.2010 (Short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
5	Control of fugitive emissions.	It is observed that fuel handling, chemical storage and processes including pickling are the major source of fugitive emission. Hence the industrial units shall be directed to adopt good housekeeping practices.	Good practices like cleaner production and cleaner technology to be adopted in fuel handling, process control in close system and house keeping	Concerned industries., **GPCB.**	30.09.2010 (Short Term)	concerned industry

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
6	Ambient Air Quality Monitoring	Concerned agency shall be asked to operate the existing AAQMS regularly and also to increase the nos. of stations.	Existing AAQMS to be strengthened to monitor AAQ as per new notification and monitoring of POP, HAPs. New AAQMS shall be installed. Installation of continuous ambient air monitoring station.	GPCB, Industrial Association	31.12.2010 (Short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
iii	**Hazardous Waste**					
1	Checking of illegal transportation and dumping of Hazardous waste	TSDF operators/Industries Association shall be asked to keep vigil on their member units regarding timely and regular disposal of HAZ wastes	Vigil check required to be kept on illegal transportation and dumping of hazardous waste.	Individual industries, CETP, NGO Industrial Association, GPCB	On going process	Concerned unit and recycler unit.
2	CPCB guidelines for TSDF are to be strictly followed	TSDF guidelines for waste quantity at site, sheds for different wastes, fire fighting facility working of incineration, etc. are not properly observed.	TSDF operator will comply with these requirements.	Concerned TSDF	31-08-2010 (Short Term)	Concerned TSDF
			No dumping of incinerable waste in TSDF	Concerned TSDF	31.08.2010 (Short Term)	
			Grouping & grading of different type of waste at TSDF.	Concerned TSDF	31.08.2010 (Short Term)	
3.	Adoption of 4-Rs (Reduce, Recover, Reuse, Recycle)	It is required to adopt 4-Rs for better management of Hazardous waste and co-incineration of incinerable hazardous waste in cement kiln.	Inventorisation of the various solid/ Hazardous waste generated from the industries	GPCB, Concern industries, Industrial Association, Gujarat Cleaner Productivity Council	31.12.2010 (Short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
			Creation of waste exchange center inline with Novel Spent Acid System	Concern industries, Industrial Association	30.6.2011 (Long Term)	
3	Capacity Upgradation of Existing TSDF	It is observed that TSDF is about to reach their design capacity. therefore, it is required to expand their design capacity	TSDF authority may be asked to work out for the remaining life of existing TSDF and identification of new site / new cell in existing facility as per requirement.	Concerned TSDF	31.12.2010 (Short Term)	TSDF authority may approach the Ministry of Industry for Upgradation of TSDF under various schemes

Chapter-7

Effect on CEPI

Expected CEPI score based on Action plan framed by GPCB

Sub component	Basis for subcomponent rating	Max	CEPI as published in CPCB document of Dec-2009			Expected reduction in CEPI based on GPCB action plan			Justification for expected reduction		
			Air	Water	Land	Air	water	Land	Air	Water	Land
A1	Based on the data on the presence of toxins	**6**	6	3	3	6	3	3	-	-	-
A2	Based on the scale of industrial activities	**5**	5	5	5	5	5	5	-	-	-
A	A1*A2	**30**	30	15	15	30	15	15			
B1	Based on the pollutant concentration data(Ambient Pollutant Concentration)	**8**	7.75	8	8	7.75	8	3	-	-	Reduction in B1 since TSDF exists for the industrial cluster and vigilant monitoring will be carried out so that there is total compliance for hazardous waste management
B2	Based on the impact on people (Evidence* of adverse impact on people)	**6**	3	3	3	3	3	0			**Reduction in B2 since there will be no impact on people after there is total compliance for hazardous waste management.**

