

adani™

APSEZL/EnvCell/2017-18/005

Date: 23.05.2017

To,
Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change,
Regional Office (WZ),
E-5, Kendriya Paryavaran Bhawan, Arera Colony,
Link Road No. - 3, Bhopal - 462 016.
E-mail: rowz.bpl-mef@nic.in

Sub : Half yearly Compliance report of Environment Clearance for the project namely
"Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch"

Ref : Environment clearance under CRZ notification granted to M/s Adani Ports & SEZ Limited vide
letter dated 5th February, 2007 bearing no. 11-84/2006- IA.III

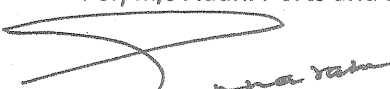
Dear Sir,

Please refer to the above cited reference for the said subject matter. In connection to the same, it is to state that copy of the compliance report for the Environmental / CRZ Clearance for the period of October - 2016 to March - 2017 is enclosed here for your records. The stated information is also provided in form of a CD (soft copy).

Thank you,

Yours Faithfully,

For, M/s Adani Ports and Special Economic Zone Limited


Ennarasu Karunesan
Chief Executive Officer
Mundra & Tuna Port

Enclosure: As above

Copy to:

- 1) The Director (IA Division), Ministry of Environment, Forests & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-110003
- 2) Zonal Officer, Regional Office, CPCB - Western Region, Pariveshi Bhawan, Opp. MC Ward Office No. 10, Subhanpura, Vadodara - 390 023
- 3) Member Secretary, GPCB - Head Office, Paryavaran Bhawan, Sector 10 A, Gandhi Nagar - 382 010
- 4) Deputy Secretary, Forests & Environment Department, Block - 14, 8th floor, Sachivalaya, Gandhi Nagar - 382 010
- 5) Regional Officer, Regional Office GPCB (Kutch-East), Gandhidham, 370201

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Environmental Clearance Compliance Report

of



Multipurpose Berth
(Terminal -2)

at

Mundra Port,
Dist. Kutch, Gujarat

of

Adani Ports and SEZ Limited

Period:

October-2016 to March-2017

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Compliance Report

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated in Environment Clearance		

Half yearly Compliance report of Environment Clearance for the project namely "Development of Multipurpose berth (Terminal – 2) at Mundra Port, Dist. Kutch" issued vide MoEF letter no. 11-84/2006-IA.III dated 5th February 2007

Sr. No.	Conditions	Compliance Status as on 31-03-2017
A. Specific Condition		
(i)	All the conditions stipulated by Forests Environment Department, Government of Gujarat vide their letter no. ENV-10-2005-222-P dated 12/10/2006 should be strictly implemented.	Complied. Point wise compliance report of CRZ recommendations issued vide letter No. ENV-10-2005-222-P dated 12/10/2006 is enclosed as Annexure – A .
(ii)	No Objection Certificate from Gujarat State Pollution Control Board should be obtained before initiating the project.	Complied. APSEZL had obtained No Objection Certificate vide GPCB letter No. GPCB/Unit-1/FT-139/11944 dated 27 th April 2005. The project is in operation phase and have been granted Consent to Operate (CC&A) No. AWH-83561 valid till 20 th November, 2021 by GPCB. Copy of CTE was already submitted to MoEF&CC vide our previous submission dated 16.09.16. Copy of renewed CC&A is attached as Annexure – 1 .
(iii)	The proposed project should not handle any hazardous goods and cargo.	Complied. There is no handling of any type of hazardous cargo / goods on Multi-Purpose Berth (Terminal – T2).
(iv)	Quarantine condition should be provided for keeping the hazardous containers if they are accidentally received.	Complied. There is no handling of any type of hazardous cargo / goods on Multi-Purpose Berth (Terminal – T2).
(v)	Green belt area should be developed along the project and budget earmarked.	Complied. APSEZL has developed its own "Dept. of Horticulture" which is taking measures/ steps for terrestrial greening as well as mangrove plantation. So, far APSEZL have developed total 7.57 ha. area as greenbelt with plantation of 3264 tress within the APSEZ area. Please refer Annexure –2 for further details (along with photographs). Total expenditures of the horticulture dept. for the period F.Y. 2016-17 are INR 555 lakh

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Sr. No.	Conditions	Compliance Status as on 31-03-2017
(vi)	A disaster management plan covering emergency evacuation mechanisms etc. to deal with natural disaster event should be prepared and furnished to the ministry.	<p>Complied.</p> <p>Disaster Management plan is in place and implemented. Updated submitted to the MoEF & CC along with half yearly compliance report Apr – 2016 to Sep – 2016.</p>
(vii)	The company must take up and earmark adequate funds for the socio-economic development and for welfare measures in the area including drinking water supply, vocational training, fishery related development programmes (like cold storages)	<p>Complied.</p> <ul style="list-style-type: none"> • Adani Skill development center, Mundra is providing skill development training to the locals for Soft Skill, Technical Training and for Carrier Guidance & knowledge based training. <p>Total 941 students were trained as per above topics during FY 2016-17. Allocation of fund for education is availed by Adani Foundation. Total 105.43 Lacs were spent for community education & skill development during FY 2016-17.</p> <p>The CSR Activities are planned out at Mundra by Adani Foundation.</p> <ol style="list-style-type: none"> 1 Community Health 2 Sustainable livelihood development -fisher folk 3 Education 4 Rural Infrastructure Development <p>Drinking water is being regularly provided to fisher folk community as total of 93000 liters of water was supplied to 728 households from different settlements on a daily basis under Machhimar Shudhh Jal Yojana. Adani Foundation has installed RO Plant at Chhach Vistar at Zarpara. Also constructed under ground tank 1.0 lacs lit capacity at Rampar village of Anjar Taluka. Budget for CSR Activity for the FY 2016-17 is to the tune of INR 1535 lakh. Out of which, INR 1420 lakh are spent.</p> <p>Details of the CSR activity and expenditure for the period Oct-16 to March.'17 is enclosed as Annexure – 3</p>

Status of the conditions stipulated in Environment Clearance

Half yearly Compliance report of Environment Clearance for the project namely "Development of Multipurpose berth (Terminal – 2) at Mundra Port, Dist. Kutch" issued vide MoEF letter no. 11-84/2006-IA.III dated 5th February 2007

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(viii)	The fishing activities by the fishermen living in the settlement along the creek should not be hindered and a mechanism may be evolved for the movement of fishing boats vis-a-vis shipping activities.	<p>Complied.</p> <p>APSEZ proposed to provide four (4) dedicated accesses at Juna Bandar, Luni, Bavdi Bandar and Zarpara for the fishermen to approach the sea for fishing activity. However, during construction as well as operation, through fishermen consultative process, APSEZ has provided seven (7) access roads. Total length of all the approach roads is approx. 23 Kms and expenditure involved is Rs. 637 Lacs. There is no hindrance to the movement of fisherman boats..</p> <p>Communication mechanisms have been developed for the smooth movement of fishing boats vis-à-vis shipping activities.</p>
(ix)	The relocation of the fishermen and local community if any, in the area should be done strictly in accordance with the norms prescribed by the State Government. The relocated communities should be provided with all facilities including health care, education, sanitation and livelihood.	<p>Complied.</p> <p>The project was conceptualized in such a way that there are no fishermen settlements in the project proposal. APSEZ performs a large scale socio-economic upliftment program in consultation with FOKIA (Federation of Kutch Industries Association) chaired by District Collector quarterly.</p> <p>APSEZL have provided necessary facilities including health care, education, sanitation, livelihood, drinking water & other infrastructural support to fisher folk community in the region.</p> <p>Budget for CSR Activity for the FY 2016-17 is to the tune of INR 1535 lakh. Out of which, INR 1420 lakh are spent.</p> <p>Details of the CSR activity and expenditure from Oct'16 to March'17 is enclosed as Annexure – 3.</p>

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(x)	The project proponent should not undertake any destruction of mangroves during construction and operation of the project.	<p>Complied.</p> <p>Construction phase is already completed and there is no further change.</p> <p>As per EIA of 2008 carried out by NIO, 1254 ha area has been identified as potential area for mangrove conservation. Same has been preserved and protected. CRZ map of CESS 2011 and satellite image confirms the presence of more than 1800 ha mangrove area.</p>																																	
(xi)	Sewage arising in the port area should be disposed off through septic tank – soak pit system or should be treated along with the industrial effluent to conform to the standards stipulated by Gujarat Pollution Control Board and should be utilized / recycled for gardening, plantation and irrigation.	<p>Complied.</p> <p>Sewage generated from port premises is being treated in designated treatment plants and treated sewage is used for horticulture purpose.</p> <table border="1"> <thead> <tr> <th>Location</th> <th>Capacity</th> <th>Quantity of Wastewater</th> <th>Type of ETP / STP</th> </tr> </thead> <tbody> <tr> <td>Liquid Terminal</td> <td>265 KLD</td> <td>150 KLD</td> <td>Activated Sludge</td> </tr> </tbody> </table> <p>Third party analysis of the treated water is being carried out twice in a month by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Oct-16 to Mar-17 is mentioned below.</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Unit</th> <th>Max</th> <th>Min</th> <th>Perm. Limit[§]</th> </tr> </thead> <tbody> <tr> <td>Residual Chlorine</td> <td>ppm</td> <td>0.8</td> <td>0.5</td> <td>> 0.5</td> </tr> <tr> <td>pH</td> <td>--</td> <td>7.95</td> <td>7.06</td> <td>6.5 – 8.5</td> </tr> <tr> <td>TSS</td> <td>mg/L</td> <td>27.0</td> <td>7.0</td> <td>30</td> </tr> <tr> <td>BOD (3 Days @ 27 °C)</td> <td>mg/L</td> <td>17.0</td> <td>BDL</td> <td>20</td> </tr> </tbody> </table> <p>[§] as per CC&A granted by GPCB</p> <p>Please refer Annexure – 4 for detailed analysis reports. Approx. INR 27.95 Lakh is spent for all environmental monitoring activities during the F.Y. 2016-17 periods.</p>	Location	Capacity	Quantity of Wastewater	Type of ETP / STP	Liquid Terminal	265 KLD	150 KLD	Activated Sludge	Parameter	Unit	Max	Min	Perm. Limit [§]	Residual Chlorine	ppm	0.8	0.5	> 0.5	pH	--	7.95	7.06	6.5 – 8.5	TSS	mg/L	27.0	7.0	30	BOD (3 Days @ 27 °C)	mg/L	17.0	BDL	20
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(xii)	Project proponent should prepare and regularly update the disaster management plan from time to time.	Complied. Disaster Management plan is in place and implemented. Updated submitted to the MoEF & CC along with half yearly compliance report Apr – 2016 to Sep – 2016																																																												
(xiii)	There should be no withdrawal of ground water in CRZ area, for this project. The proponent should ensure that as a result of the proposed constructions, ingress of saline water into ground water does not take place. Piezometers should be installed for regular monitoring for this purpose at appropriate locations on the project site.	<p>Complied.</p> <p>There is no withdrawal of ground water in CRZ area, for this project. Entire water requirement is sourced from Narmada water and desalination plant of APSEZL.</p> <p>A detail report on the ground water, salinity ingress & possibility of rain water harvesting was submitted along with Half Yearly EC Compliance report Apr – 2013 to Sep – 2013.</p> <p>However, piezometers have been installed to monitor ground water level and quality of water. Details were submitted along with Half Yearly EC Compliance report Apr – 2013 to Sep – 2013. Third party analysis of the ground water is being carried out at every three month by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Oct-16 to Mar-17 is mentioned below.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Parameter</th> <th style="text-align: center;">Unit</th> <th style="text-align: center;">Min.</th> <th style="text-align: center;">Max.</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td style="text-align: center;">-</td> <td style="text-align: center;">7.57</td> <td style="text-align: center;">8.41</td> </tr> <tr> <td>Salinity</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">2.98</td> <td style="text-align: center;">22.2</td> </tr> <tr> <td>Oil & Grease</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">BDL*</td> <td style="text-align: center;">BDL*</td> </tr> <tr> <td>Hydrocarbon</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">BDL*</td> <td style="text-align: center;">BDL*</td> </tr> <tr> <td>Lead as Pb</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">0.011</td> <td style="text-align: center;">0.012</td> </tr> <tr> <td>Arsenic as As</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">BDL*</td> <td style="text-align: center;">BDL*</td> </tr> <tr> <td>Nickel as Ni</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">BDL*</td> <td style="text-align: center;">BDL*</td> </tr> <tr> <td>Total Chromium as Cr</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">0.017</td> <td style="text-align: center;">0.022</td> </tr> <tr> <td>Cadmium as Cd</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">BDL*</td> <td style="text-align: center;">BDL*</td> </tr> <tr> <td>Mercury as Hg</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">BDL*</td> <td style="text-align: center;">BDL*</td> </tr> <tr> <td>Zinc as Zn</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">0.029</td> <td style="text-align: center;">0.93</td> </tr> <tr> <td>Copper as Cu</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">BDL*</td> <td style="text-align: center;">BDL*</td> </tr> <tr> <td>Iron as Fe</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">0.041</td> <td style="text-align: center;">0.48</td> </tr> <tr> <td>Insecticides/Pesticides</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">BDL*</td> <td style="text-align: center;">BDL*</td> </tr> </tbody> </table> <p>*BDL = Below Detectable Limit</p>	Parameter	Unit	Min.	Max.	pH	-	7.57	8.41	Salinity	mg/L	2.98	22.2	Oil & Grease	mg/L	BDL*	BDL*	Hydrocarbon	mg/L	BDL*	BDL*	Lead as Pb	mg/L	0.011	0.012	Arsenic as As	mg/L	BDL*	BDL*	Nickel as Ni	mg/L	BDL*	BDL*	Total Chromium as Cr	mg/L	0.017	0.022	Cadmium as Cd	mg/L	BDL*	BDL*	Mercury as Hg	mg/L	BDL*	BDL*	Zinc as Zn	mg/L	0.029	0.93	Copper as Cu	mg/L	BDL*	BDL*	Iron as Fe	mg/L	0.041	0.48	Insecticides/Pesticides	mg/L	BDL*	BDL*
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Sr. No.	Conditions	Compliance Status as on 31-03-2017
(xiv)	The project should not be commissioned till the requisite water supply and electricity to the project are provided by PWD/Electricity Department.	Complied. Construction activity is already completed. Necessary agreement for supply of Water & Electricity is done with MPSEZ Utilities Pvt. Ltd. Copies of agreements were already submitted to MoEF&CC vide our previous submission dated 16.09.16.
(xv)	Specific arrangements for rainwater harvesting should be made in the project design and the rain water so harvested should be optimally utilized. Details in this regard should be furnished to this Ministry's Regional Office at Bhopal within 3 months.	Complied. Project is developed in reclaimed land, so rain water harvesting is not viable in the project area. Groundwater recharge cannot be done at the project site since the entire project is in the intertidal / sub tidal areas. Rain water within project area is managed through storm water drainage. However, APSEZL has carried out rainwater harvesting activities in the nearby villages for benefit of the locals as pond deepening activities carried out at Dhrub, Mota Bhadiya villages in FY 2016-17 by Adani foundation. Earthen bund construction was carried out across the river at Baroi and Bhujpur village for the benefit of local farmers. A detail study report on the same was submitted to the Ministry of Environment, Forest & Climate Change along with Half Yearly EC Compliance report Apr – 2013 to Sep – 2013.
(xvi)	The facilities to be constructed in the CRZ area as part of this project should be strictly in conformity with the provisions of the CRZ Notification, 1991 as amended subsequently.	Complied. Construction activities are completed in accordance with the prevailing laws.
(xvii)	No product other than those permissible in the coastal Regulation Zone Notification, 1991 should be stored in the Coastal Regulation Zone area.	Complied. APSEZ store only those product / cargo within CRZ area, which are permissible as per Coastal Regulation Zone Notification, 1991.

B. General Condition

	Adani Ports and SEZ Limited	From : October'16 To : March'17
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(i)	<p>Construction of the proposed structures should be undertaken meticulously confirming to the existing Central / local rules and regulations including Coastal Regulation Zone Notification 1991 and its amendments. All the construction designs / drawings relating to the proposed construction activities must have approvals of the concerned State Government Department / Agencies.</p>	<p>Complied.</p> <p>Construction activities are completed in accordance with the prevailing laws.</p>
(ii)	<p>Adequate provisions for infrastructure facilities such as water supply, fuel, sanitation, etc. should be ensured for construction workers during the construction phase of the project so as to avoid felling of trees / mangroves and pollution of water and the surroundings.</p>	<p>Complied.</p> <p>Construction activity is completed and the project is in operation phase.</p>

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(iii)	<p>The project authorities must make necessary arrangements for disposal of solid wastes and for the treatment of effluents by providing a proper waste water treatment plant outside the CRZ area. The quality of treated effluents, solid wastes and noise levels etc. must conform to the standards laid down by the competent authorities including the Central / State Pollution Control Board and the Union Ministry of Environment and Forest under The Environment Protection Act, 1986, whichever are more stringent.</p>	<p>Complied.</p> <p>Waste Management: APSEZL adopted 5R concept for environmentally sound management of different types of solid & liquid waste. The following table summarizes the waste management practice (for Oct'16 to Mar'17) for different types of wastes at Mundra:</p> <table border="1"> <thead> <tr> <th>Waste</th> <th>Quantity in MT</th> <th>Disposal method</th> </tr> </thead> <tbody> <tr> <td colspan="3">Hazardous Waste</td> </tr> <tr> <td>ETP Sludge</td> <td>2.18</td> <td>Landfilling at TSDF Site</td> </tr> <tr> <td>Pig Waste</td> <td>4.59</td> <td>Co-processing at cement industries</td> </tr> <tr> <td>Tank Bottom Sludge</td> <td>42.90</td> <td>Co-processing at cement industries</td> </tr> <tr> <td>Oily Cotton waste</td> <td>28.21</td> <td>Co-processing at Cement Industries</td> </tr> <tr> <td>Used / Spent Oil</td> <td>86.40</td> <td>Sell to registered recycler</td> </tr> <tr> <td>Discarded Containers</td> <td>8.85</td> <td>Sell to registered recycler</td> </tr> <tr> <td colspan="3">Municipal Solid Waste</td> </tr> <tr> <td>Dry Waste</td> <td>62.77</td> <td>After recovery sent for recycling</td> </tr> <tr> <td>Wet Waste</td> <td>25.78</td> <td>Converted to Manure for Horticulture use</td> </tr> </tbody> </table> <p>Municipal Solid Waste A well-established system for segregation of dry & wet waste is in place, by which all wet waste (Organic waste) is being segregated & utilized for compost manufacturing; compost is further used by in house horticulture team for green belt development. Dry Recyclable Waste - is being sorted out in various categories & finally being sent for recycling. E- Waste & Used Batteries - is being sold to registered recycler. Solid Hazardous Waste - is being disposed through common facility i.e. CHWIF and / or co-processing at cement industries.</p>	Waste	Quantity in MT	Disposal method	Hazardous Waste			ETP Sludge	2.18	Landfilling at TSDF Site	Pig Waste	4.59	Co-processing at cement industries	Tank Bottom Sludge	42.90	Co-processing at cement industries	Oily Cotton waste	28.21	Co-processing at Cement Industries	Used / Spent Oil	86.40	Sell to registered recycler	Discarded Containers	8.85	Sell to registered recycler	Municipal Solid Waste			Dry Waste	62.77	After recovery sent for recycling	Wet Waste	25.78	Converted to Manure for Horticulture use
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		<p><u>Used/Waste Oil</u> - It is being sold to authorized recycler/reprocessor.</p> <p><u>Downgrade Chemicals</u> - It is being sold to authorized solvent recover.</p> <p><u>Slop Oil</u> – Slop oil from vessels are received and water and oil particles from the same are separated in Oil Water Separator system. Separated oil from the same is being sold to authorized recycler /reprocessor.</p> <p><u>Liquid Effluent & Sewage</u> - It is being treated at ETP/STP plants out side the CRZ area, treated water from ETP/STP is being used for horticulture purposes. Please refer point no xi of the specific conditions above for further details.</p> <p>All attributes of environment viz. air; water; soil and noise are being regularly analyzed by NABL and MoEF&CC accredited agency M/s Pollucon Laboratory Pvt. Ltd., and the summery is attached as Annexure – 4.</p>
(iv)	<p>The proponents should provide for a regular monitoring mechanism so as to ensure that the treated effluents conform to the prescribed standards. The records of analysis reports must be properly maintained and made available for inspection to the concerned state /central officials during their visits.</p>	

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated in Environment Clearance		

Half yearly Compliance report of Environment Clearance for the project namely "Development of Multipurpose berth (Terminal – 2) at Mundra Port, Dist. Kutch" issued vide MoEF letter no. 11-84/2006-IA.III dated 5th February 2007

Sr. No.	Conditions	Compliance Status as on 31-03-2017																																								
(v)	In order to carry out the environmental monitoring during the operational phase of the project, the project authorities should provide an environmental laboratory well equipped with standard equipment and facilities and qualified manpower to carry out the testing of various environmental parameters.	<p>Complied.</p> <p>Ambient Air Quality (twice in a week) and Noise (once in a month) monitoring are being carried out by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Oct-16 to Mar-17 is mentioned below.</p> <p>Total Sampling Locations: 3 Nos.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Parameter</th> <th style="text-align: center;">Unit</th> <th style="text-align: center;">Max</th> <th style="text-align: center;">Min</th> <th style="text-align: center;">Perm. Limit^s</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">PM₁₀</td> <td style="text-align: center;">µg/m³</td> <td style="text-align: center;">97.29</td> <td style="text-align: center;">44.47</td> <td style="text-align: center;">100</td> </tr> <tr> <td style="text-align: center;">PM_{2.5}</td> <td style="text-align: center;">µg/m³</td> <td style="text-align: center;">56.64</td> <td style="text-align: center;">18.72</td> <td style="text-align: center;">60</td> </tr> <tr> <td style="text-align: center;">SO₂</td> <td style="text-align: center;">µg/m³</td> <td style="text-align: center;">25.73</td> <td style="text-align: center;">5.09</td> <td style="text-align: center;">80</td> </tr> <tr> <td style="text-align: center;">NO₂</td> <td style="text-align: center;">µg/m³</td> <td style="text-align: center;">43.31</td> <td style="text-align: center;">14.23</td> <td style="text-align: center;">80</td> </tr> <tr> <th style="text-align: center;">Noise</th> <th style="text-align: center;">Unit</th> <th colspan="2" style="text-align: center;">Avg. Value</th> <th style="text-align: center;">Perm. Limit</th> </tr> <tr> <td style="text-align: center;">Day Time</td> <td style="text-align: center;">dB(A)</td> <td colspan="2" style="text-align: center;">65.7</td> <td style="text-align: center;">75</td> </tr> <tr> <td style="text-align: center;">Night Time</td> <td style="text-align: center;">dB(A)</td> <td colspan="2" style="text-align: center;">63.4</td> <td style="text-align: center;">70</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">^s as per NAAQ standards, 2009</p> <p>Please refer Annexure – 4 for detailed analysis reports. Approx. INR 27.95 Lakh is spent for all environmental monitoring activities during the F.Y. 2016-17 periods.</p>	Parameter	Unit	Max	Min	Perm. Limit ^s	PM ₁₀	µg/m ³	97.29	44.47	100	PM _{2.5}	µg/m ³	56.64	18.72	60	SO ₂	µg/m ³	25.73	5.09	80	NO ₂	µg/m ³	43.31	14.23	80	Noise	Unit	Avg. Value		Perm. Limit	Day Time	dB(A)	65.7		75	Night Time	dB(A)	63.4		70
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(vi)	The sand dunes and mangroves, if any, on the site should not be disturbed in any way.	<p>Complied.</p> <p>There are no sand dunes within the project site. Nearby conservation area of Mangroves is protected & its regular monitoring is being done through Gujarat Institute of Desert Ecology (GUIDE).</p>																																								
(vii)	A copy of the clearance letter will be marked to the concerned Panchayat / local NGO, if any, from whom any suggestion / representation has been received while processing the proposal.	Complied.																																								

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated in Environment Clearance		

Half yearly Compliance report of Environment Clearance for the project namely "Development of Multipurpose berth (Terminal – 2) at Mundra Port, Dist. Kutch" issued vide MoEF letter no. 11-84/2006-IA.III dated 5th February 2007

Sr. No.	Conditions	Compliance Status as on 31-03-2017
(viii)	The Gujarat Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industries center and Collector's Office / Tehsildar's Office for 30 days.	Not Applicable This condition does not belong to project proponent.
(ix)	The funds earmarked for environment protection measures should be maintained in a separate account and there should be no diversion of these funds for any other purpose. A year wise expenditure on environmental safeguards should be reported to this Ministry's Regional Office at Bhopal and the State Pollution Control Board.	Complied. Separate budget for the Environment protection measures is earmarked every year. All environment and horticulture activities are considered at corporate level and budget allocation is done accordingly. No separate bank account is maintained for the same however, all the expenses are recorded in advanced accounting system of the organization. Budget for environmental management measures (including horticulture) for the FY 2016-17 is to the tune of INR 932 lakh. Out of which, Approx. INR 910 lakh are spent during F.Y. 2016-17 period. Detailed breakup of the expenditures is attached as Annexure -5 .
(x)	Full support should be extended to the officers of this Ministry's Regional Office at Bhopal and the officers of the Central and State Pollution Control Board by the project proponents during their inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect of mitigative measures and other environmental protection activities.	Complied. APSEZL is always extending full support to the regulatory authorities during their visit to the project site. Last visit of Regional Office, GPCB was done on 12.01.2017 and 09.02.2017 for West port and Main port respectively. APSEZL has submitted the reply to the site visit report vide letter dated 29.01.2017 and 17.02.2017 incorporating details of action taken in respect of the observations of the GPCB representative. Please refer Annexure -6 for a copy of the communication.

	Adani Ports and SEZ Limited	From : October'16 To : March'17
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Sr. No.	Conditions	Compliance Status as on 31-03-2017
(xi)	In case of deviation or alteration in the project including the implementing agency, a fresh reference should be made to this Ministry for modification in the clearance conditions or imposition of new one for ensuring environmental protection.	Complied. Construction phase is completed and the project is in operation phase. There is no deviation or alteration in project including implementing agency. Project was commissioned by Mundra Ports & SEZ Ltd. Only name change of organization done from Mundra Ports to Adani Ports & SEZ Ltd.
(xii)	This Ministry reserves the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this Ministry.	Point noted.
(xiii)	This Ministry or any other competent authority may stipulate any other additional conditions subsequently, if deemed necessary, for environmental protection, which should be complied with.	Point noted.