B3	Based on the impact oneco-geological features(reliable evidence of adverse impact on eco-geological features)	**6**	3	3	3	3	3	0			**Reduction in B3 because there will be no impact on eco-geological features after total compliance for hazardous waste management**
B	B1+B2+B3	**20**	13.75	14	14	13.75	14	3			
C1	Based on potentially affected population)	**5**	3	3	3	3	3	1	-	-	**Reduction in C1 because after compliance of hazardous waste management there will be no impact of hazardous waste on people.**
C2	(Based on the level of exposure)	**5**	3	3	3	3	3	1	-	-	**After management of hazardous waste the level of exposure will decrease and hence decrease in C2**
C3	Based on the risk to sensitive receptors	**5**	0	5	5	0	5	5	-	-	
C	(C1*C2) + C3	**30**	9	14	14	9	14	6			

D	Based on the informationon pollutioncontrol facilities	**20**	10	15	15	5	10	5	**There will be reduction in D because after enforcing the norms for common facilties it is envisaged that they will adequate and will be complying.**	**There will be reduction in D because after enforcing the norms for common facilities' it is envisaged that they will adequate and will be complying.**	**There will be reduction in D because after enforcing the norms for common facilties it is envisaged that they will adequate and will be complying.**
CEPI	A+B+C+D	**100**	62.75	58	58	57.75	53	29	-		
	max.CEPI		62.75			57.75					
	Aggregated CEPI		75.28			64.24			**Thus after implementation of this Action Plan for short term period the CEPI score is predicted as 62.18 which will further decrease on implementing the long term action plan.**		

Annexure - I

Treated wastewater quality at CETP, Naroda

Month	NH3-N,	B.O.D.	C.O.D.
Permissible Limit	**50 mg/l**	**30 mg/l**	**100 mg/l**
Jan,2007	19	1667	6139
Feb,2007	56	2250	6924
Mar,2007	34	1200	3530
Apr,2007	34	1900	3628
May,2007	45	1100	3979
Jun,2007	73	3200	6869
Jul,2007	27	1700	3297
Aug,2007	40	1000	2518
Sep,2007	40	850	2869
Oct,2007	72	1600	4516
Nov,2007	164	1500	3437
Dec,2007	150	1789	3976
Jan,2008	180	1534	3758
Feb,2008	183	1792	4320
Mar,2008	58	1475	3176
Apr,2008	107.52	875	2440
May,2008	11.2	800	2869
June,2008	78	1067	2670
July,2008	31	450	1867
Sept,2008	84	893	2880
Oct,2008	93	252	1714
Nov,2008	112	214	1207
Dec,2008	42.56	452	1548
Jan,2009	17.92	345	1032
Feb,2009	16.8	276	606
Mar,2009	33.6	362	827
Apr,2009	12.32	242	909
May,2009	15.68	418	1135
Jun,2009	111	610	1780
Jul,2009	112	555	1485
Aug,2009	166	611	1573
Sep,2009	32.48	402	1063
Jan,2010	140	360	1131
Feb,2010	31	125	444
May,2010	148	709	1371
June,2010	192	530	1542
July,2010	228	307	1167
Aug,2010	180	525	1450
Sept,2010	191	530	1675