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated in Environment Clearance		

Half yearly Compliance report of Environment Clearance for the project namely "Development of Multipurpose berth (Terminal – 2) at Mundra Port, Dist. Kutch" issued vide MoEF letter no. 11-84/2006-IA.III dated 5th February 2007

Sr. No.	Conditions	Compliance Status as on 31-03-2017
(xiv)	<p>The project proponent should advertise in at least in two local newspapers widely circulated in the region around the project, one of which should be in the vernacular language of the locality concerned informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board and may also be seen at the website of the Ministry of Environment & Forests at http://www.envfor.nic.in.</p> <p>The advertisement should be made within seven days from the date of issue of the clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Bhopal.</p>	<p>Complied</p>
(xv)	<p>The projects proponents should inform regional Office at Bhopal as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work.</p>	<p>Complied.</p> <p>The construction phase is complete and the project is in operation phase.</p>

Annexure - A

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for the project namely "Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch" issued by DoEF, GOG vide letter no. ENV-10-2005-222-P dated 12th October,2006

Sr. No.	Conditions	Compliance Status as on 31-03-2017
Specific Condition		
1	The provision of the CRZ notification of 1991 and subsequent amendments issued from time to time shall be strictly adhered to by the GAPL. No activity in contradiction to the provision of the CRZ Notification shall be carried out by the GAPL.	Complied. APSEZ strictly adhere the provision of CRZ notification of 1991 and subsequent amendments issued from time to time and Only permissible activities are carried out within CRZ area as per CRZ Notification.
2	All permissions from different Government Departments / agencies shall be obtained by the GAPL before commencing the expansion activities.	Complied. Construction activity is already completed and the project is in operation phase. APSEZL had obtained No Objection Certificate vide GPCB letter No. GPCB/Unit-1/FT-139/11944 dated 27 th April 2005. The project is in operation phase and have been granted Consent to Operate (CC&A) No. AWH 83561 valid till 20 th November 2021 by GPCB. Copy of CTE was already submitted to MoEF&CC vide our previous submission dated 16.09.16. Copy of renewed CC&A is attached as Annexure - 1.

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

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Sr. No.	Conditions	Compliance Status as on 31-03-2017
3	No Dredging and/or reclamation activity shall be carried out in the CRZ area categorized as CRZ (i) and it shall have to be ensured that the mangrove habitats and other ecologically important and significant areas are not affected due to any of the project activities.	<p>Complied.</p> <p>No dredging or reclamation is carried out in CRZ(1)A area. Maintenance dredging is being performed regularly for maintaining navigation channel.</p> <p>Nearby conservation area of Mangroves is protected & its regular monitoring is being done through Gujarat Institute of Desert Ecology (GUIDE). The report of the mangrove conservation is attached as</p>

	Adani Ports and SEZ Limited	From : October'16 To : March'17
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Sr. No.	Conditions	Compliance Status as on 31-03-2017
4	<p>The dredge material shall be disposed of into pre-designated areas duly identified and got approved through the Gujarat Coastal Zone Management Authority for which the company shall have to make separate application along with proper EIA indicating the exact location of the dredge material disposal area on the CRZ map of the region prepared by the Space Application Center, Ahmedabad, as there exists best mangrove area in and around Bocha and Navinal islands, which requires to be protected.</p>	<p>Complied. Construction and capital dredging activities are completed and the project is in operation phase.</p> <p>Impact assessment was done for the same and EIA report was submitted to GCZMA and MoEF&CC based on which the final Environmental and CRZ clearance was granted.</p> <p>Nearby conservation area of Mangroves is protected & its regular monitoring is being done through Gujarat Institute of Desert Ecology (GUIDE).</p>

	Adani Ports and SEZ Limited	From : October'16 To : March'17
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Sr. No.	Conditions	Compliance Status as on 31-03-2017																																	
5	Massive mangrove plantation activity in at least 1200 ha. Area shall be carried out within a time frame of 5 years commencing from July, 2006 without any delay whatsoever.	<p>Complied.</p> <p>Mangrove plantation activity is carried out in more than 1287 hectare at different locations of Gujarat including Mundra and nearby villages. Please refer Annexure - 2 for further details (along with photographs). Total expenditures of the horticulture dept. for the period F.Y. 2016-17 are INR 555 lakh.</p>																																	
6	No effluent or sewage shall be discharged into the sea / creek or in the CRZ area and shall be treated to conform the norms prescribed by the Gujarat Pollution Control Board and would be reused/ recycled within the plant premises.	<p>Complied.</p> <p>Entire quantity of sewage generated is being treated in designated STPs and treated sewage is used for gardening.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Location</th> <th style="text-align: center;">Capacity</th> <th style="text-align: center;">Quantity of Wastewater</th> <th style="text-align: center;">Type of ETP / STP</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Liquid Terminal</td> <td style="text-align: center;">265 KLD</td> <td style="text-align: center;">150 KLD</td> <td style="text-align: center;">Activated Sludge</td> </tr> </tbody> </table> <p>Third party analysis of the treated water is being carried out twice in a month by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Oct-16 to Mar-17 is mentioned below.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Parameter</th> <th style="text-align: center;">Unit</th> <th style="text-align: center;">Max</th> <th style="text-align: center;">Min</th> <th style="text-align: center;">Perm. Limit[§]</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Residual Chlorine</td> <td style="text-align: center;">ppm</td> <td style="text-align: center;">0.8</td> <td style="text-align: center;">0.5</td> <td style="text-align: center;">> 0.5</td> </tr> <tr> <td style="text-align: center;">pH</td> <td style="text-align: center;">--</td> <td style="text-align: center;">7.95</td> <td style="text-align: center;">7.06</td> <td style="text-align: center;">6.5 – 8.5</td> </tr> <tr> <td style="text-align: center;">TSS</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">27.0</td> <td style="text-align: center;">7.0</td> <td style="text-align: center;">30</td> </tr> <tr> <td style="text-align: center;">BOD (3 Days @ 27 °C)</td> <td style="text-align: center;">mg/L</td> <td style="text-align: center;">17.0</td> <td style="text-align: center;">BDL*</td> <td style="text-align: center;">20</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">§ as per CC&A granted by GPCB BDL – Below Decatable Limit</p> <p>Please refer Annexure - 4 for detailed analysis reports. Approx. INR 27.95 Lakh is spent for all environmental monitoring activities during the F.Y. 2016-17 period.</p>	Location	Capacity	Quantity of Wastewater	Type of ETP / STP	Liquid Terminal	265 KLD	150 KLD	Activated Sludge	Parameter	Unit	Max	Min	Perm. Limit [§]	Residual Chlorine	ppm	0.8	0.5	> 0.5	pH	--	7.95	7.06	6.5 – 8.5	TSS	mg/L	27.0	7.0	30	BOD (3 Days @ 27 °C)	mg/L	17.0	BDL*	20
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	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for the project namely "Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch" issued by DoEF, GOG vide letter no. ENV-10-2005-222-P dated 12th October,2006

Sr. No.	Conditions	Compliance Status as on 31-03-2017		
7	<p>All the recommendation and suggestions given by the NIO in its Comprehensive Environment Impact Assessment report for conservation / protection and betterment of environment shall be implemented strictly by the GAPL.</p>	<p>Complied.</p> <p>All the recommendation and suggestions for conservation / protection and betterment of environment given by the NIO in its comprehensive EIA have been implemented.</p> <p>Already Complied. Not applicable at present</p> <p>Environmental Clearance was granted based on the submission of said documents. Rapid EIA was submitted on Feb 29, 2000 & Risk Assessment Report containing worst case scenario and detailed oil spill control management plan was submitted on Dec 28, 1999.</p> <p>All the recommendations given in the report of NIO and Tata AIG Risk Management Services are implemented. Few examples are provided below.</p> <p>Few Marine EIA recommendations:</p> <table border="1"> <tr> <td> <p>Operational protocols and safety procedure should be printed and freely available to concerned staff. The employees must be adequately trained to inculcate a high level of competence not only in day to day operations but also during emergency sictuations. Periodic refresher cources must also be organized to maintain the level of their competence.</p> </td> <td> <p>The company has written the operational protocols and safety procedures as a part of ISO 14001:2008, OHSAS 18001:2008 and ISO 9001:2008 certifications.</p> <p>APSEZ has established training department to impart training to its employees.</p> <p>IMO module course organized by Maritime Training Institute is conducted & 36 personnel have achieved IMO level 1 & 4 personnel have achieved IMO Level 2. Different training modules as Oil Spill, Oil Spill Equipment, Notification exercise, Incident are conducted at different frequency.</p> </td> </tr> </table>	<p>Operational protocols and safety procedure should be printed and freely available to concerned staff. The employees must be adequately trained to inculcate a high level of competence not only in day to day operations but also during emergency sictuations. Periodic refresher cources must also be organized to maintain the level of their competence.</p>	<p>The company has written the operational protocols and safety procedures as a part of ISO 14001:2008, OHSAS 18001:2008 and ISO 9001:2008 certifications.</p> <p>APSEZ has established training department to impart training to its employees.</p> <p>IMO module course organized by Maritime Training Institute is conducted & 36 personnel have achieved IMO level 1 & 4 personnel have achieved IMO Level 2. Different training modules as Oil Spill, Oil Spill Equipment, Notification exercise, Incident are conducted at different frequency.</p>
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Sr. No.	Conditions	Compliance Status as on 31-03-2017	
		<p>Temporary colonies of workforce should be located sufficiently away from the HTL with proper sanitation. Adequate arrangement of fuel supply to the workers should be made to discourage them from using mangroves for firewood.</p>	<p>Construction activity is already completed. Most of the construction labours were residing in the nearby villages where all basic facilities are easily available. However, for those residing near the construction site, infrastructure facilities such as water supply, fuel, sanitation, first aid, ambulance etc. were provided by APSEZL.</p>
		<p>Periodic monitoring should be undertaken at the designated sites after the terminals become operational and the results of each monitoring should be carefully evaluated to identify changes if any and to take corrective measures, if warranted.</p>	<p>Monitoring of various environmental parameters for Ambient Air, Noise, Wastewater, ground water, marine water and sediments is being carried out by NABL and MoEF&CC accredited agency. Monitoring reports for the period from Oct'16 to March.'17 are enclosed as Annexure-4.</p>
		<p>Adequate vigilance is required to adherence of ships to Marpol protocol and related regulations.</p>	<p>During the vessel declaration compliances with respect to Air Pollution and Oil are monitored by the Port Authority. The ships are certified with international certification bodies only after complying with the Marpol protocol..</p>

	Adani Ports and SEZ Limited	From : October'16 To : March'17
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Sr. No.	Conditions	Compliance Status as on 31-03-2017	
		Manual Listing Procedure for conducting ship movement operations in the port area must be available to the concerned staff.	Berthing Policy & Tariff Structure is made available for conducting ship movement to the concerned staff and made available on web link www.adaniports.com/pdfs/PIB_06122013.pdf Port Information Booklet is also made available on web link www.adaniports.com/Port_Operations_Port_Tariffs.aspx
		Few Tata AIG Risk Assessment Recommendations:	
		There should be facilities of boom, skimmer, dispersant, diving suits, firefighting equipment and excellent communication facilities.	11 Dolphin tugs fitted with Oil Spill Dispersant boom and proportionate pump to mix OSD and Sea water as required; out of them 10 Dolphin Tugs are fitted with a fire curtain and remote controlled fire monitors.
		In the event of oil spillage the oil slick normally will be carried away by water current and wind. It is very difficult to identify oil slick patches by boats/vessels, hence it is suggested that GAPL may take help from coast guard/Navy for aerial surveillance in order to identify and monitor oil slick movement.	Oil spill contingency plan is in place to handle Tier 1 level oil spills considering different accident scenarios, and the vulnerable areas are identified and mitigation plan is prepared. Oil spill contingency plan updated & approved by coast guard is attached as details is submitted to the MoEF & CC along with half yearly compliance report Apr – 2016 to Sep – 2016.

	Adani Ports and SEZ Limited	From : October'16 To : March'17
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Sr. No.	Conditions	Compliance Status as on 31-03-2017
8	<p>The construction and operational activities shall be carried out in such a way that there is no negative impact on mangroves and other coastal / marine habitat. The construction activities and dredging shall be carried out only under the constant supervision of the NIO.</p>	<p>Complied. Construction and capital dredging activity is already completed. All operational activities are being carried out in such a way that there are no impacts on the nearby mangroves. Nearby conservation area of Mangroves is protected & its regular monitoring is being done through Gujarat Institute of Desert Ecology (GUIDE).</p>
9	<p>The GAPL shall strictly ensure that no creeks are blocked due to any activity at Mundra Port and the mangrove habitats are neither disturbed nor destroyed due to any activity.</p>	<p>Complied. As per Marine EIA carried out by NIO in 2008, prominent creek system (main creeks and small branches of creeks) in the study region are: (1) Kotdi (2) Baradimata (3) Navinal (4) Bocha (5) Mundra (Oldest port (Juna Bandar) leading to Bhukhi river) All above creeks are in existence allowing free flow of water and there is no filling or reclamation of any creek area. APSEZL has so far constructed 19 culverts having total length of approx. 1100 m with total cost of INR 20 Crores. Three RCC Bridges have been constructed over Kotdi creek with total length of 230 m and cost of INR 10 Crores.</p>

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Sr. No.	Conditions	Compliance Status as on 31-03-2017
10	The GAPL shall contribute financially for any common study or project proposed that may be proposed by this Department for environmental management / conservation / improvement for the Gulf of Kutch.	<p>Point Noted.</p> <p>Following studies were proposed by the FED and MOEF&CC.</p> <p>Marine EIA study was carried out by NIO in 2008.</p> <p>Bathymetry & Topography study of Mundra is being carried out by National Center for Sustainable Coastal Management (NCSCM), Chennai. The study being carried out by NCSCM covers preparation of plan for protection of creeks/ mangrove area including buffer zone, mapping of co-ordinates, running length, HTL, CRZ boundary.</p> <p>Cumulative Impact Assessment study is being carried out by MS Choramandamam. The study started in March-2017 and the same is expected to be completed by June 2017.</p>
11	The construction debris and/or any other type of waste shall not be disposed of into the sea, creek or in the CRZ areas. The debris shall be removed from the construction site immediately after the construction is over.	<p>Complied.</p> <p>Construction activity is already completed. Project is in operation phase.</p>

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for the project namely "Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch" issued by DoEF, GOG vide letter no. ENV-10-2005-222-P dated 12th October,2006

Sr. No.	Conditions	Compliance Status as on 31-03-2017
12	The construction camp shall be located outside the CRZ area and the construction labour shall be provided the necessary amenities, including sanitation, water supply & fuel and it shall be ensured that the environmental conditions are not deteriorated by the construction labours.	Complied. The construction activity of said project is already completed. Project is in operation phase.
13	The GAPL shall prepare and regularly update their local Oil Spill Contingency and Disaster Management Plan in for their all activities in Mundra Port consonance with the National Oil Spill and Disaster Contingency Plan and shall submit the same to this department after having it vetted through Indian Coast Guard.	Complied. Cost gurad approved Oil Spill Contingency Response Plan is updated regularly and the updated OSCRP was submitted to the MoEF & CC along with half yearly compliance report Apr – 2016 to Sep – 2016. Disaster Management Plan is updated regularly and the updated DMP was submitted to the MoEF & CC along with half yearly compliance report Apr – 2016 to Sep – 2016.

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for the project namely "Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch" issued by DoEF, GOG vide letter no. ENV-10-2005-222-P dated 12th October,2006

Sr. No.	Conditions	Compliance Status as on 31-03-2017
14	<p>The Gujarat Maritime Board shall expedite for the Vessel Traffic Management System for the Gulf of Kutch and would work out the modus operandi for cost sharing by the different players in the Gulf indicating the GAPL. The GAPL shall contribute for the same as may be decided by the Gujarat Marine Board or any other competent authority for this purpose.</p>	<p>Point noted. Gujarat Maritime Board control & monitor shipping traffic in Gulf of Kutch through Vessel Traffic & Port Management System (VTPMS).</p> <p>APSEZL regularly contribute in VTMS. Gazette notification dated 12th April, 2013 submitted to the MoEF & CC along with half yearly compliance report Apr – 2013 to Sep – 2013.</p>
15	<p>The GAPL shall bear the cost of the external agency that may be appointed by this Department for supervision / monitoring of proposed activities and the environmental impacts of the proposed activities.</p>	<p>Point noted.</p>

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for the project namely "Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch" issued by DoEF, GOG vide letter no. ENV-10-2005-222-P dated 12th October,2006

Sr. No.	Conditions	Compliance Status as on 31-03-2017
General Condition		
16	The ground water shall not be tapped by the GAPL to meet with the water requirement in any case.	Complied. APSEZ does not draw any ground water for the water requirement. Average water requirement of Main Port Terminal (including Terminal – 2) is 1.74 MLD which is sourced from desalination plant of APSEZ and/or GWIL.
17	The GAPL shall take up massive greenbelt development activities in consultation with Forest and Environment Department.	Complied. APSEZ has consulted Gujarat Institute of Desert Ecology (GUIDE) as they are one of the authorized agencies of Dept. of Forest & Env., Govt. of Gujarat for carrying out mangrove afforestation.1400 trees are planted covering 0.6 hectare of land at Terminal – 2. Total 396 hectares of green belt is developed by APSEZ at Port SEZ and Townships. Details of the green belt development activity done by APSEZL Mundra are attached as Annexure – 2 .
18	The GAPL shall have to contribute financially for taking up the socio-economic upliftment activities in this region in consultation with the Forests and Environment Department and the District Collector / District Development officer.	Complied. APSEZ performs a large scale socio-economic upliftment program and shares with FOKIA (Federation of Kutch Industries Association) chaired by District Collector quarterly. APSEZL have provided necessary facilities including health care, education, sanitation, livelihood, drinking water & other infrastructural support to Local community in the region. The CSR Activities are planned out at Mundra by Adani Foundation. 1 Community Health 2 Sustainable livelihood development -fisher folk 3 Education 4 Rural Infrastructure Development Drinking water is being regularly provided to fisher folk community as total of 93000 liters of water was supplied to 728 households from different settlements on a daily basis under Machhimar Shudhh Jal Yojana.

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for the project namely "Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch" issued by DoEF, GOG vide letter no. ENV-10-2005-222-P dated 12th October,2006

Sr. No.	Conditions	Compliance Status as on 31-03-2017
19	<p>A separate budget shall be earmarked for the purpose of socio-economic upliftment activities and details thereof shall be furnished to this department as well as the MoEF&CC, GOI from time to time. The details with respect to the expenditure from this budget head shall also be furnished on annual basis.</p>	<p>Adani Foundation has installed RO Plant at Chhach Vistar at Zarpara. Also constructed under ground tank 1.0 lacs lit capacity at Rampar village of Anjar Taluka.</p> <p>Budget for CSR Activity for the FY 2016-17 is to the tune of INR 1535 lakh. Out of which, INR 1420 lakh are spent.</p> <p>Details of the CSR activity and expenditure for the period Oct-16 to March.'17 is enclosed as Annexure - 3</p>
20	<p>A separate environment management cell with qualified personnel shall be created for environmental monitoring and management during construction and operational phases of the project.</p>	<p>Complied.</p> <p>M/s APSEZL has a well structured Environment Management Cell, staffed with qualified manpower for implementation of the Environment Management Plan. Organogram of environment management cell is enclosed as Annexure -8 .</p>

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for the project namely "Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch" issued by DoEF, GOG vide letter no. ENV-10-2005-222-P dated 12th October,2006

Sr. No.	Conditions	Compliance Status as on 31-03-2017																																																														
21	Environmental Post Project Monitoring report indicating the changes, if any, with respect to the baseline environmental quality in the coastal and marine environment shall be submitted every year by the GAPL to this department as well as to the MoEF&CC, GOI.	<p>Complied.</p> <p>The quality of treated effluent, emission and noise level is being monitored regularly by a MoEF&CC/NABL accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Monitoring results are confirming to the applicable norms.</p> <p>Marine monitoring is being carried out once in a month. Summary of the same for duration from Oct'16 to Mar'17 is mentioned below.</p> <p>Total Sampling Locations: 12 Nos.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Parameter</th> <th rowspan="2">Unit</th> <th colspan="2">Surface</th> <th colspan="2">Bottom</th> <th>Baseline (EIA, 2004)</th> <th>Baseline (EIA, 2004)</th> </tr> <tr> <th>Max</th> <th>Min</th> <th>Max</th> <th>Surface</th> <th>Surface</th> <th>Bottom</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>--</td> <td>8.28</td> <td>7.1</td> <td>8.4</td> <td>7.2</td> <td>7.7- 8.3</td> <td>8.1-8.3</td> </tr> <tr> <td>TDS</td> <td>mg/L</td> <td>538320</td> <td>34120</td> <td>56780</td> <td>35330</td> <td></td> <td></td> </tr> <tr> <td>TSS</td> <td>mg/L</td> <td>55</td> <td>14</td> <td>47</td> <td>18</td> <td></td> <td></td> </tr> <tr> <td>BOD (3 Days @ 27 °C)</td> <td>mg/L</td> <td>8.6</td> <td>0</td> <td>10</td> <td>3</td> <td>0.1-4.4</td> <td><0.1-3.8</td> </tr> <tr> <td>DO</td> <td>mg/L</td> <td>6.6</td> <td>4.8</td> <td>8</td> <td>4.2</td> <td>1.8-5.7</td> <td>1.8-5.7</td> </tr> <tr> <td>Salinity</td> <td>ppt</td> <td>44.72</td> <td>30.6</td> <td>4209</td> <td>37.8</td> <td>35.9-39.0</td> <td>36.0-39.0</td> </tr> </tbody> </table> <p>Please refer Annexure - 4 for detailed analysis reports. Approx. INR 27.95 Lakh is spent for all environmental monitoring activities during the F.Y. 2016-17 period.</p>	Parameter	Unit	Surface		Bottom		Baseline (EIA, 2004)	Baseline (EIA, 2004)	Max	Min	Max	Surface	Surface	Bottom	pH	--	8.28	7.1	8.4	7.2	7.7- 8.3	8.1-8.3	TDS	mg/L	538320	34120	56780	35330			TSS	mg/L	55	14	47	18			BOD (3 Days @ 27 °C)	mg/L	8.6	0	10	3	0.1-4.4	<0.1-3.8	DO	mg/L	6.6	4.8	8	4.2	1.8-5.7	1.8-5.7	Salinity	ppt	44.72	30.6	4209	37.8	35.9-39.0	36.0-39.0
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	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for the project namely "Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch" issued by DoEF, GOG vide letter no. ENV-10-2005-222-P dated 12th October,2006

Sr. No.	Conditions	Compliance Status as on 31-03-2017
22	The GAPL shall have to contribute financially to support the National Green Corps Scheme being implemented in Gujarat by the GEER foundation, Gandhinagar in consultation with Forests and Environment Department.	Complied. Necessary support will be provided on hearing from GEER foundation to support NGC scheme.
23	A six monthly report of compliance of the conditions mentioned in this letter shall have to be furnished by the GAPL on a regular basis to this department without fail.	Complied. Six Monthly environment clearance compliance report is being submitted regularly to the concerned authorities. Last half yearly environmental clearance compliance report was submitted on 28.11.2016 in soft as well as hard copy.

	Adani Ports and SEZ Limited	From : October'16 To : March'17
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for the project namely "Development of Multipurpose berth (Terminal- 2) at Mundra Port, Dist. Kutch" issued by DoEF, GOG vide letter no. ENV-10-2005-222-P dated 12th October,2006

Sr. No.	Conditions	Compliance Status as on 31-03-2017
24	Any other condition that may be stipulated by this department from time to time for environment protection / management purpose shall also have to be complied with by the GAPL.	Complied. Any other condition stipulated for environment protection / management purpose will be complied by APSEZ.

Annexure - 1



GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN

Sector 10-A, Gandhinagar 382 010

Phone : (079) 23226295

Fax : (079) 23232156

Website : www.gpcb.gov.in

By R.P.A.D.

In exercise of the power conferred under section-25 of the Water (Prevention and Control of Pollution) Act-1974, under section-21 of the Air (Prevention and Control of Pollution)-1981 and Authorization under rule 6(2) of the Hazardous & Other Waste (Management & Transboundary Movement) Rules-2016, framed under the Environmental (Protection) Act-1986. The board has granted the consent order no. **AWH- 80627** vide letter No. PC/CCA-KUTCH/39(4)/ID-17739/364963 dated-01/08/2016.

And whereas Board has received application inward No. **113691** dated **21/11/2016** for the **Renewal Consolidated Consent and Authorization (CC&A)** of the Board under the provisions / rules of the aforesaid Acts. Consents & Authorization are hereby granted as under:

CONSENTS AND AUTHORISATION:

(Under the provisions /rules of the aforesaid environmental acts)

To

M/s. Adani Ports & Special Economic zone Limited,

Plot No: 169/P

AT-Navinal Island,

Taluka: Mundra,

Dist: Kutch – 370 421

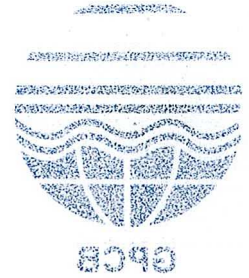
1. Consent Order No. AWH-83561 Date of Issue: 09/01/2017.

2. The consent shall be valid up to **20/11/2021** for storage & distribution of following products:

No.	Product	Quantity in MT/Month
1.	General Cargo	4.0 Lac MT/Month
2.	Liquid Cargo (Chemical/Poc Products)	2.65 Lac MT/Month
3.	Import, Storage And Distribution Of Edible Oil	1.25 Lac MT/Month
4.	Storage And Distribution Of Bitumen	6,400 MT/Month
5.	Dry Cargo Handling	9 MMT/Month
6.	Container Terminal Handling Operation	4.5 Million TEUs/Annum
7.	Waste destruction system for decomposition/destruction of municipal solid waste	3.5 Cubic Meter (MSW Destruction Capacity @ 500 Kg/day)
8.	Oil water separate (Flame Proof) to remove –Oil portion from slope oil received from Vessels/Ships	25 M ³ /Hr

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SUBJECT TO THE FOLLOWING SPECIFIC CONDITIONS:

1. You shall not carry out any activity which may attract applicability of EIA Notification-2006.
2. No ground water shall be withdrawal without obtaining prior permission from competent authority.
3. You shall operate 18 No of D. G Sets as stand by, as mentioned in 4.2 No .
4. You shall comply all conditions of CTE issued vide order No. PC/NOC/CCA-Kutch - 582/16783, 01/08/2009 for "Waterfront development Plan" which includes four Port Clusters, ship yard, Desalination plant, Intake and outfall facility and associated area development.
5. You shall have to comply with all the condition mentioned in the Environment Clearance accorded for all port activities vide bearing number 10-47/2008-IA-III dated 12/01/2009 & dated 15/07/2014.
6. The project proponent shall comply with all the orders/directions of the Hon'ble High Court of Gujarat and Hon'ble supreme court in the matter including any pending order.