Annexure – II

Ambient Air Quality at CETP Naroda

Month	RSPM	SPM	SO_2	NOx
Permissible Limit	**100 µg/m³**	**200 Mg/m³**	**80 µg/m³**	**80 µg/m³**
Feb-07	63.13	141.13	9.73	17.89
Mar-07	75.13	188.5	10.55	18.22
Apr-07	74.9	167.27	9.05	18.12
May-07	117.2	268.83	12.73	17.76
Jun-07	82.48	185.39	10.42	16.16
Jul-07	73.72	166.21	10.66	14.41
Aug-07	76.04	172.46	10.84	15.99
Sep-07	91.92	209.96	11.94	17.32
Oct-07	83.23	191.07	9.52	14.36
Nov-07	61.1	150.7	9.3	12.4
Dec-07	71.46	157.67	8.54	12.28
Jan-08	74.8	176.7	10.3	14.8
Feb-08	88.17	196.96	11.81	18.13
Mar-08	87.21	200.33	12.61	19.16
Apr-08	81.3	194.33	11.93	19.8
May-08	87.08	218.63	11.71	22.87
Jun-08	83.33	209.75	12.86	20.49
Jul-08	77.45	199	14.02	22.82
Aug-08	78.58	185.79	14.9	20.76
Sep-08	73.37	169.9	11.59	16.99
Oct-08	71.56	191.39	11.81	18.72
Nov-08	65.27	152.73	11.76	15.88
Dec-08	74.77	171.73	11.96	17.18
Jan-09	73.25	164.42	12.15	16.82
Feb-09	83.08	181.67	13.16	17.63
Mar-09	88.13	195.17	13.56	18.53
Apr-09	88.79	193.71	15.56	19.65
May-09	93.29	207.63	14.05	20.38
Jun-09	94.17	213.5	13.75	20.96
Jul-09	87.48	200.22	13.81	20.39
Aug-09	87.73	199.03	13.79	20.17
Sep-09	70.38	160.13	15.35	19.68
Oct-09	89.54	202.08	13.39	19.6
Nov-09	77.4	185	18.27	22.44
Dec-09	72.75	172.17	14.47	18.69
Jan-10	84.58	177.75	14.62	18.88
Feb-10	90.08	187.38	14.07	18.28

Mar-10	97.67	202.23	15.23	19.18
Apr-10	105.33	210.04	15.67	19.48
May-10	106.27	213.9	16.39	20.1

Annexure - III

Treated wastewater quality at CETP Odhav Enviro Project Ltd.

	NH3-N,	B.O.D.	C.O.D.
Permissible Limit	**50 mg/l**	**30 mg/l**	**250 mg/l**
Jan, 2007	53	229	583
Feb, 2007	48	238	1013
Mar, 2007	48	160	763
Apr, 2007	39	140	867
May, 2007	63	175	983
Jun, 2007	63	320	714
Jul, 2007	32	195	455
Aug, 2007	13	60	363
Sep, 2007	52	1006	3472
Oct, 2007	55	1025	2207
Nov, 2007	69	720	1648
Jan, 2008	120	1125	2441
Feb,2008	100	800	1680
Mar, 2008	92	1350	2880
Apr, 2008	59	167	576
May, 2008	39	175	384
Jun, 2008	25	185	352
Jul, 2008	17.92	186	531
Aug, 2008	10.08	110	416
Sep, 2008	12.32	232	774
Oct, 2008	12.32	171	531
Nov, 2008	20.2	53	255
Dec, 2008	50.4	222	800
Jan, 2009	30.24	261	765
Feb, 2009	49.28	303	708
Mar, 2009	50.4	219	467
Apr, 2009	40.32	311	757
May, 2009	44.8	153	430
Jun, 2009	39	308	983
Jul, 2009	34	273	717
Aug, 2009	53	220	654
Sep, 2009	10.08	242	871
Nov, 2009	5.04	52	366
Dec, 2009	13	40	416
Feb, 2010	16	28	208
May,2010	7.28	84	264
June,2010	2.8	128	378

Annexure - IV

Treated wastewater quality at CETP Odhav Green Enviro Project Ltd.