3. CONDITIONS UNDER WATER ACT 1974:

- 3.1 The quantity of industrial effluent generation from industrial operations shall not exceed 90.31 Kl/day
- 3.2 The quantity of the domestic waste water (Sewage) shall not exceed 248 KL/day.
- 3.3 The quality of the industrial effluent shall conform to the following standards;

PARAMETER	PERMISSIBLE LIMIT
pH	6.5 to 8.5
Temperature	40 °C
Colour (pt.co.scale units)	100 units
Suspended Solids	100 mg / l
Oil & Grease	10 mg / l
Phenolic Compound	01 mg / l
Amonical Nitrogen	50 mg / l
BOD (3Days at 27 oC)	30 mg / l
COD	100 mg / l
Chlorides	600 mg / l
Sulphates	1000 mg / l
Total Dissolved Solids	2100 mg / l
Sulphides	02 mg / l
Copper	03 mg / l
Lead	0.1 mg / l
Cadmium	02 mg / l
Fluorides	02 mg / l

All efforts shall be made to remove colour & unpleasant odour as far as practicable.



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- 3.4 The treated effluent conforming to the above standards shall be used for plantation & gardening purpose within the premises.
- 3.5 Sewage shall be treated in existing ETP.
- 3.6 The unit shall install meters at utilities for measuring category wise (Category as given in Schedule II of "Water (Prevention & Control of Pollution) Cess Act-1977") consumption of water.

4 CONDITIONS UNDER AIR ACT 1981:

- 4.1 The following shall be used as fuel in the boiler/ furnace / Thermic fluid Heater / D.G Sets as following rates after proposed expansion:

Sr. no.	Name of Fuel	Quantity
1.	Furnace oil/LDO/HSD	860 Liter/Hour
2.	HSD	100 Liter/Hour

- 4.2 The flue gas emission through various stacks/vent of boiler, heaters shall conform to the following standards:

Sr. no.	Stack attached to	Stack height in meters	Parameter	Permissible limit
1.	Hot Water Generator --1	35	PM SO ₂ NOx	150 mg/Nm ³ 100 ppm 50 ppm
2.	Hot Water Generator ---2	35		
3.	Thermic fluid heater (2 Nos)	35		
4.	D.G. Set – 9 Nos (500 KVA) (Stand By)	9 Meter Each		
5.	D.G. Set – 3 Nos (1250 KVA) (Stand By)	30 Meter common		
6.	D.G. Set – 6 Nos (1500 KVA) (Stand By)	30 Meter Each		

- 4.3 The applicant shall install & operate air pollution control system in order to achieve process gas emission norms as prescribed below;

Sr. no.	Stack attached to	Stack height in meters	Air Pollution Control System	Parameter	Permissible limit
1.	Waste Destruction System with Auxiliary heater	10	Ventury Scrubber	SO ₂ NOx	40 mg/Nm ³ 25 mg/Nm ³

- 4.4 The concentration of the following parameters in the ambient air within the premises of the industry shall not exceed the limits specified hereunder as per National Ambient Air Quality Standards issued by MoEF & CC dated 16th November-2009.

Sr. No.	Pollutant	Time Weighted Average	Concentration in Ambient air in µg/m ³
1.	Sulphur Dioxide (SO ₂)	Annual	50
		24 Hours	80
2.	Nitrogen Dioxide (NO ₂)	Annual	40
		24 Hours	80
3.	Particulate Matter (Size less than 10 µm) OR PM ₁₀	Annual	60
		24 Hours	100
4.	Particulate Matter (Size less than 2.5 µm) OR PM _{2.5}	Annual	40
		24 Hours	60

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4.5 The applicant shall provide portholes, ladder, platform etc at chimney(s) for monitoring the air emissions and the same shall be open for inspection. The chimney(s) vents attached to various sources of emission shall be designed by numbers such as S-1, S-2, etc. and these shall be painted / displayed to facilitate identification.

4.6 The concentration of Noise in ambient air within the premises of industrial unit shall not exceed following levels:

Between 6 A.M. to 10 P.M. : 75 dB (A)

Between 10 P.M. to 6 A.M. : 70 dB (A)

5 Authorization under Hazardous & Other Waste [Management, Transboundary Movement] Rules, 2016 & amended.

5.1 Authorization Number: AWH-83561 and shall valid up to 20/11/2021.

5.2 M/s. Adani Ports & Special Economic zone Limited, is hereby granted an authorization to operate facility for following hazardous wastes on the premises situated at, **Plot No: 169/P, AT-Navinal Island, Taluka: Mundra, Dist: Kutch – 370 421.**

Sr. No	Waste	Quantity /Year	Category	Facility
1.	Used Oil	300 MT	5.1	Collection, storage, Transportation,, Disposal by selling out to registered recyclers/reprocessors
2.	ETP Sludge	1.095 MT	35.3	Collection, storage, Transportation, Disposal at TSDf site of SEPPL
3.	Sludge and filters contaminated with oil	5 MT	3.3	Collection, storage, Transportation,, Disposal by sending to common facility of SEPPL/NECL and/or sent for co-process at cement industries through recycling solutions Pvt. Ltd, Panoli.
4.	Asbestos Waste	Whatever quantity generated	B-1	Collection, storage, Transportation, Disposal at TSDf site
5.	Glass wool Waste (Thermal Insulation Material)	Whatever quantity generated	H-6.1	Collection, storage, Transportation, Disposal at TSDf site
6.	Downgrade Chemicals	Whatever quantity generated	20.2	Collection, storage, Transportation, Disposal by sending to authorized Solvent Recover
7.	Discard containers/barrels	16 MT	33.3	Collection, storage, Transportation,, Disposal by selling to registered vendor
8.	Bottom sludge	Whatever quantity generated	3.2	Collection, storage, Transportation,, Disposal by sending to common facility of SEPPL/NECL and/or sent for co-process at cement industries through recycling solutions Pvt. Ltd, Panoli
9.	Waste Residue containing Oil	100 MT	33.2	Collection, storage, Transportation, Disposal by Co-processing at cement Industries and / or incineration at CHWIF site



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10.	Pig Waste	24 MT	3.1	Collection, storage, Transportation,, Disposal by sending to common facility of SEPPL/NECL and/or sent for co-process at cement industries through recycling solutions Pvt. Ltd., Panoli
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5.3 The authorization is granted to operate a facility for collection, storage, within factory premises, transportation, and ultimate disposal of Hazardous wastes by selling out to registered recyclers.

5.4 The authorization is subject to the conditions stated below and such other conditions as may be specified in the rules from time to time under the Environment (Protection) Act-1986.

5.5 TERMS AND CONDITIONS OF AUTHORISATION:

1. The authorized person shall comply with the provisions of the Environment (Protection) Act, 1986, and the rules made there under.
2. The authorization or its renewal shall be produced for inspection at the request of an officer authorized by the State Pollution Control Board.
3. The person authorized shall not rent, lend, sell, transfer or otherwise transport the hazardous and other wastes except what is permitted through this authorization.
4. Any unauthorized change in personnel, equipment or working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorization.
5. The person authorized shall implement Emergency Response Procedure (ERP) for which this authorization is being granted considering all site specific possible scenarios such as spillages, leakages, fire etc. and their possible impacts and also carry out mock drill in this regard at regular interval of time;
6. The person authorized shall comply with the provisions outlined in the Central Pollution Control Board guidelines on "Implementing Liabilities for Environmental Damages due to Handling and Disposal of Hazardous Waste and Penalty"
7. It is the duty of the authorized person to take prior permission of the State Pollution Control Board to close down the facility.
8. The imported hazardous and other wastes shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation.
9. The record of consumption and fate of the imported hazardous and other wastes shall be maintained.
10. The hazardous and other waste which gets generated during recycling or reuse or recovery or pre-processing or utilization of imported hazardous or other wastes shall be treated and disposed of as per specific conditions of authorization.
11. The importer or exporter shall bear the cost of import or export and mitigation of damages if any.
12. An application for the renewal of an authorization shall be made as laid down under these Rules.
13. Any other conditions for compliance as per the Guidelines issued by the Ministry of Environment, Forest and Climate Change or Central Pollution Control Board from time to time.

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14. Annual return shall be filed by June 30th for the period ensuring 31st March of the year.

6. GENERAL CONDITIONS:

- 6.1 As per "Public liability insurance act-91" company shall get Insurance policy of total project cost, if applicable & submit the valid policy to this office.
- 6.2 Unit shall develop green belt within premises as per the CPCB guidelines. However, if the adequate land is not available within premises, the unit shall tie up with local agencies like gram panchayat, school, social forestry office etc. for the plantation at suitable open land in nearby locality and submit an action plan of plantation for next three years to GPCB.
- 6.3 Adequate plantation shall be carried out all along the periphery of the industrial premises in such a way that the density of plantation is at least 1000 trees per acre of land and a green belt of 10 meters width shall be developed. The applicant shall have to submit the returns in prescribed form regarding water consumption and shall have to make payment of water cess to the Board under the Water (Prevention and Control of Pollution) Cess Act- 1977.
- 6.4 In case of change of ownership/management the name and address of the new owners/partners/directors/proprietor should immediately be intimated to the Board.
- 6.5 The applicant shall however, not without the prior consent of the Board bring into use any new or altered outlet for the discharge of effluent or gaseous emission or sewage waste from the proposed industrial plant. The applicant is required to make applications to the Board for this purpose in the prescribed forms under the provisions of the Water (Prevention and Control of Pollution) Act-1974, the Air (Prevention and Control of Pollution) Act-1981 and the Environment (Protection) Act-1986.
- 6.6 The overall noise level in and around the plant area shall be kept well within the standards by providing noise control measures including engineering control like acoustic insulation hoods, silencers, enclosures etc on all sources of noise generation. The ambient noise level shall conform to the standards prescribed under the Noise Pollution (Regulation and Control) Rules, 2000 framed under Environment. (Protection) Act, 1986.
- 6.7 Applicant is required to comply with the manufacturing, Storage and Import of Hazardous Chemicals Rules-1989 framed under the Environment (Protection) Act-1986.



GUJARAT POLLUTION CONTROL BOARD

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- 6.8 If it is established by any competent authority that the damage is caused due to their industrial activities to any person or his property in that case they are obliged to pay the compensation as determined by the competent authority.
- 6.9 Applicant shall have to comply with all the guidelines / directive issued / being issued by MoEF&CC / CPCB / DoEF from time to time.
- 6.10 Environmental cell shall be setup and shall be responsible for the total Environmental management. Monitoring in respect to Air, Water, Noise level shall be carried out and results shall be submitted to GPCB on quarterly basis.

For and on behalf of
GUJARAT POLLUTION CONTROL BOARD

(Sushil Vegda)

Senior Environment Engineer

NO: PC/ CCA- KUTCH-39(4)/ ID 17739/ 403 658

Date: 9/2/2017!

ISSUED TO:

M/s. Adani Ports & Special Economic zone Limited,

Plot No: 169/P

AT-Navinal Island,

Taluka: Mundra, Dist: Kutch – 370 421

Clean Gujarat Green Gujarat

ISO-9001-2008 & ISO-14001 - 2004 Certified Organisation

Annexure - 2

Details of Greenbelt development at APSEZ, Mundra

LOCATION	Total Green Zone Detail Till Up to March - 2017				
	Area (In Ha.)	Trees (Nos.)	Palm (Nos.)	Shrubs (SQM)	Lawn (SQM)
SV COLONY	61.09	28287.00	6965.00	50020.00	80069.00
PORT & NON SEZ	71.96	124946.00	18613.00	62986.78	58455.18
SEZ	94.01	158335.00	15924.00	250449.60	27462.03
MITAP	2.48	8168.00	33.00	1670.00	4036.00
WEST PORT	81.34	181827.00	50221.00	24112.00	22854.15
AGRO- PARK	7.52	17244.00	1332.00	5400.00	2121.44
SOUTH PORT	14.08	25150.00	3430.00	3882.00	4826.97
Samundra Township	48.62	24602.00	12505.00	19978.07	35071.67
Productive Farming (Vadala Farm)	15.69	19336.00	0.00	0.00	0.00
TOTAL (APSEZL)	396.7	587895.0	109023.0	418498.4	234896.4
		696918.00			



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❖ Within Residential Township (Samudra and Shantivan)



❖ Within CETP Premises



Mangrove Afforestation Detail

S. NO.	Location	FY	Area (Hectare)	Clearance Reference	Plantation/Gap Filling	Species
A.1	Mundra Port Area (Mundra, Kutch)		24.00	Environment Clearance - Mundra (J-16011/13/95-IA.III dated 25 August 1995)	Plantation	Avicennia marina
Total Plantation			24.00			
B.1	Mundra Port Area (Mundra, Kutch)		25.00	Environment Clearance - Mundra (J-16011/30/2003-IA.III dated 21 July 2004)	Plantation	Avicennia marina
Total Plantation			25.00			
C.1	Luni/Hamiramora (Mundra, Kutch)	2007-08	40.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina Rhizophora mucronata Ceriops tagal
C.2		2009-10	10.00		Gap Filling Work	
C.3		2010-11	10.00		Gap Filling Work	
C.4		2011-12	95.40		Plantation	
C.5		2012-13	25.40		Plantation	
C.6		2013-14-15	70.00		Gap Filling Work	
Total Plantation (C.1+C.4+C.5)			160.80			
D.1	Kukadsar (Mundra, Kutch)	2012-13	66.50	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina
D.2		2013-14	10.00		Gap Filling Work	Avicennia marina
Total Plantation (D.1)			66.50			
E.1	Forest Area (Mundra)	2011-12	50.00	Forest Clearance - Mundra (F.No. 8-2/1999-FC (pt) dated 27 February 2009)	Plantation	Avicennia marina
E.2		2012-13	248.00		Plantation	Avicennia marina
Total Plantation (E.1+E.2)			298.00			

S. NO.	Location	FY	Area (Hectare)	Clearance Reference	Plantation/Gap Filling	Species
F.1	Jangi village (Bhachau, Kutch)	2012-13	50.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina
F.2		2013-14	20.00		Gap Filling Work	Avicennia marina
Total Plantation (F.1)			50.00			
G.1	Jakhu Village (Abdasa, Kutch)	2007-08	40.10	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina Rhizophora mucronata Ceriops tagal
G.2		2008-09	10.00		Gap Filling Work	
G.3		2009-10	10.00		Gap Filling Work	
G.4		2011-12	50.00	Environment Clearance - Dahej (11-37/2007-IA-III dtd 11 November, 2008)	Plantation	
G.5		2013-14	20.00		Gap Filling Work	
G.6		2012-13	30.00		Gap Filling Work	
G.7		2012-13	20.50	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	
G.8		2012-13	200.00	Environment Clearance - Mundra (10-47/2008-IA.III dtd. 12th Jan,2009)	Plantation	
G.9		2013-14-15	50.00		Gap Filling Work	
Total Plantation (G.1 + G.4 + G.7 + G.8)			310.60			
H.1	Sat Saida Bet (Kutch)	2014-15	250.00	Commitment with KPT for 250 Ha. - Tuna (By undertaking dated 3 June, 2013)	Plantation	Avicennia marina
H.2	Sat Saida Bet (Kutch)	2016-17	5.00	Commitment with KPT for 5 Ha. Bio-Diversity- Tuna.	In Progress.	Bio Diversity (Three Var.)
H.3	AKBTPL, Tuna Area	2016-17	30.00		Gap Filling Work-In Progress	Avicennia marina
Total Plantation			255.00			

S. NO.	Location	FY	Area (Hectare)	Clearance Reference	Plantation/Gap Filling	Species
I.1	Village Dandi (Navsari)	2006-07	200.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina Rhizophora mucronata Ceriops tagal
I.2		2007-08	100.00		Plantation	
I.3		2007-08	100.00	Environment Clearance - Dahej (11-37/2007-IA-III dtd 11 November, 2008)	Plantation	
I.4		2008-09	200.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	
I.5		2010-11	200.00		Plantation	
Total Plantation (I.1 + I.2 + I.3 + I.4 + I.5)			800.00			
J.1	Village Talaza (Bhavnagar)	2011-12	50.00	Environment Clearance - Dahej (11-37/2007-IA-III dtd 11 November, 2008)	Plantation	Avicennia marina
J.2	Village Narmada (Bhavnagar)	2014-2015	250.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina
Total Plantation (J.1 + J.2)			300.00			
K.1	Village Malpur (Bharuch)	2012-13-14	200.00	CRZ Recommendation - Dahej ENV-10-2006-71-P dtd 29th May, 2007	Plantation	Avicennia marina
K.2	Village Kantiyajal (Bharuch)	2014-15	50.00	CRZ Recommendation - Hazira ENV-10-2012-30-E dtd 11th May, 2012	Plantation	Avicennia marina
K.3	Village Devla Bharuch	2014-15	50.00		Plantation	Avicennia marina
K.4	Village Devla Bharuch	2015-16	100.00		Plantation	Avicennia marina
Total Plantation (K.1 + K.2 + K.3 + K.4)			400.00			
L.1	Village Tada Talav (Khambat, Anand)	2015-16	100.00	Environment and CRZ clearance - Mundra SEZ (10-138/2008/IA.III dated 15 July 2014)	Plantation	Avicennia marina
L.2	Village Tada Talav (Khambat, Anand)	2015-16	100.00		Plantation	Avicennia marina
Total Plantation (L.1 + L.2)			200.00			
G. Total (Plantation+ Gapfilling)			2889.90			



Dandi



Hamiramora



Jakhau



Dandi

Annexure - 3

Adani Foundation, Mundra



2016-17 ANNUAL REPORT



Adani Foundation
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Message from Head, Adani Foundation, Mundra....

The year 2016-17 has passed off with passion and courage to work for the commitment given to the community. It is essential that sustained growth is achieved at rural level along with the industrial development. This can be made possible by involving more and more people in the rural development programme.

This year conceded with more streamline procedure of grievance mechanism, milestone achievement in malnourishment project, considerable impact created by fisherman amenities projects and new era defined in agriculture projects.

The people of Kutch, especially that of Mundra, have generously supported the activities carried out by the Adani Group or else this wouldn't have been possible. Their determination, understanding and commitment have strengthened the development even more.

Our Achievement would not be possible without the ultimate support by Mr. Rakshit Shah, Executive Director - APSEZ and plentiful faith and passionate support by Dr. (Mrs.) Priti G Adani, Managing Trustee – Adani Foundation.

Mr. Mukesh Saxena
Head,
Adani Foundation



Community Health

It is not a coincidence that the first letters of health is "Heal". Instilling health pursuing activities and ensuring availability of quality health care services to the remote areas is the objective of this sector. Committed to "Health for All" the Foundation runs Mobile Health Care Units, Rural Clinics, Special Innovative Projects i.e. Health Card to Senior Citizens, "Suposhan"- Fighting to Mal nourishment in Mundra and Kidney Stone Project and Variety of Health Related Camps.



Mobile Dispensaries & Rural Clinics

The population of Mundra block is spread over various villages. Due to inadequate transportation facilities, the villagers have to face many hardships even for reaching to the doctor in case of common diseases. The medical expenses and zero earning per day add surplus to their hardships.

To help them in the above mentioned health related problems, the service of mobile medical van has been started by the Adani Foundation in Mundra block. In big villages, rural dispensaries have been started considering their population and area.

The Adani Foundation runs two mobile health care units - One at Mundra and the other at Bitta. Main objective of Mobile Van is to reduce travel time, hardships and expenses. Two mobile health care units cover 29 villages at Mundra, 8 villages at Bitta and 06 fisherman settlements. Around 121 types of general and life saving medicines are available in these units. It has turned out to be a boon for women and children as the service is availed at their door - step.

The Adani Foundation operates Rural Dispensaries in 09 villages of Mundra block, 03 villages of Anjar block and at SEZ Gate. At these dispensaries, health services are provided free of charge for two hours daily by a doctor and a volunteer.

Sr.	Month	MHCU Month wise Data-2016/17	Rural Clinic OPD Data-2016/17
1	April	2714	2833
2	May	2873	2505
3	June	2947	3055
4	July	3262	3550
5	Aug.	3197	3712
6	Sep.	4384	3659
7	Oct.	2865	3631
8	Nov.	3890	3513
9	Dec.	4242	3513
10	Jan.	3936	3989
11	Feb.	4367	3790
12	March	3900	3200
	Total	42547	40950

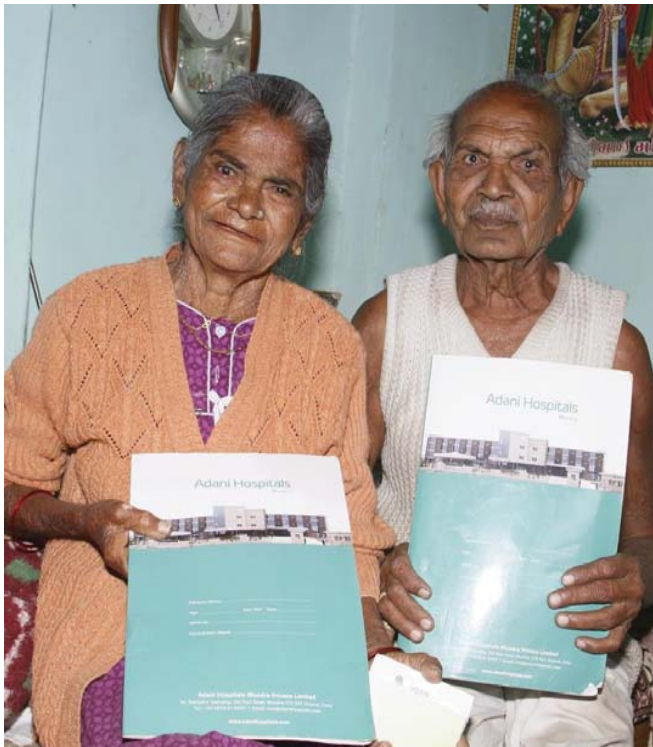


Details of transaction

Sr.	Month	Sr.Citizen
1	April	677
2	May	648
3	June	698
4	July	757
5	Aug.	815
6	Sep.	822
7	Oct.	871
8	Nov.	742
9	Dec	808
10	Jan	833
11	Feb	896
12	March	800
	Total	9367

Health Cards to Senior Citizens

- **Expected Outcome**
Rapport building with families of old age persons and other stakeholders. 62 villages will be covered through this intervention. District Civil Hospital in Bhuj will take care of all planned medical interventions. Only emergency and primary treatment cost will be incurred from Adani Hospital Mundra
- **Expected Impact**
Social security for old age persons (as health matters in old age). Building good image and long run relationship.



Health Cards to Senior Citizens

The major junctures of human life are - childhood, adulthood and old age. The first phase is well looked after by the parents and second phase is of self-reliant but the last phase is a dependent one. The needs of old people are less looked after. When people become old, they start living a life of aloofness and solitude. Therefore, the Adani Foundation has started the Adani Health Programme for the aged to look after their health. To address the health care issues related to ageing, AF launched a 3 year long pilot project - 'Adani Vaidi Swasthya Yojna' on 20th February 2011 at Mundra and further extended the same for the next three years i.e. up to 2017. Under this programme, the individuals aged 60 years and above are benefitted. Health Cards are issued to them with the purpose of providing adequate and timely treatment. The families consisting of aged ones with a yearly income of Rs. 2 lacs or more get a Blue Card. The Blue Card holders can avail diagnosis facility and treatment at a subsidized rate in the Adani hospitals, Mundra. The families with a yearly income of less than Rs. 2 lacs are issued a Green Card. Green Card holder aged people get treatment for illness in Adani hospitals, Mundra with an aid up to the limit of Rs. 50,000/- within a period of 3 years.

During the year 2016-17, total 9367 transactions were done by 7487 card holders of 66 villages of Mundra Taluka. They received cash less medical services under this project.

In Green Card category, 6665 aged people got treated for various illness & diseases at Adani hospitals, Mundra with an aid up to a limit of Rs. 50,000/- within the period of 3 years.

The 822 Blue Card Holders can avail diagnosis facility and treatment at a subsidized rate in the Adani hospitals, Mundra.

Scheme is continue since six years and We are planning to extend the project for next three years period.

"Suposhan"

Basis of Requirement

Malnutrition amongst Children, Adolescent girls and Women in India is an alarming phenomenon. (In India: 48 % or 54 million children under-five years were stunted. India accounted for 33 % of stunted children in the world. As per Global Nutrition Report released recently, Children below five years- 38.7 % Stunted and 15.1% are wasted. 69.5% children 6-59 months old, 55.8% adolescent girls aged 15-18 years, 55.3% women aged 15-49 years have Anaemia. Moreover anaemia prevalence in pregnant women is as high as 58.7%) Curbing Malnutrition was part of Millennium Development Goals and again focussed through second and third Sustainable Development Goals on Zero hunger and Good Health & Wellbeing respectively.



Sr. No.	Detail of Village & Work	No of total
1	Total village	61
2	Pending village	7
3	Villages in progress	54
4	Total sangini	28
5	Total Anganwadi in Mundra block	104
6	Total cover Anganwadi	86
7	Pending Anganwadi	20
8	Anthropometric study	7101
9	SAM children	22
10	MAM children	9
11	CMTC admitted	16
12	Total adolescent group	169
13	Reproductive women group	185
14	FGD	369
15	Hb testing (adole. girls and women)	2292
16	RUTF distribution	23
17	PRA	6
18	Camps-CMTC (SAM-MAM)	2
19	No. of beneficiaries	106
20	Total household survey	18185
21	family based counselling	83
22	Total events of project	95
23	Total sangini meeting	10
24	Total training	6

"Suposhan "

A child's entire life is determined in large measures by the food given to him/her during his/her first five years because childhood is the period of rapid growth and development. Nutrition is one of the most influencing factors in this period. Malnutrition substantially raises the risk of infant and child deaths, and increases the vulnerability to a variety of diseases in later life.

Project Suposhan is initiated with the objectives

- **Curb malnutrition amongst Children, Adolescent girls and Women in our CSR villages**
- **To reduce malnutrition and anaemia amongst adolescent girls and pregnant & lactating women by 70% in three years**
- **Reduction IMR and MMR**
- With combined efforts of Adani Foundation health team, ICDS and Child malnourishment treatment centre of GoG, we had identified 45 malnourished children and started intervention as per their illness. Now, 14 children reached to normal category and it is achievement of Adani Foundation. RUTF distribution done to 23 children and it really started to give magical results and positive response of parents for RUTF therapy has increased our enthusiasm.

- Adolescent girls group forming is in progress Total 169 groups are already formed. HB Testing completed for 2292 girls. We are getting good support in HB testing as the Touch HB machine is needle less capacity.
- Likewise more than 180 groups are formed for reproductive age group women. In this age group we are getting most appreciable response due to most of our Sangini are of the same age.



Implementation Strategy

Base line data was provided for Mundra Taluka in initial phase of Project.

- Total Number Aanganwadis in the selected area
- Information on Sub-centers/ Primary Health Centres/ Community Health centres/ Referral Hospitals
- Availability of Healthy worker- male & female both, ANMs, LHVs, Doctors, specialists such as Gynaecologist, Paediatricians, Pharmacist, Dietician Lab, Technician, Nursing Staff etc. at above centres (Number & names with contact details)
- Selected areas' Birth rate, Death rate, Infant Mortality Rate, Mother Mortality Rate, Sex ratio, Child Sex ratio against district, state and national average
- Total number of beneficiaries and against that enrolled beneficiaries at Anganwadi/ICDS: 0-6 year children, Adolescent girls, pregnant women and lactating mothers
- Identified malnourished and anaemic children/ adolescent girls and women (numbers & name as well as current level of malnutrition & anaemia with dates- Base Line data)
- Current Inputs provided through the Government machineries
- Other services available through CBOs, NGOs etc.- Details of inputs and contact details of those organizations
- Understanding & Listing of area specific cultural and behavioural barriers

Expected Outputs

- Community Health vertical at each location would focus on project on "Curbing Malnutrition amongst Children, Adolescent girls and Women "with combined approach of community management of Malnutrition and Anaemia and necessary medical treatment components.
- Each child and especially malnourished will be mapped with growth chart
 - Regular inputs of RUTF treatment when necessary.
 - FDGs with mothers and adolescent girls.
 - Village meeting one in a month at every village
 - Health camp every month
 - Awareness campaigns.

Expected Outcomes

- To reduce the occurrence of malnutrition amongst Children by 95 % in three years
- To reduce malnutrition and anaemia amongst adolescent girls and pregnant & lactating women by 70% in three years
 - To create awareness about the issue of malnutrition and anaemia and related factors amongst all stakeholders and role they may play in curbing the issue
 - To create a pool of resources to be utilised for combating the issue of Malnutrition and Anaemia
 - To support efforts in reducing IMR and MMR



Support for Medical Aid to Deprived

The scope of the organization extended up to providing best health care facilities to the needy, poor, challenged and not so well-to-do families for the treatment of illness and diseases. It is not always possible to predict the medical expenses. Moreover, those who are economically not so sound, become indebted for lifetime in case of certain illnesses. Therefore, Adani Foundation provides primary health care and financial assistance for ailments such as kidney related problems, paralysis, cancerous and tumor surgeries, neurological and heart problems, blood pressure, diabetes etc. In current month we organized two medical examination camps in which **Medical Support was given to 1413 People from Mundra, Bhadreswar, Zarpara, Shekhadia Nana Mota Kapaya, Bhujpur, Vadala, Wandi and other villages under our work area.**

Medical Supports		
1	April	58
2	May	50
3	June	40
4	July	43
5	Aug.	95
6	Sep.	96
7	Oct.	85
8	Nov.	98
9	Dec.	166
10	Jan.	257
11	Feb.	225
12	March	200
Total		1413



General Health Camp Data

Sr.no.	Month	Date	Place	Total Patinets
1	16-Apr	26&27.04.2016	Tuna- Wandh Health Camp	74
2	16-Apr	15.4.2016	Samuh Sadi Mundra	81
3	16-Apr	9.4.2016	Ganesh mandir Mela	31
4	16-May	3&4.05.2016	Tuna- Wandh Health Camp	111
5	16-May	8.5.2016	Boliya Samuh Sadi	76
6	16-Jul	20.7.2016	Govt. School Health Camp-Bhadreswar	178
7	16-Aug	16-Aug	Marin police through Medical Camp- Bhadreswar	37
8	16-Aug	13 to 15.8.2016	Bharadi Mata Camp Navinal	100
9	16-Sep	2 to 9.9.2016	Shiv puran Katha Vandh	275
10	16-Oct	24.10.2016	Uras - Luni & Garib Kalyan Melo-Mundra	218
11	16-Dec	13.12.2016	Bukhari pir melo-Mundra	110
12	16-Dec	26.12.2016	Juna Bandar	53
13	17-Jan	27.01.2017	AVM-Bhadreswar	14
14	01-Feb	18.02.2017	Seth R.D. High school - Health Camp	210
Total				1568

Health Camps

Various health camps are organized at regular intervals to meet the specific requirements of the community. Screening camps are organized regularly as per the route map planned in coordination with Adani Hospitals. **During the year 2016-17, 14 specialty camps were organized and 1568 Patients were benefitted.**



CALMED PROJECT- Collaborative Actions in Lowering Maternity Encounters Death

Adani Foundation has been looking after the health requirements of Mundra block for a long time. It has got a rich experience to address the preventive and curative health measures at Mundra belt. Therefore it was assessed by the Adani Foundation team that the most burning problem of this region is to cure Maternal Health, therefore, The demand was raised from the AF staff to improve the maternal health. Looking at the strengths of AF the following role has been identified. The prime objective is to reduce maternal and new born mortality through a collaborative cascade of training, briefings, publicity and monitoring. An effective programme to reduce maternal mortality (MDG 5A) requires collective efforts by Government, Professionals and Communities to deal with medical and administrative issues in a top down and bottoms up approach as both the approaches are important and complementing to one another.



Activities proposed for this project are Selection of CHC/PHC, Training of trainers, AF Involvement in Target Areas, Identification of Needs in Target Areas, Implementation-mechanism, Publicity, and Communication-A Preparing Training Materials in MCH- Funding - Reporting: The project consultant of this project will submit monthly planning to AF

Capacity building inputs to AF staff in Maternal and child health situation so that at the initial stage they can reduce the maternal encountered death at Mundra Block. Implementation Strategy of the project: Master trainers has identified i.e. doctors from Adani Foundation, Adani Hospitals Mundra and Gujarat Adani Institute of Medical Sciences. Co - trainers would also be selected. These Master trainers had further percolated the knowledge and skill to ANM/ ASHA for the last 2 years and will continue current year also.

Urinary stone – Dialysis Treatment

Drinking water of Mundra contains high Fluoride (amount of salt). Hence, the proportion of patients with urinary stone and kidney failure is more . A project for patients who need dialysis is thus initiated so that the poor patients can receive the treatment at Adani hospitals. The main objective of providing dialysis treatment is to help the extremely needy patients to live a healthy life.

Total 5 Patients were being supported for regular dialysis (twice in a week) during this year.



PHYSIOTHERAPY CAMPS

Adani Foundation is providing physiotherapy service to differently abled children's in coordination with BRC-Mundra. **This year total 18 children have taken physiotherapy at Adani hospital.**



Health Awareness session Data- April to December-2016			
Month	Topic	Villages	Total
April	Health Hygiene & Cleanliness	Ganesh Mandir- Luni	80
June	Health Hygiene & Cleanliness	Govt.School- Bhadreswar	70
July	Diseases & Personal Hygiene in monsoon season	Govt.school- Moti Bhujpur	370
Aug.	Personal Hygiene in monsoon season	Govt.School- Moti Khakhar	75
Sep.	Health Hygiene & Cleanliness	Govt.school- Zarpara	325
Oct.	Dengue fever information & Awareness Generation session	Govt.school- Gundala	75
Nov.	Personal Hygiene & Cleanliness	Govt High .School – Moti Bhujpur	210
Dec.	HIV-aids information & Awareness Generation session	Bed collage Mundra	110
Total			1315

AWARENESS SESSIONS BY MEDICAL OFFICERS:

Awareness sessions at various schools and colleges were conducted to sensitize the future generations and teachers for further cooperation and coordination on various topics of women health. We had included women health issues such as anemia, menstrual disorders, breast cancer, cervical cancer etc. to promote awareness among the people. **During this year more than 1300 students are benefitted by awareness sessions**

Gujarat Adani Institute of Medical Sciences

Gujarat Adani Institute of Medical Science is the first Medical College of Kutch region. It started in partnership with Adani Group and Government of Gujarat in the year 2009. This college was affiliated by the Medical council of India in the year 2014 for the MBBS with 150 seats per year. Gujarat Adani Institute of Medical Science is affiliate with the first digital university "Krantiguru Shyamji Krishna Verma Kutch University". In GAIMS, currently 750 students are studying, The GAIMS Medical College is situated in heart of Bhuj city on a large plot of 27 acres.

A teaching hospital (G K General Hospital) with 700 beds is established with GAIMS in which patients of Kutch are getting subsidized medical facilities. The Hostel facility is also available for the students in the campus only. The accommodation facility is given to the staff of GAIMS.

- Adani Foundation Team has initiated coordination with GKGH hospital since last year and established a reception area for the smooth patient coordination and preparation for the social networking programme.
- Adani Foundation organized General Health Camps and Speciality Camps in various interior villages of Kutch in coordination with GKGH which created magical impact and benefitted 3335 patients. Adani Foundation Bhuj Health team has also organized more than ten awareness camps and village level meetings at 293 villages of Kutch regarding services of GKGH.
- Dead body medical van** – Dignity to death is one of the noble initiatives taken up by the Adani Foundation. If any death occurs in GKGH, dead bodies are shifted to the native village of the concerned in the Kutch District free of cost. **Total 584 dead bodies privileged till now to different locations in Kutch.**



Disease wise Data					
Month	Dengue	Jaundice	Malaria	HIV	TB
April	7	0	0	8	55
May	11	35	2	7	46
Jun	4	46	1	4	35
July	1	149	6	4	47
Aug	3	54	19	6	48
Sep	25	80	33	3	32
Oct	49	41	27	6	35
Nov	75	18	35	18	26
Dec	29	7	11	3	24
Jan	16	6	5	0	40
Feb	15	5	7	0	32

OPD/IPD Data		
Month	OPD	IPD
April	16221	2130
May	15652	2223
Jun	15420	2232
July	16819	2396
Aug	18494	2597
Sep	19121	2575
Oct	17919	2471
Nov	19998	2541
Dec	23053	8534
Jan	22693	7381
Feb	23217	7241

Safe child Project Annual Analysis			
No.	Month	Students	School
1	June	573	3
2	July	1489	7
3	August	1305	6
4	September	1964	6
5	October	1007	4
6	November	68	1
7	December	882	5
8	January	163	5
9	February	204	3
Total		7507	38

Death Body Van Data			
No.	Month	AF Van	Death in GKGH
1	April	51	72
2	May	46	134
3	Jun	52	103
4	July	51	115
5	Aug	50	115
6	Sep	54	72
7	Oct	50	82
8	Nov	59	75
9	Dec	53	73
10	Jan	60	77
11	Feb	58	64
Total		584	982

Education

Education is one of the most important stepping stones to bring about a unified development in any community. The Adani Foundation, through its rigorous surveys and assessments, could understand that it was education which should be taken up to bring about a real change in the status of the fisher folk communities. Following are some of the major education initiatives taken up by the foundation.



Vidya Sahay Yojana – Scholarship Support

Under this programme, special attention is given to motivation higher education by providing books. The Adani Foundation provided transport facilities to students from Std. 6 to 8, studying in nearby villages. Bicycles have been distributed to students who have enrolled for higher education. The Foundation also gave scholarships to the students of ITI, Diploma Engineering and Degree Engineering.

Balvadi		
Sr.	Village & Bandar	Children
1	Juna Bandar	50
2	Luni Bandar	28
3	Bavdi Bandar	35
4	Zarapra	32
Total		145



SUSTAINABLE LIVELIHOOD DEVELOPMENT PROGRAM

Empowering lives and broadening their scope for economic opportunities, Adani Foundation's initiatives introduced under 'Sustainable Livelihood Development Program', have been founded on community based approaches. In the villages at Mundra Taluka, several communities are economically side-lined and weaker that depend on a sole income source or are unemployed. Sustainable livelihood projects have been launched to cater financial independence through building local partnerships, providing diverse livelihood avenues, inculcate the attitude to establish savings, equipping to earn and updating local skills by making use of existing resources to encourage self-reliant lifestyles. Participation is encouraged by launching specific projects for fishermen communities, farmers and cattle owners, youth and women.



Vidya Deep Yojana

A lot of efforts were put in towards a school preparedness programme by empowering 'Balwadis' at Fisherfolk settlements. Under the Machhmar Vidya Deep Yojana, the Adani Foundation constructed four 'Balwadis', at different settlements, for children between the age group of two and a half years to five years. This programme focuses on the development of basic age-appropriate learning concepts, discipline, regularity, awareness about health, hygiene, cleanliness and also provides nutritious food. **Total beneficiaries of Vidya deep Yojana is 145 students**

Machhimar Arogya Yojana

A healthy person can work well and earn for his family. Hence it is necessary to provide medical facilities to cure and prevent them and to provide them the treatment of diseases prevailing among the people specially women; children and elderly person, especially due the lack of balanced nutritious diet.

Mobile Health Care Unit - the mobile dispensaries have been run by the Adani Foundation since 2009. The mobile dispensary is available not only in the Vasahats/Settlements but also near the coast where the fishermen, can avail the facilities as and when needed. **Total average 7801 fishermen were benefitted by Mobile Dispensary every year.**



1. Apart from this, a number of subsidiary initiatives such as health awareness camps, medical check-ups, etc. are conducted by the Adani Foundation at frequent intervals, to provide the fisher folk community with the much needed and required information and assistance.
2. **Medical Financial Support -Adani Foundation has extended financial assistance to more than 1187 financially challenged patients from the Fisher Folk Community in case of medical urgency during this year.**
3. **Health Card for Senior Citizen Project** – This is one of the major and prominent and the most innovative project of the Adani Foundation. Under this scheme Health Cards were given to the Senior Poverty Stricken Citizens to provide them financial support to combat with their health related needs. **The project for the senior citizens is popularly known as Vadil Swasthya Yojana and till date 263 senior citizens from fisher folk community are enrolled in the scheme.** They are getting cash less medical services uptoRs. 50,000 for three years. Besides this, follow up with the card holders is a regular activity. It has been observed that card holders treat the card as an important document. Most of them keep these cards in their wallets with other important documents and cards.

Machhimar Kaushalya Vardhan Yojana

Apart from formal education, special programmes were conducted to enhance employability of the youth. Based on the need assessment, several trades were introduced by the Adani Skill Development Centre in Mundra, where the youth from the Fisherfolk communities could join and get vocational training for a number of technical and non-technical skills. These vocational trainings are unique as they include practical sessions and simulation activities. **This programme has benefited 94 youths by various training.**



Machhimar Shudhh Jal Yojana

In order to reduce the hardships faced by women, potable water was provided this year to the communities of this region. Water tank platforms have been constructed and tanks have been set up in order to provide clean potable drinking water to the community. **A total of 93000 litres of water was supplied to 728 households from different settlements on a daily basis..**

Machhimar Awas Yojana

Fishermen who stay at vasahat/settlement at the seashore have been provided with appropriate shelter to protect them from the harsh weather. A special design of foldable housing with residents. These shelters are equipped with basic facilities such as toilets and pure drinking water to provide them clean and hygienic residences. **164 refurbished shelters have already been handed over to fishermen families at Juna Bandar. Another 110 shelters, with the additional advantage electricity facilities, are being made at Luni Bandar..**



Sughad Yojana

A total of 230 toilets have been constructed at three Fisherman related Villages at Mandvil Taluka and Randh Bandar. The construction of infrastructure was also accompanied by a continuous awareness campaign on hygiene, sanitation and use of toilets in particular.

Toilet Block		
Sr.	Village & Bandar	Qty
1	Modhva	156
2	Tragadi	6
3	Randh Bandar	8
4	Chachh Zarpura	60
Total		230



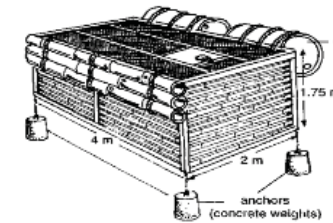
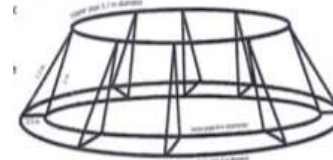
Machhimar Ajivika Uparjan Yojana

The 'Ajivika Uparjan Yojana' was implemented to promote and support alternative livelihoods among the Fisherfolk communities during the non-fishing months. The Foundation introduced 'Mangrove Nursery Development and Plantation' in the area as an alternate income generating activity for the people of the region. Both men and women received training on Mangrove plantation, moss cleaning, etc. as per requirements. The Foundation provided them with employment equivalent to **3315** man-days. In addition to this, employment worth of **25,000** man-days has been provided till date. The Foundation has also supported **42** Pagadiya fishermen as painting labourers by providing them with employment of **5068** man-days.

Income Generation Activities : Painting Labour work and Mangroves plantation

Name of Fishermen	Year-2015-16	16-Apr	16-May	16-Jun	16-Jul	16-Aug	16-Sep	16-Oct	16-Nov	16-Dec	17-Jan	17-Feb	Apr to Feb Year-16-17 Total	Total Man-days	Order Amount Rs.
Vagher Talab Osman	2969	70	0	278	115	115	200	170	191	150	85	156	1530		3262568
Vagher Abbas Suleman	2961	240	400	268	185	70	168	204	200	200	216	208	2359		3417469
Vagher Mubark Iliyias	1090	150	40	160	232	145	150	110	35	15	80	62	1179		1903536
Total	7020	460	440	706	532	330	518	484	426	365	381	426	5068	12088	8583573

Sr.	Name of Fishermen	Village	Man-days										Total	Order Amount Rs
			Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar			
1	Mubarak Alimamad Vagher	Shekhadiya	167	167									334	100200
2	Abdul Satar Jam	Shekhadiya	167	167									334	100200
3	Ismail Hajibhai Jam	Shekhadiya	167	167									334	100200
4	Sidhik Hasan Reliya	Luni	216	216									432	129600
5	Latif Suleman Manjaliya	Luni	183	183									366	109800
6	Jakab Hasan Manjaliya	Luni	290	270	115	60	60	60	60	60	60	60	975	340000
7	Manek Jakariya Suleman	Bhadreswar	292	308									600	180000
	Total		1482	1478	115	60	60	60	60	60	60	60	3375	1060000



New Initiatives : Cage culture

Fishing occupation and Port business coexists. When we started port operations, condition of Fisherfolk community was deprived. After inception of CSR arm of Adani Group – Adani Foundation in 1996, strategy was planned based on priorities for socio-economic development of Fisherfolk community. The fishers of the Shekhadia fishing village (Juna Bandar) are one of the stakeholders of the Adani Port Ltd., Mundra. The Company likes to intervene to provide quality livelihood to the fishers especially the women under their CSR funds.

The main objectives for promotion of alternative livelihood is to raise the economic standard of fisher folk, second is to reduce the pressure on fishing effort.

It was reported that about big numbers of fisher folks are willing to change their occupation; therefore, Cage culture aimed to provide alternative employment and encouraging them to shift from full-time to part-time fishing.

The Institute shall provide training to the selected fishers in live lobster handling, seed transportation and quality testing, cage fabrication and deployment, lobster husbandry practices, harvest and marketing etc. with sufficient hands on exposure at the sea cage farm owned by the CMFRI at Veraval. First phase of exposure and cage fabrication is completed. Launching of cage is done in presence of Dr. Koya (CMFRI) in March.

New Initiatives : Polyculture

Polyculture is the practice of culturing more than one species of aquatic organisms in the same unit area (marine, pond, streams and rivers). The principle of Polyculture is that production of more organisms in the particular unit area having different food habits.

The main objectives for promotion of alternative livelihood is to raise the economic standard of fisher folk, second is to reduce the pressure on fishing effort.

It was reported that about big numbers of fisher folks are willing to change their occupation; therefore, Cage culture aimed to provide alternative employment and encouraging them to shift from full-time to part-time fishing.

The activities involved i.e. capacity building, expert inputs, machineries, seeds of fish and fish food. We will identify feasible sites for the Polyculture and implement the activities with participation of fisher folk committees who will take whole responsibilities. These Polyculture will add value to the fishing occupation of the local fisher folk community.



Exposure visit : Fish Research Centre at Okha

The Seaweeds are macrophytes algae, a primitive type of plants lacking true roots, stems and leaves. The word seaweed gives the wrong impression that it is a useless plant. Seaweeds are wonder plants of the sea and highly useful plants. Seaweeds grow in the shallow waters. Root system and conducting tissues like land plants are absent in seaweeds. Most of them have hold-fast for attachment and some drift loose in the sea. Adani Foundation Team (PO:SLD) has visited Okha for the same.

Seaweeds new renewable source of food, energy, chemicals and medicines. Provides valuable source of raw material for industries like health food, medicines, pharmaceuticals, textiles, fertilizers, animal feed etc.



Agriculture & Animal Husbandry

Adani Foundation puts efforts in Mundra block for consistent betterment in livelihood sector. The organization has carried out remarkable activities in the agricultural and animal husbandry sectors.

Drive for Technology to use in agriculture

- We have initiated Programme for Awareness of Farmers in collaboration with KVK. The outreach is approximate 70 farmers of 5 villages
- The purpose of this project is to initiate village wise integrated agricultural & allied development for sustaining agriculture and socio economic situation of farming community of Mundra block.
- This year Main Focused Activities

1. Biogas Support to 9 Nos of farmers (AF, Beneficiaries and Govt support)
2. Kitchen Garden Kit distribution to 20 Farmers
3. Soil Health cards analysis : 25
4. Organic farming Related 15_ Demonstration for "Jivamrut" at Zarpara
5. 20 Tissue culture Date palm demonstration is successfully done with farmers of Zarpara



Marketing Linkages : Dates

To promote Date : Amrut fal of Kutchh, AF did various linkages for marketing. By this support, **more than 1000 Kg Selling** at Adani Residential Colonies, Ahmedabad and Surat with good rate .



Food for cattle

The organization provides fodder during the time of scarcity and the last 3 months of summer every year. During this period, fodder is regularly sent to every village with the help of the local people. This has given stability to the families who earn their livelihood through animal husbandry.

In order to meet the demand of fodder, the Adani Foundation purchases it from the regional farmers. This gives them fair rates in return.

This year we have given 59,224 mann fodder worth Rs. 127.00 Lacs approximately.



Exposure Visits

- 30 Farmers visited and discussed about results of Jivamutra and Kitchen Garden Feedback & "Agri Asia" Agriculture Technology Exhibition
- Animal Hostel visit Himatnagar and Gauchar Development workshop attended by Jayram Rabari and Karsan Gadhavi
- Group of farmers were taken to exposure visit of organic farming and bio gas bottling plant at Vaghodiya. This is totally new concept in agriculture. Organic products are demand of today's period. Bio gas plant is eco friendly and gives very good result



Women Empowerment Projects

Encouraging women, to take control of their lives and building their confidence whether they are single, married or a widow; is one of the initiatives under the sustainable livelihood development program.

- Considering this situation, We have started our training programme with two major women's group of Villages near Adani Power and Adani Ports. Both the groups of women (90 women in total) successfully completed their training for preparing washing powder, phenyl, liquid for cleaning utensils and hand wash etc.
- We have selected 6 women groups having 15 members each, as per their ability for different work i.e. accounting, banking, leadership, marketing, administration etc.
- As a further step to bring sustainability, we thought to start a shop "Saheli Mahila Gruh Udyog" at Shantivan Colony after discussion with the Administrative Department of Ports and Power regarding the supply of the material, rate etc.
- Our pilot project is preparing Washing Powder and Phenyl. We are planning to start Home Made Products after discussion with HOD and Random groups of ladies in colonies and villages.
- Till date "Saheli Mahila Gruh Udyog" has annual turn over of Rs. 3.70 Lacs.**
- After one year of Pilot phase, Saheli Mahila Gruh Udyog includes 70 women. We are planning to convert "Saheli Mahila Gruh Udyog" into Producer company. Planning for 1. Production of Hygiene Products 2. Edible products and 3. Handicraft items with capacity building of women group



Coordination with Government for Widow and Senior Citizen Scheme

- We are playing the role of facilitator in case of tie up with Government Scheme for Widows, Senior Citizens and Handicapped people.
- The identity cards are issued to two persons for the handicapped in coordination with Bhuj Samaj Suraksha Khata for regular visit and follow up.
- Last year, 63 widows and 40 Senior citizens and 351 handicapped - total 454 members got benefitted** from the approval of pension certificate. The financial benefit of the senior citizen yojana is Rs. 400 per month and the widow scheme is of Rs. 900 per month.



No.	Scheme Name	Total	Remark
1	Medical Certificate for specially abled	136	Under medical camp and G.K. General Hospital, Bhuj
2	Buss pass for specially abled and I card	109	Samaj Suraksha Khata at Bhuj
3	Sadhan Sahay	30	Bicycle 15, Tricycle-9, wheelchair -2, hearing machine -1, lage-1
4	Physiotherapy - Children	10	Coordination with B.R.C and Adani hospital
5	I.G Sadhan Sahay	41	Sewing machine-36, hand cart-3, computer kit 1
6	Sadhan Sahay	23	By Adani foundation
7	Handicap pension	2	Sant surdas Yojana - Samaj suraksha - bhuj
8	Widows pension	63	Mamlatdar Kacheri Mundra
9	Senior Citizens pension	40	Mamlatdar Kacheri Mundra
	Total benefits	454	

Beti Vadhavo Abhiyan

Beti Vadhavo programme was organized in **32** Villages in the presence of Village Sarpanch and other leaders. We explained people about the various topics i.e. importance of girl child, Sex Ratio, Gender Equality and laws regarding Child abortion. This initiative was well accepted by community and we have observed a visible change in their mindset. We have facilitated **500** daughters with Kit (Small Bed sheet, Mosquito net, Soap and Cream with nutritious food for mother)



In the present era, improvement in quality of educational services and a sound infrastructure for higher education is required so that the children are prepared to be globally competitive.

Education in its broadest, general sense is the means through which the aims and habits of a group of people lives on from one generation to the next.