Month	NH3-N,	B.O.D.	C.O.D.
Permissible Limit	50 mg/l	30 mg/l	250 mg/l
Jan, 2007	8	290	570
Feb, 2007	11	467	906
Mar, 2007	19	380	798
Apr, 2007	8	360	712
May, 2007	13	227	630
Jun, 2007	7	279	497
Jul, 2007	9	367	722
Aug, 2007	8	257	571
Sep, 2007	13	375	665
Oct, 2007	3.36	350	485
Nov, 2007	10.1	279	520
Dec, 2007	35	244	490
Jan, 2008	10	307	528
Feb,2008	10.1	311	437
Mar, 2008	24	625	1109
Apr, 2008	4.48	433	929
May, 2008	8.96	285	524
Jun, 2008	7.84	233	357
Jul, 2008	4.48	433	606
Aug, 2008	3.36	270	424
Oct, 2008	16.8	450	1243
Nov, 2008	78.4	132	1403
Dec, 2008	144.48	685	829
Jan, 2009	8.96	274	762
Feb, 2009	14.56	314	786
Mar, 2009	21.28	526	1320
Apr, 2009	8.96	176	436
May, 2009	12.32	253	707
Jun, 2009	7	128	395
Jul, 2009	21	314	1000
Aug, 2009	9	197	571
Sep, 2009	24.64	337	851
Oct, 2009	1.68	35	128
Nov, 2009	15.68	99	325
Dec, 2009	3.36	43	116
Jan,2010	8.3	124	515
Mar, 2010	1.68	32	200
Apr,2010	11	47	196
May,2010	5.04	69	184

Annexure - V

Ambient Air Quality monitoring at Odhav Estate

Month	RSPM	SPM	SO_2	NOx
Permissible Limit	**100 µg/m³**	**200 Mg/m³**	**80 µg/m³**	**80 µg/m³**
Feb-07	131.0	306.62	48.78	38.1
Mar-07	126.71	304.83	41.79	36.29
Apr-07	129.25	304.75	39.52	31.94
May-07	126.92	289.08	40.37	33.61
Jun-07	124.67	278.87	35.38	29.16
Jul-07	124.21	281.21	35.64	31.27
Aug-07	106.42	241.25	32.9	28.39
Sep-07	114.25	261.25	38.99	32.81
Oct-07	110.67	249.17	39.12	33.29
Nov-07	115.0	262.12	40.83	33.82
Dec-07	114.46	256.5	40.89	34.21
Jan-08	116.96	257.54	37.28	33.09
Feb-08	110.92	258.67	34.53	30.24
Mar-08	106.96	242.29	42.65	32.14
Apr-08	110.8	262.83	36.64	32.22
May-08	113.79	268	35.76	29.57
Jun-08	108.29	238.92	33.06	29.76
Jul-08	106.17	234.87	33.65	29.78
Aug-08	97.83	218.5	31.82	28.73
Sep-08	106.62	235.25	38.56	35.37
Oct-08	111	261	31.82	27.75
Nov-08	107.83	249.79	38.18	31.87
Dec-08	108.62	250.08	37.27	34.11
Jan-09	104.21	236.5	41.48	38.04
Feb-09	101.33	229.83	41.29	37.23
Mar-09	103.58	234.37	42.94	36.78
Apr-09	111.04	247.62	38.24	32.91
May-09	109.58	247.83	41.61	36.64
Jun-09	108.79	249.83	44.27	37.01
Jul-09	99.46	218.58	43.39	38.78
Aug-09	105.12	234.37	39.96	34.93
Sep-09	108.04	243.75	45.19	40.22
Oct-09	108.25	243.54	46.7	42.3
Nov-09	107.75	238.5	49.2	44.57
Dec-09	105.92	232.17	48.8	42.4

Annexure – VI

TREATED WASTEWATER QUALITY OF STPS

OLD VASNA SEWAGE TREATMENT PLANT -126 MLD

	T.D.S.	T.S.S.	B.O.D.	C.O.D.
	mg/l	mg/l	mg/l	mg/l
Jan-09	1214	38	142	430
Feb-09	1574	278	243	586
Mar-09	1268	20	31	111
May-09	1160	36	40	132
Jun-09	1164	14	50	176
Jul-09	1286	38	38	138
Aug-09	1322	22	23	68
Sep-09	1134	18	16	64
Oct-09	1010	20	15	59
Nov-09	1088	28	2	12
Dec-09	1138	20	16	68
Jan-10	1094	20	11	55
Feb-10	1036	20	23	80
Mar-10	1086	20	17	68
April-10	968	36	08	36
May-10	1084	30	20	64
June-10	678	266	12	55
July-10	1158	28	20	56
Aug-10	922	34	11	44
Sept-10	744	32	19	60