Adani Foundation has marked out FOUR major core areas for peripheral Developmental work, amongst them "EDUCATION PROGRAMME" is one of the major areas where we work on following Objectives:

- To fill the gap – understanding the importance & urgency of requirement through Material or Infrastructural Support
- Render support to improved School Environment
- Efforts for 100 % enrollment & retention of eligible children in Govt. Primary Schools
- Provide conducive & healthy environment along with nutritious food to Children of Fisherman at Vasahat by means of Balwadis

Key Focus:

- Efforts to Improve Quality of Education
- Child Education & Nurturing
- Propagate Child Friendly Environment at schools
- Community Participation
- Maximum [100%] enrollment and retention in Schools



Education



Project UDAAN

Udaan is a learning based initiative focused on the youth coming from various schools across the state of Gujarat. Under this project, a two day free of cost exposure tour is organized wherein students are given a chance to visit the Adani Port, Adani Power & Adani Willmar facilities to get an insight upon the large scale business activity carried out at each of them.

Specifically students from high school (9th to 11th grade) are encouraged to take part in the exposure tours. It is believed that students of this age would be able to absorb the learning in a better way which could help them shape their lives by aspiring for big. The spread of the schools extends to various districts in Gujarat. There is a specific effort to reach out to schools in the rural areas. Other than schools even colleges where the exposure visit seems to be helping the curriculum are encouraged.

Till Date Total 2230 Schools and 169953 students have been part of project UDAAN.



Shala Praveshotsav

To motivate children for schooling by providing them welcome kit / Education kit and to Create conducive environment for children for "Joyful Learning" during Shala Praveshotsav.

Govt. has wide spread network of 111 Govt. Primary Schools in total 61 villages of Mundra Taluka, 3 villages in Anjar Taluka and two villages of Mandvi Taluka. Every Year on an average 2500 to 2700 children gets enrolled in 1st Std. in Taluka. For 2016 - 17 total 2500 children got enrolled & Adani Foundation provided the "Enrollment Kit" to all new enrollee in Taluka. .



Adani Education Development Center

Kutchh District is very poor in case of Primary Education. Educational Standards of Govt. School is considerably deprived. As per Government Figures, among 103 schools of Mundra Taluka, only 10 schools are in "A" Grade. It continuously destroying our young generation in absence of proper direction and base. keeping this situation in view, We have initiated Coaching center at Zarpara. After getting good results (62 students were in D grade now only 4 students are in D grade, 8 students in C Grade, 30 students are in B grade and 20 are reached to A grade) this year we have planned to start at Navinal Village



Material Support

Adani Foundation is supporting for improving quality of Education, under the Teaching Learning Material to schools for Teachers & Students.

Role on infrastructure is must to achieve quality of Education. Many studies highlight that lack of infrastructure is also affected the school dropout ratio. Good & proper infrastructure is attracting children for school. So A.F. is also trying to full fill need of infrastructure in schools. Where there is no provision of Gov. grant & schools required support A.F. is there. During this period AF provided RO Plant at Tunda Wandh Primary School and constructed Science laboratory at School at Mundra.

In month of February 2017, supported district level annual event Kasturba Gandhi Kanya Vidyalaya. Addition to this Sound system given to Primary Schools at Siracha, Tunda Wandh and Vallabh Vidyalaya. Furniture support to Science School Mundra and Block resource center Mundra

Adani Vidya Mandir, Bhadreswar

Adani Vidya Mandir, a unique Gujarati medium school was started in June 2012 at Bhadreswar village of Mundra Taluka. The objective behind setting up this school is to provide free education to children of fishermen and economically challenged families. The foundation provides nutritious food to the pupils including lunch and snacks every day. Special care is taken to provide high quality education and overall development of children. The children are groomed to go back to their families and communities and be the agents to change.

In the Year 2015-16, Adani Vidya Mandir became a school having classes from 1st to 10th with total strength of 395 students. Right now 137 students are coming from Fisher folk communities.

Additional Coaching for new enrolled students was structured upto 17th May, 2015. Main objective is to make the new

students cope up with new syllabus. Remedial Teaching has been started for Mathematics and Science subject. In addition to quality education, we focus on overall health, co-curricular activities and sports related events.

The Annual sports Day Celebration was held on January 28, 2017. Shri Sharad Sharma was the special guest for the occasion. It was witnessed by around 150 parents, village leaders and teachers of other government schools.

Also it is privilege to share that farewell was organized for Board going students at Vidya Mandir. Executive director APSEZ and Head AF Mundra remained present and encouraged students and all the teachers of AVMB for tirelessly working with the students to bring them up to this level.



Other activities organized throughout the year

No	village	School's name	Activity	Beneficiaries
1	Jabalpur	Jabalpur Primary school.	Drawing Competition	47
2	Tuna	Tuna Group Primary school	Drawing & Fancy Dresses Comp.	371
3	Zarpara	Pransla (Zarpara) Primary school.	Essay Writing	115
4	Nana Kapaya	Nana Kapaya Primary school.	Quiz Competition	235
5	Gundala, Bhujpur	Gundala, Bhujpur, Mundra High school.	Costal Day Calibration	150
6	Tunda	Tunda Primary school.	Quiz Competition	178
7	Kandagara	Kandagara Wadi Vistar Primary school.	Quiz Competition	45
8	Zarpara, Shekhadia	Zarpara, Shekhadia, Navinal Primary school.	Balotsav Camp	115
9	Luni, Goyarasama, Baroi	Luni, Goyarasama, Baroi school	Elocution Competition	678
10	Zarpra	Zarpara kanya shala	Svachhata Abhiyan Program	57
11	Shekhadiya	Shekhadia Primary School	Svachhata Abhiyan Program	52
12	Mundra	B.Ed. Collage Mundra	Youth Day celebration	89
13	Mota Bhadia	vadi primary school	elocution	162
14	Mota Kandagra	primary school	quiz competition	338
			Total :-	2632

RURAL INFRASTRUCTURE DEVELOPMENT



Building a strong community relationship is the key to progress of Adani Foundation. The programs such as Education, Health and Sustainable livelihood development play a very important role in building this strong relationship with the community. These programs are incomplete without the inclusion of the Rural Infrastructure Development program.

Whatever be the budget strategies for Infrastructure development, desired change is possible only if emphasis is laid on participation and leadership of the pupils therein. It is for this reason that Adani Foundation insists on including members of Gram Panchayat as well as thoughtful individuals from the rural areas for the implementation of programme. A remarkable development is the result of the joint efforts of the Adani Group and the Gram Panchayat. For the welfare of the rural area, the Gram Panchayat writes a requisition letter to Adani Foundation according to its primary needs. On the basis of this letter, several requisitions are registered in the "Request register". According to this registration, the programme is being implemented under the permission and guidance of the Gram Panchayat through appropriate decision - making.

It is important to build new structures. It is equally important to maintain these with ease and regularity. Adani Foundation has designed, planned and built a strong infrastructure for the betterment of education, community health, agriculture and living standards.

Under this core area, the Projects undertaken including construction of various infrastructures in villages as per requirements.



• Education Related Projects: Education is the most powerful weapon which you can use to change the world." To improve the quality of education and to improve school environment, the Adani Foundation supports for infrastructure development on request basis. Adani Foundation carries out the construction of assembly hall, classrooms, computer labs, space for midday meal, playground, school walls, washrooms etc. as per the needs and preferences of the school. It is aimed at providing facilities in education sector to the present generation.

• We have constructed Science laboratory at Govt Science School at Mundra. We have repaired toilets and kitchen at Adani Vidya Mandir at Bhadreswar.



Other Projects: Some Projects we took up to fulfill the demands of communities. We have completed Canal connecting pond and river at Bhujpur, Shed Construction at Gundala, Construction of approach road at vadi Vistar at Zarpara.

- **Water Conservation Projects:** Scarcity of potable water in Kutch has led to acute problems in its coastal region. In Mundra, people mostly use ground water for drinking. Unfortunately this water has a high level of TDS which causes bone and kidney diseases. To alleviate this situation, the Adani Foundation has taken initiatives for water conservation including construction of check dams and pond deepening
- This year Adani foundation carried out pond deepening in Dhruh, Mota Bhadiya Village and constructed earthen bund construction across the river at Baroi and Bhujpur village.



- **Drinking Water Related Projects:** Potable drinking water is basic requirement of any village. For better health and hygiene of village drinking water should be clean and pure. So, this project will create positive and effective social impact. Adani Foundation has installed RO Plant at Chhach Vistar at Zarpara. Also constructed UG tank 1.0 lacs lit capacity at Rampar village of Anjar Taluka.

- **Fisherman Related Projects:** The primary objective of Adani Foundation is the development of the marginalized section of the region. The welfare of the Fisher Folk Community is of prime importance. In order to raise the standard of living of the fisherman community, Adani Foundation is active in providing good roads to reach ports and other remote corners

- Adani Foundation has also constructed platforms for drinking water, solar light, space for drying fish, etc. The construction of temporary residence of fishermen in order to provide them healthy lifestyle is being looked under the Fisherman Housing Programme by the Adani Foundation. In 2015-16, Adani Foundation constructed 2300 Mtr approach road for Pagadiya fisherman. We have refurbished 140 shelters at Juna Bandar.



Adani Skill Development Centre

Adani Skill Development Centre (ASDC) is playing a pivotal role in implementing sustainable development in the state.

Several miscellaneous industries exist in Kutch district. Considering the same, Adani Skill Development Centre has initialized in the Mundra block so that the needs of these industries are fulfilled, the local youth is enrolled in various training/ skill courses and the distance between both is minimized.

- The objective of this center is to impart different kinds of training to the students of 10th, 12th, college or ITI from surrounding areas. Thus, various employment-oriented trainings are organized to optimize the skills, art and knowledge through proper guidance and direction.
- Due to social and cultural traditions, various training programme are organized at school OR village level for youth and women so that they can gain its benefits in the future as well.
- Adani Skill Development Centre provides opportunities to the young people to become self-reliant, responsible and active citizens



ASDC is proud that along with generating employment, it has also been a source of inspiration for entrepreneurship.

Vision:

To systematize the skill development efforts in the Nation and create an environment where youth and women not only get some vocational training but also gets some gainful employment, entrepreneurship and self-respect.

Objective:

- Bridge the wide gap in demand & supply of human power.
- Awareness regarding availability, needs and vision for career development and education.
- Facilitation, spreading awareness, creating new opportunity to upgrade skills through organizing various skill trainings in the region.
- To improve overall status of rural Youth and women in the society by enhancing confidence and entrepreneurship in them.

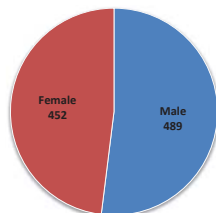
- Encouraging youth for participatory approach in social and economic activity and helping them to keep away from addictions, to become self-dependent, and empower them to live a dignified life.

- To build a feeling of harmony in the society by creating a rapport of goodwill, mutual trust and respect.

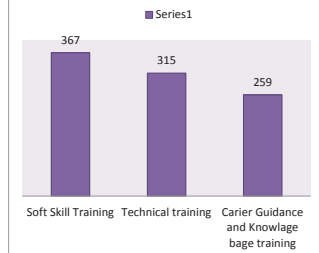
Skill development trainings administered by ASDC

Each training module of ASDC is well-designed to make the learning more effective.

Total trained of Male & Female



Total 941 students trained



Skill development trainings administered by ASDC

Each training module of ASDC is well-designed to make the learning more effective. Hands on experiment are the key factor to enhance learning in all the courses offered by ASDC.

IT- Basic Computer

Word, Excel, Power Point, Internet, Web Browser detail

Tally ERP 9

Basic Accounts, Voucher Entry, Ledgers, Group Creation, VAT, TDS, Service tax, Excise etc. is taught for 60 days to benefit students of class XII and above having commerce background.

Spoken English

Grammar, Tenses, Vowels, Articles, Prepositions, Phonetics, Tenses, Communication Skills etc. are offered especially for students and working people. This course duration is of 60 days.

Auto mobile Assistance

Training is regarding Units and Dimensions, Measuring & Marketing (Preparation of jobs for welding, Dismantling and assembly of components), Inspection, Preventive Mtc. And repair of bearing, gearbox, couplings, and TPM, Condition Monitoring, Kaizen
All the trainings are offered at either ASDC centre, at Port, at Power plant, at specific

villages depending on the need of the module and the students. Certificate for each course is given by ASDC or by partner institute.

O&M of Coal Handling System at Ports

This module includes Induction at Port + First Aid + Safety training, GSU (Grab Ship unloaded) Crane Theory training, GSU Crane Simulator training, Commercial Documentation O & M of coal handling Activities Stacker Reclaimer Theory training, Silo Theory Training, Conveyor Theory Training, On Job Training conveyor.

Checker cum RTG Crane Operator

Students get training regarding Safe Operating Practices, RTG Controls and Functions, Pre-Operational and Operational Checks, Driving, Hoisting and Lowering Loads, Operations - Transferring Loads for three months.

Mechanical & Electrical work of Container Terminal

It includes training of Crane Operation & maintenance for two months and minimum qualification is ITI Fitter & Electrical

Stitching & Bagging Machine Operator

It includes Stitching and bagging operation in FCC 7 plant. It is for 1 Month and min. qualification required is 10 Pass.

Checker

Students gets basic induction on (Safety, Fire,

First Aid, Security, CT), Export Import procedures, Identification of containers, Container construction, Hazardous classification & Symbols, Role of yard checker, Role of deck checker, Role of Wharf checker, Bay Plan, Awareness of RDT, Custom Seal.

Forklift operator training

Forklifts are an incredibly useful tool, and in many cases are absolutely essential for the transport of goods in storage facilities, warehouses and construction sites. They tend to be fairly simple to operate, especially for people who can drive a car, and they help to lift loads that other readily accessible workplace machine cannot. They are therefore extremely common in a lot of different industries.



Adani Skill Development Centre, Mundra

Course wise status, 1st April 2016 to 31st March 2017

Sr. No.	Course Name	Location	Male	Female	No of students
1	IT Basic Computer	ASDC Mundra	10	1	11
2	IT Basic Computer	ASDC Mundra	6	3	9
3	Tally Erp9.	ASDC Mundra	4	2	6
4	IT Basic Computer	ASDC Mundra	2	2	4
5	Vocation Training	Zarpara High School	59	36	95
6	Basic Computer-RTG student	ASDC Mundra	16	0	16
7	Basic Computer-RTG student	ASDC Mundra	8	0	8
8	IT Basic Computer	AVMB	33	6	39
9	IT-Basic Computer	Adani House	18	0	18
10	Mehnadi work	Gundala	0	21	21
11	Mehnadi work	Gundala	0	17	17
12	Dori work training	Gundala	0	20	20
13	Dori work training	Gundala	0	19	19
14	IT Basic computer-RTG Student	ASDC	8	0	8
15	IT Basic computer-RTG Student	ASDC	7	0	7
16	IT Basic computer-RTG Student	ASDC	8	0	8
17	IT Basic computer	Luni Bandar	14	0	14
18	IT Basic computer	Luni Bandar	6	9	15
19	IT Basic computer	ASDC	6	1	7
20	IT-Basic Computer	Adani House	25	0	25
	Total - A		230	137	367

Other Training					
Sr. No.	Course Name	Location	Male	Female	No of students
1	Mobile Repairing	ASDC Mundra	12	0	12
2	Stitching & Bagging Machine Operator	APSEZ	7	0	7
3	Beauty Parlour	Nana Kapaya	0	24	24
4	Beauty Parlour	ASDC Mundra	0	21	21
5	Checker Cum RTG Crane Operator	APSEZ	14	0	14
6	Tailoring	ASDC Mundra	0	18	18
7	Tailoring	ASDC Mundra	0	13	13
8	Beauty Parlour	Mundra	0	20	20
9	Mechanical & Electrical training of Container Terminal	APSEZ	6	0	6
10	Tailoring	ASDC	0	20	20
11	Forklift operator training	MSPVL	8	0	8
12	Checker Cum RTG Crane Operator	APSEZ	23	0	23
13	Tailoring	Old port	0	15	15
14	Tailoring	Old port	0	15	15
15	Beauti Parlour	MICT	0	23	23
16	Forklift operator training	MSPVL	14	0	14
17	Tailoring	Bhorara	0	15	15
18	Tailoring	Bhorara	0	17	17
19	Tailoring	Zarapara-Chach wadi	0	15	15
20	Tailoring	Zarapara-Chach wadi	0	15	15
		Total - B	84	231	315

"Swachhh Bharat" Movement

Adani Vidya Mandir gives momentum to "Swachhh Bharat" movement at Bhadreshwar in coordination with government schools of Bhadreshwar. Total 450 Students participated in drive. Several activities were carried out during the day that marked the uniqueness of this drive. Shri Mukesh Saxena, (Head CSR) specially remained present on the occasion to motivate and participate in this event. He shared that a cleanliness drive was initiated by the Adani Vidya Mandir at Bhadreshwar, Mundra. Having a clean and hygienic living environment is utmost important for health and profession, but providing for the same is equally challenging.



Model Making Competition Certification

We had organized Model Making Competition among Technical Students of Kutchh District in Aug 2014. Three Winners of the Competition constructed replica of their model at Nana Kapaya, Baroi and Gundala Village under guidance of Engineers Team of Adani Foundation Which will be used as Medical Center at Gundala and Nana Kapaya and residence for poorest of poor at Baroi Village. Launching of Booklet of process documentation and Certification of Students organized on 9th July 2016



Support to Blind Girls from AKPG

Adani Foundation Mundra Supported blinded girls of Andh Kanya Prakash Gruh by purchasing rakhis made by them. Fisherman leader of Navinal Anwar bhai created best example of Hindu Muslim unity by tying Rakhi from differently abled girls from Andh Kanya Prakash Gruh, Ahmedabad. Not only that, They gave donation to institute... This shows binding of our team so deeply and socially with fisherman community...



Important Events



SEA OF CHANGE : A JOURNEY OF TRANSFORMATION OF FISHERFOLK

Adani Foundation Mundra Team has transcribed about Life of Fisherman and its transformation. The Book was launched by Shri Gautam Adani and appreciated by all dignitaries.



"Panjo Medavo"

Adani Foundation Mundra has organized "Panjo Medavo" Programme on 27th Aug 2016 Saturday Evening. Total 170 local people including Sarpanch, village leaders and NGO working for welfare of community including media.

Mr. Mukesh Saxena, CSR head Adani Foundation shared that development of business is only possible with whole hearted support of local community. He gave confirmation that Adani foundation team is for community and will remain always !! Main attraction of the event was Kutchhi folk music by "Suvani - the traditional artist support group" of Kutchh.

International Coastal Clean up Day

The International Coastal Clean-up is one of the largest volunteer efforts in the world dedicated to the health of our oceans. Every year, 20th September is dedicated to this noble cause of cleaning our beaches / shorelines impounded with lots of waste material which is considered non-biodegradable in nature and considered hazardous to the ocean health. Indian Coast Guard had been associated with this international event in India and has been organizing clean-up drive for our beaches once in a year to represent its concern for the overall ocean health and generating awareness among public. Coast Guard Authority being in Mundra would be organizing a clean-up operation in coordination with Adani Foundation. Adani Foundation gives momentum to "Swachh Bharat" movement at Juna Bandar, Mundra with Fisher folk community.



Adani Premiere League

Adani Foundation, Mundra organized Cricket Tournament, "**Adani Premiere League**" among fishermen community to promote healthy sportsmanship and harmonically transparent community relationship among fisher folk of Mundra and Anjar Taluka from 13.07.2015 to 23.07.2015. The Adani Premiere League by Adani Foundation started on 13.07.2016 at Shantivan Colony Cricket Ground. Total 44 Teams of 12 villages and 528 Fisherman participated. Teams from Villages Zarpara, Navinal, Shekhadia, Modhava, Salaya, Mundra, Tragadi, Luni, Sanghad, Gundiyali, Bhadreshwar & Vandi (Tuna) participated with great enthusiasm.

Safety awareness for fisherman

Safety awareness program for fisherman community was organized on 16th Sep 2016 in coordination with Indian coast guard, Air force and Fisheries department. Commandant Pradip Kumar did live demo for using different equipment like boya, ring and life jackets for safety purpose. Mr. Mukesh Saxena had given information about coastal safety and measures



Community Speaks...

"ADANI VIDYA MANDIR HAS CARVED OUR FUTURE !!!"

In the Mundra Taluka of Kutch district there is a village named Bhadreshwar. The population of this village is approx. 9000 to 9500. Wherein resides the people of different castes like Darbar, Harljan, Vagher, Bhrahmin, Lohana, Darzi and Jains. These people find an occupation in the nearby companies and others continue their ancestral occupation and get an income. The community like Vagher and Manek are included in the activities of fishing. Fishing is their only means of finding Remuneration. Hence they are known as Sagar khedu. For their survival they completely sustain on these. The lives of the fishermen are full of velour. But the level of education is very low. They go fishing for 8 months. There is stagnancy in work during the rainy season. During those seasons they celebrate all their cultural festivities. With an aim that the children from the fisher folk community move forward in the field of education.

Adani Foundation encourages them by various means. As a result the children from the fishermen community and the nearby locations are admitting to the Adani Vidhyamandir School in Bhadreshwar. Here the children receive quality education and nutritious food. In this school the underprivileged children from the nearby villages also gain education. With the progress in the field of education there is also a change observed amongst the fishermen families. The younger generation is also ready to leave their family occupation of fishing and progress in the field of education. Similar is the case of Haji Mohamad Sale.

He was disinterested in studying. He was very irregular, would not concentrate in class. He completed Std 7 with difficulty continuing the fishing lifestyle along with schooling. In this phase the Adani Foundation boosted his confidence by frequently visiting and with proper guidance he was admitted in the Adani Vidhyamandir, Bhadreshwar.

When they started he was very weak in Reading, writing and mathematics. Moreover he could not communicate with the co-students. In this phase they obtained education from the Adani Vidya Mandir. After receiving personal attention from the teachers he started improving gradually. Presently He is studying in class 9 and participating in all the extra curriculum activities. After having a talk with him we realized that he is having future plans too. Haji replied that he wants to be a soldier when he grows up. For which he runs, does physical activities and is always mentally prepared for any sports activities. He realized the strengths only after getting educated.

Today the importance of education has increased in the fisher folk community. Moreover the parents are also equally realizing the importance. Those who were not interested in Primary education are taking further education. Hence the fishermen communities are thankful to Adani Foundation for making these changes possible



SAMANVAY

Samanvay - A Seminar was organized to define social responsibility with the perspective of Development on September 20, 2016 at Adani House, Auditorium, Port road, Mundra, Kutch.

More than 35 Organizations namely Agakhan Rural Support Programme, Kutchn Navnirman Abhiyan, Vivekanand Research & Training Institute (VRTI), Navchetan Andhjan Mandal, Welspun Limited, Coastal Gujarat Power Limited, Ashapura group of industries, Sarv Seva Sangh, Kutch Mahila Vikas Sangathan (KMVS), Arid Community & Technology, SETU, Sahjeevan Trust, Veerayatan and Yusuf Meher Ali Centre (YMC) etc. took part in this Seminar. All NGO and Corporate shared their view for development from one common platform and impactful Work. The Chief Guest: Shri Apurva Oza (CEO, Agakhan Rural Support Programme) and other Distinguished guests were:

Mr. Lalji Prajapati, Navchetan Andhjan Mandal
Shri Lalbhai Rambhiya, Head CSR AARTI Group of Industries
Shri Ramesh Gor, Coordinator, Vivekanand Research & Training Institute
Smt. Raginiben Vyas (Head-CSR, Ashapura group of Industries)
Dr. Punam Gupta (Welspun Limited)
Smt. Lataben Sachdey, KMVS
Shri Pradip Ghosal (Head - CSR, CGPL)
Dr. Yogesh Jadeja, Arid Community & Technology
Shri Dharmendra Kumar, Director, YMC
Shri Jadvajbhai Shethia, from Sarva Seva Sangh



CSR Conclave : Adani Foundation

Adani foundation CSR Conclave- II was held on 14th and 15th October 2016 at AMDC, Ahmedabad. Sh. P.N. Roy Chowdhury briefed the participants regarding the CSR conclave and substantiated few activities being carried out at various sites of AF. He said that mature sites should start transformative CSR rather than demand based CSR.

Dr. Malay Mahadevia underlined the need for adding sensitivity in all CSR activities and Business we do. He further highlighted that through our CSR efforts, we are transforming to be a responsible corporate.

Dr. Pritiben G. Adani shared the vision of Adani Foundation. She shared about sustainable CSR linked with Business. Respected A Nath Sir was felicitated by long service award. All eleven CSR Sites from various places of India shared that startvision for five years. Mr. Ennarasu (CEO, APSEZ) shared the strategies for designing long term vision. Mr. Mukesh Saxena (COO, SEZ Operations) and Head (CSR-AF Mundra) had presented Startvision for Mundra and Tuna CSR Projects.



Singing Sea Bird : Balvadi at Bandar

The Girl named Amina is 3 years old. She lives at Zarpara Bandar with her Family. She was living in unhygienic and unhealthy condition. Due to this condition she used to fall sick frequently. After joining Balvadi, she learned the importance of hygiene and started to remain clean. By nutritious food given in Adani Balvadi, she could keep herself healthy. Moreover, she learned to speak English Alphabets and now she sings poems and songs with full enthusiasm.

Her parents expressed their gratitude to foundation in the words "Adani e nahi dikri ni jindagi sudhari didhi".

Senior Citizen Scheme is blessing !

Ameena ben, a resident of Shekhadia Village, never ever thought of that in spite of having three sons she will have to lead a life of desertion. None of them had time to look after her and she was suffering from high blood pressure and stomach problems. She was worried about increasing health problems due to old age. During Senior Citizen health camp organized in her village she came to know about this facility. Adani Foundation arranged for critical drugs through senior citizen scheme. Due to regular intervention with Adani hospital she is now absolutely fine and living gracious life with smile.



"I AM SPECIALLY BLESSED NOT DISABLED!!!"

She always says with gratitude: "Adani hospital provides very good service with lots of care and love. Thanks to Adani for giving me new life with self-respect."



Myself Naresh Maheshwari 13 years old boy resident of village Baroi, 3 Kms Distant from Mundra. I am physically disabled since birth. My parents are working as a Labour and can not take me for treatment or physiotherapy. My panchayat leader got news that for disable children physiotherapy treatment is available at Adani hospital. I started for the same and got very good results after regular treatment and exercises suggested by orthopedic doctor and physiotherapist . Now I can walk with help of stick, I am really thankful to Adani foundation for great help.