NEW VASNA TERMINAL SEWAGE PLANT- 76 MLD

	T.D.S.	T.S.S.	B.O.D.	C.O.D.
	mg/l	mg/l	mg/l	mg/l
Jan-09	1078	44	94	299
Feb-09	1060	88	184	426
Apr-09	826	10	73	285
May-09	852	44	83	251
Jun-09	1168	120	80	272
Jul-09	1002	258	91	308
Aug-09	870	170	91	232
Sep-09	768	76	21	76
Oct-09	742	106	15	51
Nov-09	1250	46	4	20
Dec-09	1074	56	22	104
Jan-10	762	26	33	399
Feb-10	808	104	59	208
Mar-10	788	76	53	184
April-10	1194	76	33	116

May-10	924	46	22	104
June-10	574	300	21	79
July-10	862	66	58	204
Aug-10	808	110	58	208
Sept-10	584	42	88	210

NEW PIRANA SEWAGE TREATMENT PLANT- 182 MLD

	T.D.S.	**T.S.S.**	**B.O.D.**	**C.O.D.**
	mg/l	**mg/l**	**mg/l**	**mg/l**
Jan-09	1082	86	97	303
Mar-09	1630	238	222	635
Apr-09	1466	28	211	605
May-09	1098	368	236	590
Jun-09	1474	276	182	500
Jul-09	1672	438	258	765
Aug-09	1838	368	304	760
Oct-09		1132	46	165
Nov-09	896	344	47	134
Dec-09	1170	338	135	524
Jan-10	1240	138	66	528
Feb-10	1032	302	115	484
Mar-10	934	318	107	460
April-10	1142	44	89	308
May-10	1192	234	74	228
June-10	854	472	106	375
July-10	8660	648	285	999
Aug-10	1074	210	98	424
Sept-10	858	118	217	566

OLD PIRANA SEWAGE TREATMENT PLANT – 106 MLD

	T.D.S.	**T.S.S.**	**B.O.D.**	**C.O.D.**
	mg/l	**mg/l**	**mg/l**	**mg/l**
Jan-09	960	-	54	147
Feb-09	1112	10	49	128
Mar-09	1716	38	78	290
Apr-09	1134	8	48	131
May-09	930	44	55	183
Jun-09	1014	16	59	184
Jul-09	1010	52	40	159
Aug-09	1132	38	22	104
Sep-09	954	20	14	68
Oct-09	838	20	5	27

Nov-09	1094	24	10	47
Dec-09	982	20	12	40
Jan-10	988	30	7	42
Feb-10	888	26	27	76
Mar-10	888	8	22	72
April-10	1028	26	33	146
May-10	924	08	09	48
July-10	972	30	22	76
Aug-10	752	16	71	175
Sept-10	386	28	20	75

Compliance of Status of Suggestions /comments of steering committee:

1.	Need for demarcation of Geographical boundaries and the impact zones in a digitized map.	Map already obtained and included.
2.	Long term and short term plans along with sector and region-wise action points have to be defined clearly with time line, cost and responsible implementing agencies/ stakeholders.	Covered under action points
3.	Major industry-based action plans should be prepared so that the problems of individual units could be identified and action points (long term and short term) be implemented within stipulated time-frame.	On the basis of the pollution potentiality, industries have been identified and specific directions issued. These directions are being presently under verification.
4.	Functioning of CETP/FETP/EPL/PETL in Ankleshwar should be reviewed and design should be re-checked on the basis of COD load, carbonaceous BOD, refractive COD through performance study.	-
5.	Appropriate action points should be incorporated in action plan to control flow of sewage in Amla Khadi and Chhapre Khadi in Ankleshwar.	-
6.	Groundwater quality should be assessed properly and taken into consideration and remedial measures should be incorporated for the improvement in groundwater quality.	Ground water monitoring is being regularly carried out.
7.	Quantification of pollution from non-point sources should be done and baseline data of VOC should be collected.	-
8.	Short-term and long term awareness programme should be incorporated.	This is regular activity. Recently two workshops organized.
9.	Online monitoring system linked with regional office and head office at-least at two stations (Ankleshwar	Online monitoring of Ambient air monitoring of Maninagar area is recently started and at present

	and Panoli) should be included in plan.	linked with CPCB on trial basis.
10.	Scheme of plantation with clear defined policy should be incorporated to control odour problem in Ankleshwar.	-
11.	GPS based transportation and tracking system for hazardous waste should be ensured.	Under consideration and planning stage.
12.	Action plans should clearly be defined with short term and long term actions including technological improvement in small scale sector and budgetary requirement for various works.	Identified pollution potential industries, common infrastructure facilities and other related Government agencies / departments have already submitted time bound technological improvement programme along with its financial outlay. Compliance verification for the same is also being done from time-to-time.
13.	DG sets should be provided at all pumping stations/ETPs/STPs to avoid overflow of untreated effluent during power failure in all clusters.	Installed at all common facilities.
14.	Efforts should be made for technological intervention (Green/clean technology) in all the industrial clusters where SSI's using old technology exist in cluster.	It is continuous process and same is under implementation stage.
15.	Efforts should be made for complete utilization / recycling of treated effluent in the industries and discharge in deep sea should be avoided for resource conservation.	Industries in textile cluster of Narol has started the reuse and recycling of treated effluent.
16.	Industrial and domestic waste should be treated separately.	Domestic waste water by an individual industry is mainly discharged into septic tank / soak pit system. Some also takes it with effluent for treatment and to maintain their biomass requirement.
17.	Action points for proper functioning of TSDF/CETP and FETP should be prepared.	Included at Action Point no. 7 of Short Term Action Plan of Water and at Action Point no. 2 of Hazardous Waste.
18.	Sectoral/regional/micro level plans for reduction/reuse/recycling of wastewater /awareness and control	Included at Action Point no. 5 of Short Term Action Plan of Air.

	of fugitive emission for non-point sources should be prepared.	
19.	Action points for Groundwater management/VOC/HAPS control /noise pollution control should be incorporated in plan.	This has already been included under various action points of the Action Plan.
20.	Resource management plan/future development/managerial plan for new sitting of industries should also be incorporated.	-
21.	Quantification of pollutants needs to be done including solvent consumption of industries.	-
22.	Health Impact Assessment Study to be undertaken.	Included at Action Point no. 11 of Short Term Action Plan of Water.
23.	Plan of Green Belt development to be incorporated.	During this monsoon about 31,000 seedlings have been planted in GIDC Naroda and Odhav.
24.	Impact on CEPI score after implementation of short term and Long term Action points should be estimated.	Estimated and presented in chapter - 7 with Action Plan.
25.	Review of locations of existing Air, Water and Ground water monitoring stations and need of new stations with regard to density of Industries.	Under SAMP, NAMP, GEMS, MINARS etc. samples are collected regularly. However, need of new stations with regard to density of industries, if any, is being explored.
26.	Monitoring of all STPs and CETPs must be conducted regularly and should be recorded.	Monthly visit is being carried out and data of visit as well as analysis results can be made available using XGN.
27.	Plan for Municipal Solid Waste, plastic waste, Bio-medical and Hazardous Waste quantification and management. Present status need to be mentioned.	This has already been covered under action plan.
28.	GPS based continuous transportation and tracking system for hazardous waste in Ankleshwar.	Under consideration and planning stage.
29.	The plastic waste management in Vapi through co-processing in Cement Kiln would be more environment friendly rather than its	-