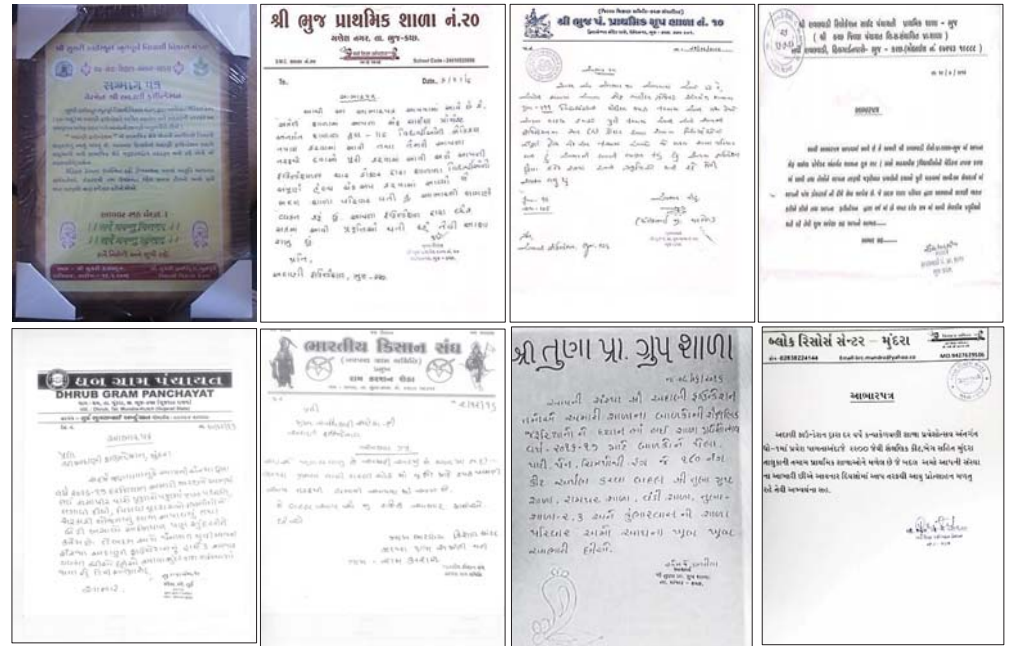
Healthcare at Door step!

Recently our primary health services are availed to 29 villages through the medium of mobile medical van. As many as 121 types of medicines are available in it. These services are liked by the people on a large scale. It has turned out like a boon for women and children as the service is availed at door - step. Borhara is a village approximately 20 km away from Mundra wherein resides **Krishna Maheshwari** who was financially, health-wise and socially unstable until she availed help from AF at Mundra. She settled in Borhara 5 years ago when she got married. she suffered from Abscess and Skin disease

Our Medical officer of Mobile Health Care Unit helped her a lot. He regularly went her home to change bandages and for dressing of abscess. Now she is completely alright and able to move and walk. Her blessings to Adani Foundation in her words **"Due to Adani Foundation Medical Van I got fast relief, Doctor take care like my own family member"**



Appreciations Letters



Visitors

- Mr. Michael Stephen, Mr. David Moor & Ms. Allison Joyce, Journalist Team from Australia along with MR. Jeyakumar Janakara) (CEO Australia Port) visited Juna bandar for Adani Foundation Activity & Discussion with Fisher folk Group.
- Visit of Mr. Naren Karunakaran–The Economics Times on 28th June, 2016-visited Luni bandar and discussed with local fisherman about Mangrove plantation work at Luni site. He also visited Juna bandar & Discussed with Fisher folk Group for activities of CSR by Adani Foundation.
- Visit of Mr. Sudhakar B.- Head HR Energy Business- visited at Junabadar for Adani Foundation Activity & discussion with Fisher folk Group.
- Visit of auditors of OeB Bank for review of CSR Activities at Juna Bandar. Presentation and information sharing was arranged at Adani House.



નાના કપાયના શાંતિ વિહાર ખાતે અદાણી ફાઉન્ડેશન દ્વારા 'પાંજો મેળાવડો' યોજાયું

કુટુંબના સભ્યો સાથે શાંતિ વિહાર ખાતે યોજાયેલા કપાયના શાંતિ વિહાર ખાતે અદાણી ફાઉન્ડેશન દ્વારા 'પાંજો મેળાવડો' યોજાયું. આ પ્રસંગે અદાણી ફાઉન્ડેશનના અધ્યક્ષે શાંતિ વિહાર ખાતે અદાણી ફાઉન્ડેશન દ્વારા 'પાંજો મેળાવડો' યોજાયું.



અદાણી ફાઉન્ડેશન દ્વારા શાંતિવન કોલોની ખાતે આયોજાયેલા કપાયના શાંતિ વિહાર ખાતે અદાણી ફાઉન્ડેશન દ્વારા 'પાંજો મેળાવડો' યોજાયું. આ પ્રસંગે અદાણી ફાઉન્ડેશનના અધ્યક્ષે શાંતિ વિહાર ખાતે અદાણી ફાઉન્ડેશન દ્વારા 'પાંજો મેળાવડો' યોજાયું.

ક્રામાં માછીમારો દરિયાઈ સુરક્ષા અંગે માહિતગાર થયા

તાલુકાના વંદર ખાતે માછીમારો માટે માર્ગદર્શક કાર્યક્રમ યોજાયેલું. આ પ્રસંગે તાલુકાના અધિકારીઓએ માછીમારોને સુરક્ષા અંગે માહિતગાર થયા.



ક્રામાં માછીમારો દરિયાઈ સુરક્ષા અંગે માહિતગાર થયા. આ પ્રસંગે તાલુકાના અધિકારીઓએ માછીમારોને સુરક્ષા અંગે માહિતગાર થયા.

મુન્દ્રામાં ધાત્રોએ સમગ્ર વિચારો વ્યક્ત કર્યા

મુન્દ્રામાં ધાત્રોએ સમગ્ર વિચારો વ્યક્ત કર્યા. આ પ્રસંગે ધાત્રોએ સમગ્ર વિચારો વ્યક્ત કર્યા.



મુન્દ્રામાં ધાત્રોએ સમગ્ર વિચારો વ્યક્ત કર્યા

મુન્દ્રામાં ધાત્રોએ સમગ્ર વિચારો વ્યક્ત કર્યા. આ પ્રસંગે ધાત્રોએ સમગ્ર વિચારો વ્યક્ત કર્યા.



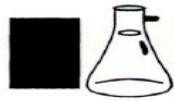
મુન્દ્રામાં ધાત્રોએ સમગ્ર વિચારો વ્યક્ત કર્યા. આ પ્રસંગે ધાત્રોએ સમગ્ર વિચારો વ્યક્ત કર્યા.



**Adani Foundation, Mundra
CSR Budget Utilization 2016-17**

Sr. No.	Program	Budget 2016-17	Expenditure	Expenditure	Total Expenditure
			Apr.16 to Sept.16	Oct.16 to Mar.17	2016-17
A.	Admin Expense	136.44	62.54	60.76	123.30
B.	Education				
(i)	Education Initiative	49.40	12.28	29.22	41.50
(ii)	Adani Vidya Mandir-Bhadreshwar	125.78	46.19	59.24	105.43
(iii)	Shanti Vihar (Project Udaan)	303.26	109.53	186.63	296.16
	Sub Total	478.44	168.00	275.09	443.09
C.	Community Health	271.18	62.37	181.01	243.38
D.	Sustainable Livelihood Development	240.90	117.97	102.01	219.98
E.	Rural Infrastructure Development	408.24	105.30	285.78	391.08
GRAND TOTAL		1535.20	516.18	904.65	1420.83

Annexure - 4



POLLUCON LABORATORIES PVT. LTD.

Environmental Auditors, Consultants & Analysts.
Cleaner Production / Waste Minimization Facilitator

Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

"HALF YEARLY ENVIRONMENTAL MONITORING REPORT"

FOR

**ADANI PORTS AND SPECIAL ECONOMIC ZONE LIMITED
TAL: MUNDRA, KUTCH, MUNDRA – 370 421**

**MONITORING PERIOD:
OCTOBER 2016 TO MARCH 2017**

PREPARED BY:

**POLLUCON LABORATORIES PVT.LTD.
544, BELGIUM TOWERS, RING ROAD, SURAT – 395 003
PHONE/FAX – (+91 261) 2455 751, 2601 106, 2601 224.
E-mail: pollucon@gmail.com web: www.polluconlab.com**

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ISO 14001:2004

OHSAS 18001:2007



Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

MARINE WATER MONITORING SUMMARY REPORT**RESULTS OF MARINE WATER [M1 LEFT SIDE OF BOCHA CREEK - N 22°45'183" E 069°43'241"]**

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016		NOVEMBER 2016		DECEMBER 2016		JANUARY 2017		FEBRUARY 2017		MARCH 2017		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.06	8.17	8.15	8.26	8.02	8.19	7.86	7.89	8.08	8.26	8.10	8.18	IS3025(P11)83Re.02
2	Temperature	°C	30	29	28	27	29	30	30	29	28	30	30	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	22	20	30	38	14	18	20	24	30	22	16	22	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	6.8	8.6	4.0	5.0	BDL*	BDL*	6.0	7.0	8.6	6.8	5.0	6.0	IS 3025 (P44)1993Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.4	5.0	5.8	4.4	5.6	5.0	5.6	4.8	5.6	8.0	5.40	4.80	IS3025(P38)89Re.99
6	Salinity	ppt	40.58	41.2	41.6	42.1	41.2	41.17	39.46	40.18	42.2	40.6	40.66	41.58	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)5520 D
8	Nitrate as NO ₃	mg/L	0.667	0.731	0.382	0.505	0.536	0.757	0.453	0.83	0.672	0.732	0.605	0.711	IS3025(P34)88
9	Nitrite as NO ₂	mg/L	0.059	0.074	0.061	0.073	0.030	0.070	0.035	0.062	0.669	0.072	0.055	0.069	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	mg/L	0.718	0.873	1.12	1.19	0.919	0.881	0.595	0.671	0.734	0.881	0.727	0.302	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	mg/L	0.093	0.102	0.935	1.24	1.16	0.836	1.35	1.88	0.093	0.103	0.111	0.133	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	mg/L	1.444	1.678	1.563	1.769	1.485	1.708	1.083	1.563	2.07	1.685	1.387	1.582	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	14	BDL*	18	BDL*	BDL*	BDL*	11	BDL*	18	BDL*	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	50010	50670	47801	48260	48593	50560	48460	48990	50020	56780	48180	48590	IS3025(P16)84Re.02
15	COD	mg/L	25	36	16	20	19	38	16	18	20	25	16	20	APHA(22 nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.64	0.44	0.44	0.32	0.6	0.48	0.84	0.36	0.68	0.48	0.38	0.40	SOP – PLPL - 07
A Flora and Fauna															
17	Primary productivity	mgC/L /day	2.13	0.563	2.13	0.563	1.46	0.09	1.35	0.225	1.66	0.33	1.125	0.203	APHA (22 nd Edi) 10200-J
B Phytoplankton															
18.1	Chlorophyll	mg/m ³	1.629	0.454	1.62	0.454	1.46	0.32	2.93	0.641	1.65	0.481	1.896	0.320	APHA (22 nd Edi) 10200-H

H. T. Shah
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Lab Manager (Q)

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		m ³													10200-G	
D	Microbiological Parameters															
20.1	Total Bacterial Count	CFU/ml	1860	1570	1610	1420	1130	1580	1520	1170	1840	1560	1520	1390	IS 5402:2002	
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22 nd Edi)9221-D	
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2.4 (2003-05)	
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002	
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)	
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)	
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)	



H. T. Shah
Lab Manager




Dr. Arun Bajpai
Lab Manager (Q)

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RESULTS OF SEDIMENT ANALYSIS [M1 LEFT SIDE OF BOCHA CREEK - N 22°45'183" E 069°43'241"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016	NOVEMBER 2016	DECEMBER 2016	JANUARY 2017	FEBRUARY 2017	MARCH 2017	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.629	0.619	0.347	0.539	0.619	0.498	FCO:2007
2	Phosphorus as P	mg/kg	147	210	145	142	143	137	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	5.48	4.89	4.99	5.05	5.45	5.15	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	mg/kg	190	239	188	179	191	169	AAS 3111B
5.3	Manganese as Mn	mg/kg	869	599	788	700	859	731	AAS APHA 3111 B
5.4	Iron as Fe	%	2.17	2.09	2.6	4.13	2.12	3.65	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	53.98	68.17	57.63	53.75	53.64	54.6	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	mg/kg	30.02	41.89	37.97	36.49	29.99	34.35	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	143	196	142	133	143	129	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	mg/kg	1.19	1.17	1.13	1.55	1.19	1.42	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Isopods Echinoderms Mysids	Mysids Echinoderms	Isopods Decapods	Polychaete worms Bivalves --	Isopods Polychaete worms --	Crabs Anthozoans Isopodes Decapodes	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Nematodes Foraminiferans --	Nematodes Foraminiferans --	Copepods Foraminiferans --	Nematodes --	Nematodes Foraminiferans	Copepodes Foraminiferans	APHA (22 nd Edi) 10500-C
6.3	Population	no/m2	205	377	288	377	238	288	APHA (22 nd Edi) 10500-C


H. T. Shah
 Lab Manager


Dr. Arun Bajpai
 Lab Manager (Q)

RESULTS OF MARINE WATER [M2 MOUTH OF BOCHA & NAVINAL CREEK - N 22°44'239" E 069°43'757"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016		NOVEMBER 2016		DECEMBER 2016		JANUARY 2017		FEBRUARY 2017		MARCH 2017		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.17	8.23	8.08	8.24	8.18	8.29	7.75	7.9	8.14	8.22	8.19	8.26	IS3025(P11)83R e.02
2	Temperature	°C	29	28	29	27	29	28	29	28	30	27	31	30	IS3025(P9)84Re .02
3	Total Suspended Solids	mg/L	22	28	31	39	22	26	22	32	31	26	28	24	IS3025(P17)84R e.02
4	BOD (3 Days @ 27 °C)	mg/L	5.4	4.2	3.0	8.0	4.0	6.0	6.0	5.0	5.6	4.6	4.0	6.0	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.4	4.8	5.7	5.2	5.4	4.8	5.0	4.6	5.2	4.4	5.40	5.00	IS3025(P38)89R e.99
6	Salinity	ppt	40.63	41.53	39.1	39.8	40.96	41.76	41.6	42.6	40.62	41.56	42.00	43.10	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)5 520D
8	Nitrate as NO ₃	mg/L	0.541	0.753	0.367	0.474	0.552	0.757	0.453	0.664	0.538	0.762	0.670	0.880	IS3025(P34)88
9	Nitrite as NO ₂	mg/L	0.06	0.042	0.027	0.043	0.061	0.04	0.025	0.053	0.080	0.046	0.068	0.049	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	mg/L	0.355	0.464	0.523	0.0616	0.337	0.468	0.479	0.537	0.367	0.477	0.420	0.540	IS3025(P34)88C la.2.3
11	Phosphates as PO ₄	mg/L	0.164	0.159	0.479	0.556	0.153	0.148	0.294	0.229	0.168	0.159	0.041	0.047	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	mg/L	0.956	1.259	0.917	1.133	0.95	1.265	0.957	1.254	0.958	1.285	0.158	1.469	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	11	BDL*	8	BDL*	10	BDL*	10.6	BDL*	8.0	BDL*	10.20	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	48410	49340	46910	47840	49460	49990	37670	38230	48420	49320	43820	46330	IS3025(P16)84R e.02
15	COD	mg/L	18	14	12	20	16	18	18	22	20	16	14	20	APHA(22 nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.368	0.744	0.36	0.41	0.79	0.33	0.36	0.5	0.366	0.746	0.80	0.30	SOP – PLPL - 07
A Flora and Fauna															
17	Primary productivity	mgC/ L/day	1.55	0.338	1.553	0.338	1.01	0.45	1.57	0.338	1.53	0.563	1.238	0.225	APHA (22nd Edi) 10200-J
B Phytoplankton															
18.1	Chlorophyll	mg/ m ³	1.148	0.347	1.14	0.347	1.36	0.16	2.72	0.32	1.22	0.267	1.095	0.134	APHA (22 nd Edi) 10200-H
18.2	Phaeophytin	mg/ m ³	1.56	1.8	1.56	1.8	1.34	1.98	2.69	3.97	4.1	4.00	1.671	1.493	APHA (22 nd Edi) 10200-H


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19.2	Name of Group Number and name of group species of each group	--	Isopods Bivalves Polychaete worms Fish eggs Brachiopods Copepods	Polychaete worms Decapods Molluscans	Copepods Decapods Polychaete s Gastropods	Decapods Gastropods	Copepods Nematodes Polychaete Cnstaen Foraminifer us	Nematodes Cnstaen	Bivalves Gastropods Nematodes Krill Fish egg --	Decapods Copepods Bivalves	Isopods Bivalves Polychaete worms Fish egg Brachiopods Copepods	Polychaete worms Decapods Molluscans	Crustaceans Copepods Krill Polychaete worms Decapods	Gastropods Polychaete worms	APHA (22 nd Edi) 10200-G
19.3	Total Biomass	ml/10 0 m ³	132	29.87	135	32	119	1.32	203	1.56	143	1.52	59	6.0	APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
20.1	Total Bacterial Count	CFU/ml	1810	1420	1640	1450	1810	1480	1830	1460	1820	1440	1670	1470	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22 nd Edi)9 221-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Ed i.2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)



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Lab Manager




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RESULTS OF SEDIMENT ANALYSIS [M2 MOUTH OF BOCHA & NAVINAL CREEK – N 22°44'239" E 069°43'757"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016	NOVEMBER 2016	DECEMBER 2016	JANUARY 2017	FEBRUARY 2017	MARCH 2017	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.586	0.483	0.680	0.598	0.556	0.670	FCO:2007
2	Phosphorus as P	mg/kg	169	171	173	156	168	1.57	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	5.29	5.09	5.3	5.16	5.26	5.21	AAS APHA 3111 B
5.2	Total Chromium as Cr+3	mg/kg	134	95.8	139	147	136	145	AAS 3111B
5.3	Manganese as Mn	mg/kg	712	755	709	669	714	807	AAS APHA 3111 B
5.4	Iron as Fe	%	2.31	2.04	2.32	2.17	2.34	2.07	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	37.83	49.26	39.36	30.54	37.86	36.64	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	mg/kg	102	69.39	111	72.87	106	80.91	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	135	171	145	127	138	119	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	mg/kg	1.32	1.1	1.26	1.2	1.36	1.11	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Amphipods Isopods --	Isopods Mysids Copepods	Bivalves Amphipods Copepods	Polychaete worms Decapods Mysids	Amphipods Isopods --	Echinoderms Polychaete worms Isopods	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Copepods Bryozoans --	--	Copepods	Brachiopods Copepods	Copepods Bryozoans	Foraminiferans Nematodes Copepods	APHA (22 nd Edi) 10500-C
6.3	Population	no/m ²	137	252	192	252	159	433	APHA (22 nd Edi) 10500-C



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Lab Manager




Dr. Arun Bajpai
Lab Manager (Q)

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RESULTS OF MARINE WATER [M3 EAST OF BOCHAISLAND - N 22°46'530" E 069°41'690"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016		NOVEMBER 2016		DECEMBER 2016		JANUARY 2017		FEBRUARY 2017		MARCH 2017		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.56	8.01	7.90	8.18	7.76	7.87	7.88	7.85	7.54	8.02	7.76	8.01	IS3025(P11)83Re.02
2	Temperature	°C	30	29	29	29	29	28	29	28	29	30	29	28	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	20	24	38	47	24	25	26	30	38	20	24	30	IS3025(P17)84Re.02
4	BOD (3 Days @ 27°C)	mg/L	5.6	8.0	3.0	5.0	BDL*	10	8.0	10	5.8	6.0	6.0	7.0	IS 3025 (P44)1993Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.32	4.58	5.80	4.40	5.64	4.80	5.40	4.80	5.34	4.54	5.64	4.62	IS3025(P38)89Re.99
6	Salinity	ppt	42.76	43.08	42.8	43.2	41.72	42.8	40.8	41.6	44.72	43.06	41.72	42.96	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)5520D
8	Nitrate as NO ₃	mg/L	0.311	0.413	0.3	0.36	0.331	0.41	0.573	0.664	0.314	0.418	0.317	0.438	IS3025(P34)88
9	Nitrite as NO ₂	mg/L	0.018	0.026	0.054	0.063	0.041	0.027	0.027	0.035	0.014	0.023	0.015	0.270	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	mg/L	0.764	0.836	0.784	0.822	0.506	0.806	0.71	0.844	0.752	0.826	0.503	0.746	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	mg/L	0.352	0.684	0.82	0.96	0.455	1.19	0.21	0.388	0.351	0.68	0.457	0.719	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	mg/L	1.093	1.275	1.138	1.245	0.851	1.24	1.31	1.543	1.08	1.267	0.836	1.011	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	14	BDL*	14	BDL*	BDL*	BDL*	10.6	BDL*	16	BDL*	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	51470	51990	51960	52360	50150	51340	47550	48230	51420	51980	50150	51690	IS3025(P16)84Re.02
15	COD	mg/L	20	29	14	18	20	28	26	30	14	18	20	22	APHA(22 nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.3	0.23	0.38	0.29	0.38	0.49	0.64	0.77	0.4	0.29	0.380	0.302	SOP – PLPL - 07
A Flora and Fauna															
17	Primary productivity	mgC/L/day	2.02	0.18	2.02	0.18	1.35	0.225	2.07	0.675	1.35	0.653	1.602	0.518	APHA (22 nd Edi) 10200-J
B Phytoplankton															
18.1	Chlorophyll	mg/m ³	1.709	0.481	1.7	0.481	1.84	0.187	3.68	0.374	2.24	0.32	2.350	0.187	APHA (22 nd Edi) 10200-H
18.2	Phaeophytin	mg/m ³	0.758	1.65	0.758	1.65	0.625	1.94	1.25	3.88	2.69	3.94	0.379	2.130	APHA (22 nd Edi) 10200-H


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18.3	Cell Count	Unit x 10 ³ /L	250	24	152	38	126	19	252	38	126	19	79	22	APHA (22 nd Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Bacillariophyceae Cyclotella sp. Coscinodiscus sp. Fragillaria sp. Melosira sp. Thalassiosira sp. Asterionella sp. Navicula sp. Pleurosigma sp. Synedra sp.	Bacillariophyceae Synedra sp. Melosira sp. Gyrosigma sp.	Bacillariophyceae Nitzschia sp. Synedra sp. Coscinodiscus sp. Thalassiosira sp. Pinnularia sp. Gyrosigma sp. Fragillaria sp. Cyclotella sp. Navicula sp. Biddulphia sp.	Bacillariophyceae Melosira sp. Navicula sp. Nitzschia sp. Coscinodiscus sp. Decapods Bivalves	Navicula sp. Nitzschia sp. Coscinodiscus sp. Thalassiosira sp. Synedra sp. Fragillaria sp.	Melosira sp. Navicula sp.	Bacillariophyceae Asterionella sp. Biddulphia sp. Cheatoceros sp. Fragillaria sp. Rhizosolenia sp. Coscinodiscus sp. Melosira sp. Gyrosigma sp. Synedra sp.	Bacillariophyceae Nitzschia sp. Fragillaria sp. Thalassiosira sp.	Bacillariophyceae Cyclotella sp. Coscinodiscus sp. Fragillaria sp. Melosira sp. Gyrosigma sp.	Bacillariophyceae Synedra sp. Melosira sp. Thalassiosira sp. Asterionella sp. Navicula sp. Pleurosigma sp. Synedra sp.	Bacillariophyceae Asterionella sp. Biddulphia sp. Cocconeis sp. Pleurosigma sp. Nitzschia sp. Thalassiosira sp. Pinnularia sp. Green Algae Ankistrodesmus sp. Pandorina sp. Chlorella sp. Cyanophyceae		APHA (22 nd Edi) 10200-H
C Zooplanktons															
19.1	Abundance (Population)	no/m ²	140	20	175	25	140	30	175	38	140	30	110	50	APHA (22 nd Edi) 10200-G


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19.2	Name of Group Number and name of group species of each group	--	Nematodes	Decapods	Nematodes	Crustacean	Crustacean	Nematodes	Decapods	Gastropods	Nematodes	Decapods	Crustacean	Polychaete worms	APHA (22 nd Edi) 10200-G
			Rotifers	Gastropods	Polychaetes	s	s	Fish egg	Polychaete	Crustacean	Crustacean	Rotifers	Gastropods	s	
			Copepods	--	Gastropods	--	Mysids	--	Bivalves	--	Ostracods	--	Fish egg		
			Isopods	--	Isopods	--	Mollusca	--	Foraminiferans	--	Isopods	--	Mysids		
			Hydrozans	--	--	--	--	--	--	--	Hydrozans	--	Molluscans		
19.3	Total Biomass	ml/100 m ³	143	12.54	126	2.3	124	1.35	213	2.35	213	2.35	93.25	33.1	APHA (22 nd Edi) 10200-G
D	Microbiological Parameters														
20.1	Total Bacterial Count	CFU/ml	1850	1540	1570	1330	1810	1140	1750	1450	1820	1560	1810	1620	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22 nd Edi)922 1-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2 .4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)



H. T. Shah
Lab Manager




Dr. Arun Bajpai
Lab Manager (Q)

RESULTS OF SEDIMENT ANALYSIS [M3 RIGHT SIDE OF BOCHA CREEK - N 22°46'530" E 069°41'690"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016	NOVEMBER 2016	DECEMBER 2016	JANUARY 2017	FEBRUARY 2017	MARCH 2017	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.535	0.620	0.514	0.539	0.569	0.501	FCO:2007
2	Phosphorus as P	mg/kg	147	198	163	157	147	163	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	5.35	5.25	5.22	5.17	5.31	5.23	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	mg/kg	142	174	150	151	145	151	AAS 3111B
5.3	Manganese as Mn	mg/kg	901	690	824	859	903	825	AAS APHA 3111 B
5.4	Iron as Fe	%	2.15	1.84	1.96	1.95	2.17	1.97	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	48.21	58	50.49	52.92	48.25	50.52	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	mg/kg	35.88	30.2	32.54	35.33	35.85	32.43	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	135	172	128	133	137	129	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	mg/kg	1.59	0.94	1.44	1.63	1.56	1.44	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaete worms Turbellaria --	Polychaete worms Decapods	Polychaete worms Ostracods	Bivalves Isopods --	Polychaete worms --	Polychaete worms Bivalves Anthozoans	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Hydrozoa Foraminiferans --	Foraminiferans Nematodes --	Nematodes Copepods --	Copepods Ostracods	Hydrozoa Foraminiferans	Foraminiferans Copepods	APHA (22 nd Edi) 10500-C
6.3	Population	no/m ²	171	314	240	314	198	337	APHA (22 nd Edi) 10500-C


H. T. Shah
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RESULTS OF MARINE WATER [M4 JUNA BANDAR N 22°47'577" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016		NOVEMBER 2016		DECEMBER 2016		JANUARY 2017		FEBRUARY 2017		MARCH 2017		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.83	8.10	8.21	8.34	7.56	7.87	7.82	7.77	7.84	8.40	8.02	8.00	IS3025(P11)83R e.02
2	Temperature	°C	30	29	28	27	29	28	30	29	28	27	29	30	IS3025(P9)84Re .02
3	Total Suspended Solids	mg/L	26	32	24	28	16	24	16	18	24	28	28	32	IS3025(P17)84R e.02
4	BOD (3 Days @ 27 °C)	mg/L	5.4	7.2	6.0	10	5.0	7.0	7.0	5.0	5.6	7.4	4.0	8.0	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.6	4.8	6.0	5.2	5.6	4.6	5.0	4.2	5.8	4.6	5.80	4.80	IS3025(P38)89R e.99
6	Salinity	ppt	39.74	40.92	37.20	38.2	41.64	42.36	42.6	43.2	39.76	40.94	38.40	39.10	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)5 520D
8	Nitrate as NO ₃	mg/L	0.353	0.386	0.413	0.566	0.789	0.852	0.453	0.528	0.538	0.388	0.384	0.222	IS3025(P34)88
9	Nitrite as NO ₂	mg/L	0.053	0.065	0.027	0.091	0.073	0.079	0.051	0.067	0.056	0.064	0.054	0.076	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	mg/L	0.673	0.763	0.896	1.10	0.618	0.618	0.729	0.806	0.679	0.771	1.010	1.290	IS3025(P34)88C la.2.3
11	Phosphates as PO ₄	mg/L	0.234	0.144	0.657	0.071	0.812	0.836	0.158	0.149	0.239	0.145	0.540	0.675	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	mg/L	1.079	1.214	1.336	1.757	1.48	1.549	1.233	1.401	1.273	1.223	1.448	1.588	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	12	BDL*	10	BDL*	10.2	BDL*	10.2	BDL*	16	BDL*	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	47010	48220	44910	45840	43940	45180	49580	50120	47020	48240	45315	46173	IS3025(P16)84R e.02
15	COD	mg/L	20	29	20	28	16	22	20	24	28	28	14	24	APHA(22 nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.818	0.454	0.52	0.34	0.89	0.37	0.84	0.42	0.816	0.456	0.500	0.460	SOP – PLPL - 07
A Flora and Fauna															
17	Primary productivity	mgC/L/day	1.845	0.563	1.84	0.563	1.46	0.585	2.25	0.788	1.73	0.81	1.575	0.675	APHA (22 nd Edi) 10200-J
B Phytoplankton															
18.1	Chlorophyll	mg/m ³	1.78	0.534	1.78	0.53	1.36	0.267	2.72	0.534	1.28	0.16	1.89	0.16	APHA (22 nd Edi) 10200-H
18.2	Phaeophytin	mg/m ³	1.08	1.67	1.08	1.67	1.51	1.93	3.03	3.87	4.47	4.25	0.067	1.69	APHA (22 nd Edi)


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		Unit x 10 ³ /L	192	44	158	34	142	17	284	34	142	17	162	33	10200-H APHA (22 nd Edi) 10200-H
18.3	Cell Count														
18.4	Name of Group Number and name of group species of each group	--	Bacillarioph yceae Biddulphia sp. Amphiprora sp. Cheatocero us sp. Navicula sp. Synedra sp. Coccinodisc us sp. Pinnularia sp. Skeletone ma sp. Rhizosoleni a sp. Dianoflagl ates Peridinizem sp. Ceratium sp. --	Bacillarioph yceae Thalassione ma sp. Fragillaria sp. Synedra sp. Nitzschia sp. Pinnularia sp. Melosira sp. Gyrosigma sp. Synedra sp. Asterionella sp. --	Bacillarioph yceae Navicula sp. Cyclotella sp. Nitzschia sp. Coccinodisc us sp. Pinnularia sp. Melosira sp. Gyrosigma sp. Synedra sp. Asterionella sp. --	Bacillarioph yceae Navicula sp. Fragillaria sp. Melosira sp. --	Navicula Biddulphia Coccinodic usus Synedra Thallassiosir a Melosira Cymbella Fragilloria Sketepnem a	Biddulphia Naviculla Nituschia -- -- -- -- --	Asterionella sp. Biddulphia sp. Skeletone ma sp. Rhizosoleni a sp. Navicula sp. -- -- -- --	Bacillarioph yceae Asterionella sp. Biddulphia sp. Navicula sp. Fragillaria sp. Gyrosigma sp. Cymbella sp. Thallassiosir a sp. Pinnularia sp. Navicula sp. -- -- -- --	Bacillarioph yceae Amphiprora sp. Cheatocero us sp. Navicula sp. Synedra sp. Gyrosigma sp. Coccinodisc us sp. Pinnularia sp. Skeletone ma sp. Rhizosoleni a sp. Dianoflagl ates Peridinizem sp. Ceratium sp. --	Bacillarioph yceae Thallassione ma sp. Fragillaria sp. Synedra sp. Nitzschia sp. Pinnularia sp. Skeletone ma sp. Rhizosoleni a sp. Dianoflagl ates Peridinizem sp. Ceratium sp. --	Bacillarioph yceae Asterionella sp. Coccinodisc us sp. Navicula sp. Nitzschia sp. Fragillaria sp. Synedra sp. Surirella sp. Thallassione ma sp. Green Algae Ankistrodes mus sp. Chlorella sp. Pandorina sp. Cyanophyc eae Anabaena sp.	Bacillarioph hyceae Tabellaria sp. Navicula sp. Gyrosigma sp. Coccinodis cus sp. Asterionell a sp. Cyanophy ceae Oscillatori a sp. Nostoc sp.	APHA (22 nd Edi) 10200-H
C Zooplanktons															
19.1	Abundance (Population)	no/m ²	200	30	250	38	190	10	238	13	190	10	267	133	APHA (22 nd Edi) 10200-G


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RESULTS OF SEDIMENT ANALYSIS [M4 JUNA BANDAR N 22°47'57" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016	NOVEMBER 2016	DECEMBER 2016	JANUARY 2017	FEBRUARY 2017	MARCH 2017	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.482	0.422	0.552	0.511	0.484	0.495	FCO:2007
2	Phosphorus as P	mg/kg	180	191	195	186	161	172	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	5.05	5.35	5.18	5.32	5.08	5.21	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	mg/kg	157	122	165	136	159	127	AAS 3111B
5.3	Manganese as Mn	mg/kg	881	811	791	827	884	896	AAS APHA 3111 B
5.4	Iron as Fe	%	2.73	2.23	2.03	2.05	2.76	2.33	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	50.07	40.98	56.85	54.61	50.08	49.9	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	mg/kg	44.27	71.28	45.21	46.36	44.28	45.9	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	170	191	175	173	168	179	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	mg/kg	1.23	1.19	1.91	1	1.26	1.94	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Bivalves Echinoderms Krill Anthozoans	Polychaete worms --	Bivalves Isopods	Mysids Polychaete worms Decapods	Polychaete worms -- --	Polychaete worms Echinoderms Anthozoans	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Copepods Bryozoans --	Foraminiforans Gastrotriches Copepods	Loepods -- --	Copopods --	Copepods Ostracodes	Nemotodes Foraminiferans Hydrozoa	APHA (22 nd Edi) 10500-C
2	Population	no/m ²	308	171	240	314	198	440	APHA (22 nd Edi) 10500-C


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RESULTS OF MARINE WATER [M5 TOWARDS WESTERN SIDE OF EAST PORT – N 22°46'041" E 069°47'296"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016		NOVEMBER 2016		DECEMBER 2016		JANUARY 2017		FEBRUARY 2017		MARCH 2017		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.98	8.10	8.18	8.24	7.81	7.76	7.92	7.87	7.96	8.40	7.87	7.70	IS3025(P11)83Re.02
2	Temperature	°C	30	29	27	28	29	28	30	29	27	30	29	30	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	22	34	19	24	16	26	18	22	20	32	18	24	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	6.0	8.0	6.0	8.0	5.0	6.0	6.0	4.0	8.0	6.0	3.0	4.0	IS 3025 (P44)1993Re.03E dition2.1
5	Dissolved Oxygen	mg/L	5.6	4.4	5.6	4.9	5.4	4.4	5.8	4.4	5.4	4.6	5.60	4.60	IS3025(P38)89Re.99
6	Salinity	ppt	38.4	39.6	39.9	40.4	39.4	40.5	40.2	40.9	38.6	39.8	39.55	40.80	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	0.2	BDL*	APHA(22 nd Edi)55 20D
8	Nitrate as NO ₃	mg/L	0.612	0.695	0.35	0.47	0.581	0.626	0.619	0.664	0.613	0.702	0.616	0.677	IS3025(P34)88
9	Nitrite as NO ₂	mg/L	0.046	0.038	0.021	0.032	0.037	0.027	0.043	0.412	0.048	0.036	0.047	0.035	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	mg/L	0.284	0.381	0.56	0.820	0.522	0.284	0.364	0.441	0.293	0.385	0.378	0.443	IS3025(P34)88Cl a.2.3
11	Phosphates as PO ₄	mg/L	0.063	0.081	0.14	0.19	0.72	1.34	0.093	0.112	0.065	0.084	0.247	0.137	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	mg/L	1.356	1.11	0.931	1.322	1.14	0.937	1.026	1.52	0.954	1.123	1.041	1.155	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	11	BDL*	BDL*	BDL*	11.8	BDL*	10.8	BDL*	14	BDL*	0.80	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	47920	48480	46500	46940	45910	47120	38440	39630	47940	48420	36800	37300	IS3025(P16)84Re.02
15	COD	mg/L	17	22	20	28	17	20	22	14	18	24	9	14	APHA(22 nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.56	0.44	0.32	0.28	0.36	0.24	0.54	0.4	0.58	0.46	0.560	0.420	SOP – PLPL - 07
A Flora and Fauna															
17	Primary productivity	mgC/L /day	1.91	0.72	1.91	0.72	2.7	0.99	2.47	0.765	1.68	0.81	1.688	0.563	APHA (22 nd Edi) 10200-J
B Phytoplankton															
18.1	Chlorophyll	mg/m ³	1.89	0.614	1.89	0.614	2.56	0.374	2.56	0.534	1.76	0.374	1.362	0.294	APHA (22 nd Edi) 10200-H
18.2	Phaeophytin	mg/m ³	0.964	1.660	0.964	1.660	1.69	3.88	3.15	4.02	3.95	4.18	0.806	0.959	APHA (22 nd Edi) 10200-H


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18.3	Cell Count	Unit x 10 ³ /L	188	54	152	18	292	32	222	18	111	9.0	215	40	APHA (22 nd Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Bacillariophyceae Skeletone ma sp. Pinnularia sp. Coscinodiscus sp. Melosira sp. Cymbella sp. Navicula sp. Nitzschia sp. Cheatoceros sp. Pleurosigma sp. -- -- -- --	Bacillariophyceae Asterionella sp. Nitzschia sp. Navicula sp. Fragillaria sp. -- -- -- -- -- -- -- -- -- --	Bacillariophyceae Asterionella sp. Nitzschia sp. Navicula sp. Fragillaria sp. Thallasiosira sp. Biddulphia sp. Thallasiosira sp. Fragillaria sp. Cyclotella sp. -- -- --	Bacillariophyceae Navicula sp. Nitzschia sp. Fragillaria sp. Pleurosigma sp. Melosira Biddulphia sp. Navicula sp. Nituschia Microcystis	Asterionella Skeletone ma Cyclotella sp. Pleurosigma sp. Melosira Biddulphia sp. Navicula sp. Nituschia Microcystis	Navicula sp. Fragillaria Melosira -- -- -- -- -- -- -- -- -- --	Bacillariophyceae Nitzschia sp. Tabellaria sp. Asterionella sp. Pinnularia sp. Coscinodiscus sp. Navicula sp. Nituschia sp. Skeletone ma sp. Cymbella sp. -- -- -- -- -- --	Bacillariophyceae Asterionella sp. Biddulphia sp. Fragillaria sp. Thallasiosira sp. Cymbella sp. Skeletone ma sp. Navicula sp. Pediastrum sp. Nituschia sp. Coscinodiscus sp. -- -- -- --	Bacillariophyceae Rhizosolenia sp. Synedra sp. Coscinodiscus sp. Navicula sp. Nituschia sp. Skeletone ma sp. Green Algae Spirogyra sp. Pediastrum sp. Hydrodictyon sp. Desmids Cosmarium sp.	Bacillariophyceae Rhizosolenia sp. Synedra sp. Navicula sp. Coscinodiscus sp. Skeletone ma sp. Spirogyra sp. Anabaena sp. Nostoc sp.	40	APHA (22 nd Edi) 10200-H	
C Zooplanktons															
19.1	Abundance (Population)	no/m ²	230	70	288	75	225	50	288	75	230	60	260	60	APHA (22 nd Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	Foraminiferans Polychaete worms Ostracods Mysids Copepods Fish eggs	Polychaetes Nematodes Bivalves -- -- --	Foraminiferans Nematodes Polychaetes Bivalves Fish egg Ostracodes	Bivalves Gastropods Mysids -- -- --	Decapods Polychaetes Mysids Bivalves Nematodes	Decapods Foraminiferans -- -- --	Polychaete worms Crustaceans Bivalves Decapods Gastropods --	Gastropods Polychaete worms -- -- -- --	Bivalves Isopods Decapods Crustaceans Copepods --	Decapods Copepods -- -- --	Copepods Cyclops Decapods Krill Polychaete worms	Copepods Polychaete worms Ostracods	APHA (22 nd Edi) 10200-G
19.3	Total Biomass	ml/100	193	65.4	171	63	159	6.98	196	5.3	196	5.3	69	11	APHA (22 nd Edi) 10200-G


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D	Microbiological Parameters	m ³													
20.1	Total Bacterial Count	CFU/m l	1670	1380	1850	1600	1750	1500	1690	1370	1680	1360	1830	1630	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22 nd Edi)92 21-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi. 2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)



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RESULTS OF SEDIMENT ANALYSIS [M5 TOWARDS WESTERN SIDE OF EAST PORT – N 22°46'041" E 069°47'296"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016	NOVEMBER 2016	DECEMBER 2016	JANUARY 2017	FEBRUARY 2017	MARCH 2017	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.704	0.56	0.578	0.629	0.706	0.64	FCO:2007
2	Phosphorus as P	mg/kg	177	182	146	173	178	180	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	5.53	5.3	6.12	5.67	5.56	5.79	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	mg/kg	117	98	192	93.96	118	119	AAS 3111B
5.3	Manganese as Mn	mg/kg	754	620	844	695	752	729	AAS APHA 3111 B
5.4	Iron as Fe	%	2.47	2.1	3.12	2.37	2.48	2.41	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	49.43	51.8	62.77	49.09	49.44	48.21	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	mg/kg	54.35	30.21	46.28	46.25	54.34	54.52	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	163	181	186	171	166	179	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	mg/kg	2.18	1.38	2.02	2.18	2.16	2.02	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaete worms Echinoderms --	Bivalves Decapods	Polychaete worms Decapods	Echinoderms Decapods Mysids	Polychaete worms Bivalves --	Crabs Mysids Decapods Bivalves	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Nematodes Foraminiferans --	Copepods Nematodes --	Copepods Foraminiferans --	Copepods --	Nematodes Foraminiferans	Gastrotriches Ostracodes	APHA (22 nd Edi) 10500-C
6.3	Population	no/m2	240	440	377	314	278	385	APHA (22 nd Edi) 10500-C


H. T. Shah
 Lab Manager


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RESULTS OF MARINE WATER [M7 EAST PORT N 22°47'120" E 069°47'110"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016		NOVEMBER 2016		DECEMBER 2016		JANUARY 2017		FEBRUARY 2017		MARCH 2017		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.91	8.10	8.15	8.35	7.97	8.18	7.90	7.81	7.92	8.20	8.10	8.18	IS3025(P11)83Re.02
2	Temperature	°C	30	29	29	28	30	29	30	29	29	30	29	30	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	16	18	16	24	18	24	18	20	18	20	18	22	IS3025(P17)84Re.02
4	BOD (3 Days @ 27°C)	mg/L	8.0	6.4	4.0	6.0	BDL*	6.0	6.0	4.0	6.0	6.8	8.0	9.0	IS 3025 (P44)1993Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.6	4.8	5.8	5.2	5.0	4.8	5.2	5.0	5.8	4.6	5.60	4.80	IS3025(P38)89Re.99
6	Salinity	ppt	39.73	40.63	37.2	37.8	38.9	39.5	38.46	39.44	39.72	40.62	38.10	39.20	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)5520D
8	Nitrate as NO ₃	mg/L	0.617	0.845	0.52	0.704	0.536	0.789	0.453	0.755	0.618	0.846	0.681	0.784	IS3025(P34)88
9	Nitrite as NO ₂	mg/L	0.066	0.052	0.047	0.031	0.031	0.025	0.022	0.024	0.066	0.054	0.063	0.050	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	mg/L	0.196	0.337	0.411	0.616	0.393	0.412	0.211	0.364	0.198	0.338	0.295	0.554	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	mg/L	0.+606	0.452	0.357	0.42	0.181	0.157	0.168	0.154	0.608	0.454	0.540	0.585	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	mg/L	0.879	1.234	0.978	1.351	0.96	1.226	0.686	1.143	0.878	1.236	1.039	1.189	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	10.4	BDL*	14	BDL*	BDL*	BDL*	11.2	BDL*	10.6	BDL*	1.40	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	44130	44720	42190	42640	46690	47650	47100	47830	44120	44710	43186	43828	IS3025(P16)84Re.02
15	COD	mg/L	12	17	16	24	20	20	18	16	20	18	24	29	APHA(22 nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.476	0.752	0.58	0.42	0.74	0.5	0.78	0.56	0.478	0.754	0.820	0.580	SOP – PLPL - 07
A Flora and Fauna															
17	Primary productivity	mgC/L/day	1.845	0.788	1.84	0.788	1.46	0.788	2.47	0.765	1.23	0.765	1.350	0.450	APHA (22 nd Edi) 10200-J
B Phytoplankton															
18.1	Chlorophyll	mg/m ³	1.97	0.614	1.97	0.614	1.60	0.187	2.563	0.534	1.440	0.427	1.682	0.107	APHA (22 nd Edi) 10200-H
18.2	Phaeophytin	mg/m ³	0.155	2.09	0.155	2.09	0.529	2.52	3.15	4.02	2.82	4.99	0.598	2.02	APHA (22 nd Edi) 10200-H


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18.3	Cell Count	Unit x 10 ³ /L	196	52	178	30	132	15	222	18	132	15	227	29	APHA (22 nd Edi) 10200-H
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18.4	Name of Group Number and name of group species of each group	--	Bacillariophyceae		Bacillariophyceae				Bacillariophyceae		Bacillariophyceae		Bacillariophyceae		Bacillariophyceae			
			Achnanthes sp.		Nitzschia sp.				Asterionella sp.		Nitzschia sp.		Nitzschia sp.		Nitzschia sp.		Nitzschia sp.	
			Biddulphia sp.	Bacillariophyceae	Navicula sp.	Bacillariophyceae	Melosira sp.	Navicula sp.	Fragillaria sp.	Thalassiosira sp.	Navicula sp.	Navicula sp.	Navicula sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.
			Cheateoceros sp.	Fragillaria sp.	Navicula sp.	Melosira sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.
			Nitzschia sp.	Melosira sp.	Coscinodiscus sp.	Nitzschia sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.	Navicula sp.
			Pinnularia sp.	Nitzschia sp.	Thalassiosira sp.	Fragillaria sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.	Asterionella sp.
			Synedra sp.	--	Tabellaria sp.	Tabellaria sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.	Melosira sp.
			Navicula sp.	--	Asterionella sp.	--	Surirella sp.	Surirella sp.	Surirella sp.	Surirella sp.	Surirella sp.	Surirella sp.	Surirella sp.	Surirella sp.	Surirella sp.	Surirella sp.	Surirella sp.	Surirella sp.
			Surirella sp.	--	Pleurosigma sp.	--	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.	Biddulphia sp.
			Melosira sp.	--	Cyclotella sp.	--	--	--	--	--	--	--	--	--	--	--	--	--
			--	--	Cymbella sp.	--	--	--	--	--	--	--	--	--	--	--	--	--
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

C Zooplanktons															
19.1	Abundance (Population)	no/m ²	290	80	225	38	180	30	288	75	180	30	280	40	APHA (22 nd Edi) 10200-G


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19.2	Name of Group Number and name of group species of each group	--	Copepods Gastropods Bivalves Foraminiferans Amphipods Ostracods	Bivalves Melopods Nematodes	Polychaete worms Decapods Nematodes Gastropods Isopods	Copepods Nematodes	Coprrops Gastropods Echinoderms Bivalves Nematodes	Foraminiferans Crustaceans	Copepods Gastropods Polychaete worms Decapods Mysids Foraminiferans	Copepods Decapods	Copepods Nematodes Polychaete worms Ostracods Mysids Isopods	Polychaete worms Foraminiferans	Copepods Krill Decapods Crustaceans Ostracodes	Copepods Gastropods	APHA (22 nd Edi) 10200-G
19.3	Total Biomass	ml/100 m ³	212	92.14	173	32	134	1.85	196	5.3	134	2.54	56	5.0	APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
20.1	Total Bacterial Count	CFU/ml	1860	1690	1790	1650	1780	1550	1870	1660	1880	1680	1760	1580	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22 nd Edi)922 1-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2 .4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)



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RESULTS OF MARINE WATER [M8 RIGHT SIDE OF BOCHA CREEK N 22°45'987" E 069°43'119"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016		NOVEMBER 2016		DECEMBER 2016		JANUARY 2017		FEBRUARY 2017		MARCH 2017		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.13	8.19	8.11	8.26	7.77	8.19	7.82	7.89	8.16	8.14	7.77	8.17	IS3025(P11)83Re.02
2	Temperature	°C	29	28	28	28	30	28	29	28	30	29	30	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	26	30	21	29	26	28	22	26	24	28	26	28	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	5.1	6.8	4.0	3.0	BDL*	BDL*	6.0	8.0	5.4	6.4	6.0	7.0	IS 3025 (P44)1993Re.03E dition2.1
5	Dissolved Oxygen	mg/L	5.4	4.8	5.8	4.9	5.6	4.8	5.6	4.4	5.8	4.6	5.60	4.40	IS3025(P38)89Re.99
6	Salinity	ppt	39.73	40.63	30.6	37.9	42.89	43.88	42.6	43.2	39.76	40.66	42.89	43.70	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)552 OD
8	Nitrate as NO ₃	mg/L	0.438	0.503	0.22	0.44	0.410	0.663	0.302	0.422	0.44	0.508	0.391	0.485	IS3025(P34)88
9	Nitrite as NO ₂	mg/L	0.482	0.606	0.063	0.042	0.052	0.035	0.017	0.025	0.48	0.6	0.053	0.067	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	mg/L	0.669	0.738	0.82	0.950	0.862	0.806	0.767	0.844	0.679	0.752	0.859	0.950	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	mg/L	0.196	0.258	0.59	0.72	0.074	0.390	0.476	0.752	0.19	0.257	0.067	0.098	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	mg/L	1.589	1.847	1.103	1.432	1.324	1.504	1.086	1.291	1.599	1.860	1.303	1.411	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	10.6	BDL*	18	BDL*	10.2	BDL*	10.6	BDL*	10.8	BDL*	0.20	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	44550	45130	42980	43640	53820	48320	50480	51370	44520	45140	538320	54740	IS3025(P16)84Re.02
15	COD	mg/L	20	30	16	12	20	18	24	26	24	26	20	22	APHA(22 nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.36	0.22	0.4	0.52	0.73	0.6	0.26	0.32	0.38	0.26	0.700	0.430	SOP – PLPL - 07
A	Flora and Fauna														
17	Primary productivity	mgC/L /day	1.08	0.563	1.08	0.563	1.32	0.698	1.12	0.675	1.08	0.81	1.463	0.113	APHA (22 nd Edi) 10200-J
B	Phytoplankton														
18.1	Chlorophyll	mg/m ³	1.7	0.561	1.7	0.561	1.46	0.294	2.93	0.587	1.65	0.267	1.922	0.427	APHA (22 nd Edi) 10200-H
18.2	Phaeophytin	mg/m ³	0.422	1.77	0.422	1.77	0.662	2.04	1.32	4.08	2.60	4.40	0.021	1.479	APHA (22 nd Edi) 10200-H


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18.3	Cell Count	Unit x 10 ³ /L	183	36	170	24	136	12	272	24	136	12	202	33	APHA (22 nd Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Bacillariophyceae Pinnularia sp. Cymbella sp. Gyrosigma sp. Fragillaria sp. Cheatoceros sp. Skeletonema sp. Pleurosigma sp. Melosira sp. -- -- -- -- --	Bacillariophyceae Navicula sp. Fragillaria sp. Nitzschia sp. Pinnularia sp. -- -- -- -- -- -- -- -- -- -- --	Bacillariophyceae Navicula sp. Synedra sp. Coscinodiscus sp. Cyclotella sp. Gyrosigma sp. Pleurosigma sp. Nitzschia sp. Surirella sp. Skeletonema sp. -- -- -- -- --	Bacillariophyceae Turbellaria sp. Fragillaria sp. Navicula sp. Coscinodiscus sp. Fragillaria sp. Pleurosigma sp. Nitzschia sp. Synedra sp. Melosira sp. -- -- -- -- --	Amphipods Navicula sp. Nitzschia sp. Coscinodiscus sp. Fragillaria sp. Pleurosigma sp. Synedra sp. Melosira sp. -- -- -- -- -- -- --	Fragillaria sp. Synedra sp. Nitzschia sp. Skeletonema sp. Rhizosolenia sp. Surirella sp. Gyrosigma sp. -- -- -- -- -- -- --	Bacillariophyceae Biddulphia sp. Navicula sp. Nitzschia sp. Skeletonema sp. Rhizosolenia sp. Surirella sp. Gyrosigma sp. -- -- -- -- -- -- --	Bacillariophyceae Pinnularia sp. Cymbella sp. Gyrosigma sp. Fragillaria sp. Pinnularia sp. -- -- -- -- -- -- -- -- -- --	Bacillariophyceae Pinnularia sp. Fragillaria sp. Nitzschia sp. Pinnularia sp. -- -- -- -- -- -- -- -- -- --	Bacillariophyceae Asterionella sp. Fragillaria sp. Navicula sp. Synedra sp. Coscinodiscus sp. Oscillatoria sp. Nostoc sp. Green Algae Chlorella sp. Pediastrum sp. -- -- -- --	Bacillariophyceae Fragillaria sp. Navicula sp. Nitzschia sp. Gyrosigma sp. Oscillatoria sp. Desmids Closterium sp. -- -- -- -- -- -- --	APHA (22 nd Edi) 10200-H	
C Zooplanktons															
19.1	Abundance (Population)	no/m ²	240	20	300	25	240	20	300	25	240	20	240	80	APHA (22 nd Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	Chaetognaths Aerophores Nematodes Decapods Isopods Crustaceans	Isopods Foraminiferans Bivalves -- -- --	Polychaete worms Nematodes Crustaceans Crustaceans Mysids --	Gastropods -- -- -- -- --	Nematodes Echinoderms Copepods Gastropods Mollusca	Copepods Gastropods -- -- --	Polychaete worms Decapods Nematodes Isopods -- --	Gastropods -- -- -- -- --	Chaetognaths Aerophores Nematodes Decapods Isopods Crustaceans	Isopods Foraminiferans Bivalves -- -- --	Nematodes Copepods Copepods -- -- --	Polychaete worms Isopods -- -- -- --	APHA (22 nd Edi) 10200-G
19.3	Total Biomass	ml/100	153	1.4	182	4.5	119	3.2	235	4.1	235	4.1	61.0	9.0	APHA (22 nd Edi) 10200-G