	conversion into Diesel to avoid sludge disposal problem.	
30.	Vehicular pollution and Traffic management should be addressed in the action plan.	This is already covered under the Air Action plan of Ahmedabad city reviewed by Bhurelal committee.
31.	Magnetic flow meters/ electric meters with recorders should be used for flow measurements.	Included at Action Point no. 1 of Short Term Action Plan of Water.
32.	Action for reducing consumption of fresh water by the industries as per CREP recommendations based on consumption per unit production.	Compliance of CREP action points are being monitored. Additionally, provision of MEE and RO by various industries has resulted into recycling of water and thus total fresh water requirements have reduced.
33.	Action regarding capacity building of SPCB to ensure proper monitoring and compliance of action points.	-
34.	Adoption of Principles of reduces, reuse, recycle & recover in action plan.	Included at Action Point no. 3 of Short Term Action Plan of Hazardous Waste.

S.N	Action point	Suggestion	Compliance
Action Plan for Water Pollution Control			
1.	1.1	Identification of units having effluent quantity > 25m3/day should also be taken into consideration to meet the flow standards as per design of CETP.	Implemented.
2	1.3	Installation of flow meters at the outlet of all ETPs connected to CETP should be incorporated as a short term plan.	Implemented.
3	10	The scheme for upgradation of drainage system to remove the problem of choking of drains should be prepared by 31st December, 2010 and adequate measures suggested in scheme should be implemented.	Drainage network within the GIDC is installed, operated and maintained by respective Industrial Associations. Mega pipeline is regularly cleaned and maintained by the AMC.
Action Plan for Air Pollution Control			
4	2	Usage of gas in industries should be ensured based on the techno-economic feasibility study which should be completed before 31st December, 2010 and use of gas in industry should be ensured within one year	533 Nos. of units have been converted to Natural gas.
5	5	Gujarat Pollution Control Board should also be involved as the implementing agency for control of fugitive emissions by keeping a vigil on the concerned industries.	Awareness program has been organized recently by the GCPC.
Other suggestions			
1.	Time bound Action plan for upgradation of Pirana STP (182 MLD) should be incorporated		Notice u/s 33-A of the Water Act is already issued.
2.	Detailed health impact study should be carried out through a reputed agency.		Industrial Associations are directed to carry out the health study.
3.	CEPI should be evaluated for the same criteria pollutants considered by CPCB and		Expected CEPI is calculated on the same basis.

	various indices should be considered as per the standard guidelines mentioned in CPCB documents.	
4.	CEPI should be evaluated on the basis of the real time data after implementation of short term and long term action plans.	Estimated and presented in Chapter 7 of Action Plan.
5.	Present status and future plan for greenbelt development should be incorporated as per the norms fixed in the master plan of the area with respect to area under greenbelt, no. and type of saplings.	Massive tree plantation has been taken up in the cluster. During this monsoon about 31,000 seedlings have been planted in GIDC Naroda and Odhav.
6.	Demographic details and water drainage pattern and road networks in 2 km buffer zone should be incorporated.	Road network is included in the map.
7.	Sector-wise and Industry-wise action points should be incorporated.	Sector wise and industry wise action plan has been formulated.
8.	Odour Problem resulting from VOC should be addressed along with capacity building of SPCB for VOC monitoring.	VOC analysis will be carried out by GEMI.
9.	Managerial and financial plans should be incorporated.	Financial plans are incorporated in the industry wise action points.
10.	GPS based tracking system for transport of hazardous waste should be incorporated.	Under consideration and planning stage.
11.	Online monitoring system linked with regional office and head office should be included in plan.	Online monitoring of Ambient air monitoring of Maninagar area is recently started and at present linked with CPCB on trial basis.
12.	DG sets should be provided at all pumping stations/ETPs/STPs to avoid overflow of untreated effluent during power failure in all clusters.	Installed at all common facilities.
13.	Resource management plan/future development/managerial plan for new sitting of industries should also be incorporated.	At present there is no such proposal.
14.	Quantification of pollutants needs to be done including solvent consumption of industries.	-
15.	Possibility of co-processing of hazardous waste may be explored and the same may be incorporated.	Included at Action Point no. 3 of Short Term Action Plan of Hazardous Waste.