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D	Microbiological Parameters	m ³													
20.1	Total Bacterial Count	CFU/ml	1550	1230	1650	1560	1680	1460	1730	1360	1580	1280	1470	1110	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22 nd Edi)922 1-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi. 2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)



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RESULTS OF SEDIMENT ANALYSIS [M8 RIGHT SIDE OF BOCHA CREEK – N 22°45'987" E 069°43'119"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016	NOVEMBER 2016	DECEMBER 2016	JANUARY 2017	FEBRUARY 2017	MARCH 2017	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.582	0.540	0.557	0.482	0.586	0.502	FCO:2007
2	Phosphorus as P	mg/kg	166	162	189	197	164	190	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	5.27	5.62	5.17	5.15	5.24	5.18	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	mg/kg	88.22	84.6	151	151	88.34	152	AAS 3111B
5.3	Manganese as Mn	mg/kg	729	712	820	801	724	821	AAS APHA 3111 B
5.4	Iron as Fe	%	2.17	2.28	2.42	3.13	2.18	2.43	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	39.38	41.9	56.59	53.96	39.39	56.62	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	mg/kg	45.25	39.4	49.27	50.01	45.29	49.38	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	159	198	193	185	158	194	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	mg/kg	1.97	1.27	1.79	1.75	1.98	1.79	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Bivalves Decapods Mysids	Decapods --	Polychaete worms --	Decapods --	Bivalves Decapods --	Polychaete worms Isopods Decapods Prawns	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Gastrotriches Bryozoans --	Gastrotriches Bryozoans --	Ciliates Nematodes --	Nematodes --	Foraminiferans --	Nematodes Foraminiferans	APHA (22 nd Edi) 10500-C
6.3	Population	no/m ²	274	189	144	189	119	433	APHA (22 nd Edi) 10500-C


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RESULTS OF MARINE WATER [M11 MPT T1 JETTY N 22°42'278" E 069°43'450"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016		NOVEMBER 2016		DECEMBER 2016		JANUARY 2017		FEBRUARY 2017		MARCH 2017		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.9	8.17	8.28	8.38	7.72	7.82	7.87	7.63	7.1	8.16	7.62	7.20	IS3025(P11)83Re.02
2	Temperature	°C	30	29	29	28	29	28	30	29	30	29	28	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	14	18	21	26	20	24	20	18	15	18	20	24	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	3.2	4.8	4.0	8.0	6.0	8.0	8.0	4.0	3.4	4.6	6.0	7.0	IS 3025 (P44)1993Re.03E dition2.1
5	Dissolved Oxygen	mg/L	5.6	4.6	5.6	4.8	4.8	4.6	5.4	4.6	6.6	5.8	5.60	4.80	IS3025(P38)89Re.99
6	Salinity	ppt	38.9	39.76	40.2	41.6	41.8	42.09	40.6	41.4	37.9	38.76	42.10	42.93	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	0.5	BDL*	APHA(22 nd Edi)552 OD
8	Nitrate as NO ₃	mg/L	0.358	0.410	0.612	0.566	0.821	0.915	0.483	0.619	0.358	0.418	0.689	0.903	IS3025(P34)88
9	Nitrite as NO ₂	mg/L	0.023	0.014	0.054	0.061	0.073	0.82	0.043	0.055	0.023	0.037	0.080	0.085	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	mg/L	0.224	0.364	0.317	0.504	0.412	0.562	0.959	1.09	0.22	0.367	0.489	0.605	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	mg/L	0.503	0.618	0.56	0.718	0.78	0.873	0.757	1.16	0.501	0.619	0.083	0.144	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	mg/L	0.605	0.79	0.983	1.13	1.306	1.559	1.465	1.764	0.601	0.78	1.256	1.593	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	BDL*	BDL*	13	BDL*	BDL*	BDL*	10.6	BDL*	BDL*	BDL*	1.70	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	41790	42280	47900	48800	48360	49870	49120	50440	41788	42283	34120	35330	IS3025(P16)84Re.02
15	COD	mg/L	10	14	24	32	24	28	20	26	14	10	18	20	APHA(22 nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.50	0.40	0.71	0.52	0.86	0.34	0.74	0.52	0.40	0.60	0.88	0.40	SOP – PLPL - 07
A Flora and Fauna															
17	Primary productivity	mgC/L /day	1.75	0.563	1.755	0.563	1.73	0.315	2.02	0.698	1.62	0.81	2.172	0.666	APHA (22 nd Edi) 10200-J
B Phytoplankton															
18.1	Chlorophyll	mg/m ³	1.89	0.748	1.89	0.748	1.81	0.427	3.63	0.854	1.65	0.69	2.584	0.489	APHA (22 nd Edi) 10200-H


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19.2	Name of Group Number and name of group species of each group	--	Fish egg	Gastropods	Gastropods	Gastropods	Ostracods	Gastropods	Copepods	Gastropods	Fish egg	Gastropods	Copepods	Decapodes	APHA (22 nd Edi) 10200-G
			Copepods	Nematodes	Nematodes	Nematodes	Nematodes	Nematodes	Nematodes	Nematodes	Nematodes	Nematodes	Nematodes	Nematodes	
19.3	Total Biomass	ml/100 m ³	162	3.25	170	1.10	148	2.60	163	26.98	163	26.98	89	26	APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
20.1	Total Bacterial Count	CFU/ml	1700	1280	1810	1560	1530	1400	1540	1410	1701	1281	1900	1580	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22 nd Edi)922 1-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi. 2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)



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RESULTS OF MARINE WATER [M12 SPM N 22°40'938" E 069°39'191"]

SR. NO.	TEST PARAMETERS	UNIT	OCTOBER 2016		NOVEMBER 2016		DECEMBER 2016		JANUARY 2017		FEBRUARY 2017		MARCH 2017		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.84	8.01	8.02	8.32	7.23	8.01	7.79	8	7.88	8.02	7.74	7.82	IS3025(P11)83Re.02
2	Temperature	°C	30	29	28	27	29	28	28	27	29	30	28	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	18	20	17	24	24	28	16	22	16	24	20	24	IS3025(P17)84Re.02
4	BOD (3 Days @ 27°C)	mg/L	5.4	7.6	3	6	7	6	4	8	5.6	7.8	6.0	8.0	IS 3025 (P44)1993Re.03 Edition 2.1
5	Dissolved Oxygen	mg/L	5.4	4.4	5.2	5.0	5.6	5.2	5.4	5.2	5.8	4.6	5.20	4.80	IS3025(P38)89Re.99
6	Salinity	ppt	40.36	41.22	42.8	43.4	39.6	40.8	42.6	43.2	41.38	40.24	41.60	42.20	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)552 OD
8	Nitrate as NO ₃	mg/L	0.464	0.876	0.413	0.566	0.457	0.568	0.412	0.563	0.463	0.882	0.503	0.625	IS3025(P34)88
9	Nitrite as NO ₂	mg/L	0.036	0.06	0.031	0.027	0.052	0.088	0.034	0.026	0.038	0.079	0.072	0.097	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	mg/L	0.804	0.99	0.672	0.766	0.206	0.712	0.676	0.766	0.807	0.11	0.814	0.889	IS3025(P34)88Cla 2.3
11	Phosphates as PO ₄	mg/L	0.076	0.084	0.479	0.560	0.222	0.283	0.476	0.554	0.079	0.084	0.150	0.186	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	mg/L	1.304	1.926	1.116	1.359	0.715	1.368	1.122	1.355	1.308	1.071	1.389	1.610	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	BDL*	BDL*	14	BDL*	10.4	BDL*	11.2	BDL*	BDL*	BDL*	1.70	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	47880	48520	39810	40180	48630	49210	39970	40230	47820	48580	45980	46720	IS3025(P16)84Re.02
15	COD	mg/L	16	24	24	28	20	12	16	24	18	28	19	24	APHA(22 nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.60	0.34	0.48	0.29	0.46	0.76	0.58	0.32	0.8	0.36	0.71	0.39	SOP – PLPL - 07
A Flora and Fauna															
17	Primary productivity	mgC/L /day	2.25	0.45	2.25	0.45	1.48	0.698	1.74	0.564	1.77	0.81	2.47	0.90	APHA (22 nd Edi) 10200-J
B Phytoplankton															
18.1	Chlorophyll	mg/m ³	1.709	0.507	1.70	0.507	1.28	0.187	1.88	0.746	1.70	0.32	2.510	0.481	APHA (22 nd Edi) 10200-H


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18.2	Phaeophytin	mg/m ³	0.422	1.623	0.422	1.620	0.849	1.944	0.234	1.26	2.55	3.94	0.219	1.830	APHA (22 nd Edi) 10200-H
18.3	Cell Count	Unit x 10 ³ /L	210	56	172	34	146	16	208	66	146	16	286.0	38.0	APHA (22 nd Edi) 10200-H

18.4	Name of Group Number and name of group species of each group	--	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Naviculla	Naviculla	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22 nd Edi) 10200-H		
			Asterionella sp.	Melosira sp.	Asterionella sp.	Pinnularia	Melosira	Naviculla	Synedra	Biddulphia	Naviculla	Naviculla	Melosira	Melosira	Melosira	Melosira	Cheatoceus	
			Navicula sp.	Melosira sp.	Asterionella sp.	Pinnularia	Naviculla	Naviculla	Synedra	Biddulphia	Naviculla	Naviculla	Melosira	Melosira	Melosira	Melosira	Melosira	Cheatoceus
			Nitzschia sp.	Coscinodiscus sp.	Biddulphia sp.	Pinnularia	Naviculla	Naviculla	Synedra	Biddulphia	Naviculla	Naviculla	Melosira	Melosira	Melosira	Melosira	Melosira	Cheatoceus
			Fragillaria sp.	Navicula sp.	Synedra sp.	Navicula	Naviculla	Naviculla	Synedra	Biddulphia	Naviculla	Naviculla	Melosira	Melosira	Melosira	Melosira	Melosira	Cheatoceus
			Melosira sp.	--	Nitzschia sp.	--	--	--	--	--	--	--	--	--	--	--	--	Cheatoceus
			Cyclotella sp.	--	Navicula sp.	--	--	--	--	--	--	--	--	--	--	--	--	Cheatoceus
			Pinnularia sp.	--	Pinnularia	--	--	--	--	--	--	--	--	--	--	--	--	Cheatoceus
			Coscinodiscus sp.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Cheatoceus
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Cheatoceus
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Cheatoceus
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Cheatoceus
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Cheatoceus
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Cheatoceus


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C Zooplanktons															
19.1	Abundance (Population)	no/m ²	275	63	220	50	180	40	249	14	180	40	275	100	APHA (22 nd Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	Copepods Polychaete worms Crustaceans Mysids Nematodes --	Crustaceans Bivalves -- -- -- --	Nematodes Polychaete worms Gastropods Crustaceans Isopods --	Decapods Isopods Nematodes -- -- --	Copropods Mysids Fish eggs Constceno us Bivalves	Polychaete s Gastropods -- -- --	Gastropods Isopods Crustacean s -- -- --	Isopods Nematodes -- -- -- --	Copepods Polychaete worms Crustacean s Mysids Nematodes --	Crustacean s Bivalves -- -- -- --	Mysids Polychaete worms Gastrotrich es Nauplius larvae Decapods	Nematodes Gastropods s --	APHA (22 nd Edi) 10200-G
19.3	Total Biomass	ml/100 m ³	172	36.90	142	48.8	119	2.70	164	3.24	159	6.98	97	17	APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
20.1	Total Bacterial Count	CFU/ml	1490	1220	1770	1460	1310	1560	1790	1450	1492	1224	1490	1030	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22 nd Ede)922 1-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Ede. 2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)


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RESULTS OF ETP WATER OUTLET

SR. NO.	PARAMETERS	UNIT	RESULTS OF ETP WATER OUTLET						TEST METHOD
			04/10/2016	08/11/2016	06/12/2016	04/01/2017	07/02/2017	07/03/2017	
1	Colour	Co-pt	20	25	30	40	30	30	IS3025(P4)83Re.02
2	pH	--	7.28	6.95	7.33	7.5	6.69	7.02	IS3025(P11)83Re.02
3	Temperature	°C	29	28	29	30	29	30	IS3025(P9)84Re.02
4	Total Suspended Solids	mg/L	28	32	32	48	24	26	IS3025(P17)84Re.02
5	Total Dissolved Solids	mg/L	709	1070	1206	1380	1124	955	IS3025(P16)84Re.02
6	COD	mg/L	84	72	126	104	76	142	APHA(22 nd Edition) 5520-D Open Reflux
7	BOD (3 Days @ 27 °C)	mg/L	23	20	25	28	22	36	IS 3025 (P44)1993Re.03Edition2.1
8	Chloride as Cl	mg/L	28.99	35.98	459	419	479	459	IS3025(P32)88Re.99
9	Oil & Grease	mg/L	BDL*	BDL*	1.1	0.8	1.0	1.1	APHA(22 nd Edition)5520D
10	Sulphate as SO ₄	mg/L	246	231	74.2	88	94	92	APHA(22 nd Edition)4500 SO ₄ E
11	Ammonical Nitrogen as NH ₃	mg/L	1.96	2.05	3.66	1.8	2.05	2.85	IS3025(P34)88Cla.2.3
12	% Sodium as Na	%	41.12	44.48	46.67	44	41.15	49.94	AAS APHA(22 nd Edition) 3500 NA B/ Flame Photometer
13	Nickel as Ni	mg/L	0.019	0.025	0.019	0.012	0.022	0.020	AAS APHA(22 nd Edition)3111 B
14	Phenolic Compound	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS3025(P43)92Re.03
15	SAR	--	2.2	4.44	2.22	2.4	2.46	2.56	By Calculation
16	Total Chromium as Cr ⁺³	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS 3111B
17	Hexavalent Chromium as Cr ⁺⁶	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edition)3500Cr B Colorimetric method
18	Copper as Cu	mg/L	0.013	0.016	0.015	0.022	0.014	0.013	AAS APHA(22 nd Edition)3111 B
19	Lead as Pb	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA(22 nd Edition)3111 B
20	Sulphide as S	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edition) 4500-S
21	Mercury as Hg	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
22	Zinc as Zn	mg/L	0.026	0.038	0.071	0.12	0.031	0.041	AAS APHA(22 nd Edition)3111 B
23	Cadmium as Cd	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA(22 nd Edition)3111 B
24	Cyanide as CN	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edition)4500CN E
25	Arsenic as As	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA 3114 B
26	Fluoride as F	mg/L	BDL*	BDL*	0.53	0.7	BDL*	BDL*	APHA(22 nd Edition) 4500 F D SPANDS
27	Insecticides/Pesticides	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	GC MS

*Below detection limit


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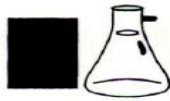

Dr. Arun Bajpai
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**RESULT OF AMBIENT AIR QUALITY MONITORING**

ADANI PORT – T1 TERMINAL NR.MARINE BUILDING								
Sr. No	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
1	04/10/2016	82.62	46.56	17.56	27.15	0.38	BDL*	BDL*
2	07/10/2016	73.20	38.66	9.91	15.45	0.40	BDL*	BDL*
3	11/10/2016	64.64	30.35	10.57	30.43	0.64	BDL*	BDL*
4	14/10/2016	79.39	44.52	15.26	34.36	0.55	BDL*	BDL*
5	18/10/2016	57.19	25.36	12.05	21.07	0.33	BDL*	BDL*
6	21/10/2016	70.31	29.52	7.98	26.55	0.18	BDL*	BDL*
7	25/10/2016	67.60	37.41	13.88	31.02	0.15	BDL*	BDL*
8	28/10/2016	58.67	27.44	8.04	28.09	0.49	BDL*	BDL*
9	31/10/2016	78.37	32.43	11.90	17.79	0.21	BDL*	BDL*
10	01/11/2016	70.43	31.59	13.36	29.36	0.66	BDL*	BDL*
11	04/11/2016	66.68	38.66	8.84	15.38	0.46	BDL*	BDL*
12	08/11/2016	76.71	44.48	15.23	23.91	0.39	BDL*	BDL*
13	11/11/2016	60.40	32.43	10.49	19.71	0.80	BDL*	BDL*
14	15/11/2016	54.61	25.77	6.25	26.42	0.60	BDL*	BDL*
15	18/11/2016	63.60	29.52	16.94	32.50	0.18	BDL*	BDL*
16	22/11/2016	58.49	37.41	14.33	16.38	0.37	BDL*	BDL*
17	25/11/2016	80.59	42.40	9.83	20.10	0.16	BDL*	BDL*
18	29/11/2016	62.67	23.70	12.86	28.10	0.53	BDL*	BDL*
19	02/12/2016	70.80	28.68	19.90	38.98	0.17	BDL*	BDL*
20	06/12/2016	66.31	35.75	14.15	33.41	0.46	BDL*	BDL*
21	09/12/2016	81.58	38.66	11.98	21.30	0.21	BDL*	BDL*
22	13/12/2016	77.82	21.62	15.14	35.50	0.40	BDL*	BDL*
23	16/12/2016	62.43	26.61	18.43	25.90	0.45	BDL*	BDL*
24	20/12/2016	54.18	23.70	13.49	27.57	0.57	BDL*	BDL*
25	23/12/2016	72.52	37.41	10.38	22.62	0.49	BDL*	BDL*
26	27/12/2016	59.29	30.76	21.44	39.16	0.33	BDL*	BDL*
27	30/12/2016	68.40	29.52	16.66	20.36	0.56	BDL*	BDL*
28	03/01/2017	44.88	25.36	6.07	26.15	0.27	BDL*	BDL*
29	06/01/2017	51.35	22.45	15.44	21.51	0.40	BDL*	BDL*
30	10/01/2017	63.91	27.44	13.90	31.63	0.32	BDL*	BDL*

Continue ...

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Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)



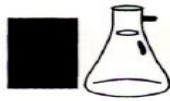
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RESULT OF AMBIENT AIR QUALITY MONITORING**ADANI PORT – T1 TERMINAL NR. (MARINE BUILDING)**

Sr.No.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
31	13/01/2017	55.22	30.35	10.12	28.26	0.50	BDL*	BDL*
32	17/01/2017	87.31	48.68	12.50	30.59	0.57	BDL*	2.72
33	20/01/2017	52.58	24.53	14.67	36.55	0.54	BDL*	BDL*
34	24/01/2017	62.67	28.68	8.87	19.51	0.42	BDL*	BDL*
35	27/01/2017	72.40	37.41	11.73	39.54	0.13	BDL*	BDL*
36	31/01/2017	81.21	46.56	16.35	23.72	0.60	BDL*	BDL*
37	03/02/2017	67.78	37.41	10.49	23.49	0.49	BDL*	BDL*
38	07/02/2017	87.30	46.56	18.16	27.27	0.73	BDL*	BDL*
39	10/02/2017	49.62	22.45	7.27	31.70	0.26	BDL*	BDL*
40	14/02/2017	56.70	32.43	17.70	35.66	0.63	BDL*	BDL*
41	17/02/2017	64.27	40.74	11.58	20.98	0.45	BDL*	BDL*
42	21/02/2017	79.42	44.48	13.41	33.09	0.23	BDL*	BDL*
43	24/02/2017	69.32	31.59	22.60	38.02	0.37	BDL*	BDL*
44	28/02/2017	70.37	38.66	16.14	36.51	0.34	BDL*	BDL*
45	03/03/2017	71.60	32.43	9.61	16.95	0.30	BDL*	BDL*
46	07/03/2017	60.58	28.68	14.38	28.08	0.48	BDL*	BDL*
47	10/03/2017	79.30	35.75	13.02	24.49	0.24	BDL*	BDL*
48	14/03/2017	52.27	25.36	7.33	19.60	0.36	BDL*	BDL*
49	17/03/2017	66.31	37.41	10.72	22.61	0.42	BDL*	BDL*
50	21/03/2017	58.43	24.53	5.09	15.37	0.19	BDL*	BDL*
51	24/03/2017	90.38	54.46	15.38	36.56	0.52	BDL*	BDL*
52	28/03/2017	78.31	27.44	19.42	30.91	0.27	BDL*	BDL*
53	31/03/2017	86.32	39.49	18.08	25.96	0.22	BDL*	BDL*
	TEST METHOD	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)	Gravimetric-CPCB - Method (Vol.I,May-2011)	IS:5182(Part II):Improved West and Gaeke	IS:5182(Part VI):Modified Jacob & Hochheiser (NaOH-NaAsO2)	NDIR Digital Gas Analyzer	SOP: HC: GC/GCMS/Gas analyzer	IS 5182 (Part XI):2006/CPCB Method

*Below detection limit

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)



Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

RESULT OF AMBIENT AIR QUALITY MONITORING

NEAR FIRE STATION								
Sr. No.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO ₂) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
1	04/10/2016	87.47	50.40	9.96	34.76	0.22	BDL*	BDL*
2	07/10/2016	79.59	41.65	11.51	37.53	0.54	BDL*	BDL*
3	11/10/2016	91.29	45.40	13.63	33.18	0.48	BDL*	BDL*
4	14/10/2016	56.39	24.57	21.58	40.11	0.77	BDL*	2.62
5	18/10/2016	85.71	39.57	16.73	29.50	0.26	BDL*	BDL*
6	21/10/2016	95.72	43.74	12.43	35.11	0.14	BDL*	2.28
7	25/10/2016	78.68	47.49	15.04	26.53	0.66	BDL*	BDL*
8	28/10/2016	86.20	42.49	18.47	22.63	0.63	BDL*	BDL*
9	31/10/2016	72.62	29.57	17.04	38.63	0.30	BDL*	BDL*
10	01/11/2016	82.68	36.66	19.19	35.88	0.96	BDL*	BDL*
11	04/11/2016	92.38	50.40	10.63	31.46	0.64	BDL*	BDL*
12	08/11/2016	70.32	39.57	8.86	26.21	0.33	BDL*	BDL*
13	11/11/2016	69.53	27.49	18.72	38.83	0.58	BDL*	BDL*
14	15/11/2016	80.38	42.49	15.94	29.71	0.76	BDL*	BDL*
15	18/11/2016	93.60	53.73	11.16	41.42	0.31	BDL*	BDL*
16	22/11/2016	76.80	47.49	20.44	32.15	0.27	BDL*	BDL*
17	25/11/2016	97.29	56.65	17.71	28.66	0.13	BDL*	BDL*
18	29/11/2016	84.62	38.74	14.31	37.75	0.82	BDL*	BDL*
19	02/12/2016	76.93	30.41	12.32	34.34	0.34	BDL*	BDL*
20	06/12/2016	95.41	53.32	16.83	30.28	0.62	BDL*	2.26
21	09/12/2016	72.38	34.57	19.13	27.15	0.11	BDL*	BDL*
22	13/12/2016	90.32	50.40	22.14	42.64	0.55	BDL*	BDL*
23	16/12/2016	84.20	31.66	25.73	33.28	0.81	BDL*	BDL*
24	20/12/2016	78.38	42.49	9.53	19.14	0.42	BDL*	BDL*
25	23/12/2016	94.63	54.57	18.05	35.58	0.63	BDL*	BDL*
26	27/12/2016	88.20	46.65	24.72	43.31	0.24	BDL*	BDL*
27	30/12/2016	75.47	39.57	22.00	38.67	0.71	BDL*	BDL*
28	03/01/2017	82.62	45.40	13.13	23.72	0.21	BDL*	BDL*
29	06/01/2017	70.38	36.66	22.77	27.94	0.73	BDL*	BDL*
30	10/01/2017	86.81	39.57	19.58	38.38	0.48	BDL*	BDL*

Continue ...

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)



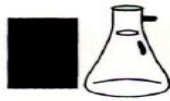
Recognised by MoEF New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

RESULT OF AMBIENT AIR QUALITY MONITORING

NEAR FIRE STATION								
Sr.No.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
31	13/01/2017	92.32	47.49	14.46	24.99	0.55	BDL*	BDL*
32	17/01/2017	72.58	35.39	16.89	35.50	0.82	BDL*	BDL*
33	20/01/2017	58.50	32.49	20.33	40.42	0.80	BDL*	BDL*
34	24/01/2017	87.78	50.82	18.70	30.75	0.56	BDL*	BDL*
35	27/01/2017	74.62	48.74	23.50	21.97	0.18	BDL*	BDL*
36	31/01/2017	68.62	30.41	8.16	15.62	0.39	BDL*	BDL*
37	03/02/2017	92.93	52.48	18.92	37.76	0.64	BDL*	BDL*
38	07/02/2017	72.80	40.40	9.91	18.35	0.44	BDL*	BDL*
39	10/02/2017	87.59	35.41	14.10	28.84	0.17	BDL*	BDL*
40	14/02/2017	63.77	38.74	19.69	31.08	0.50	BDL*	BDL*
41	17/02/2017	76.93	43.74	23.44	34.96	0.78	BDL*	BDL*
42	21/02/2017	68.62	25.41	11.24	26.22	0.14	BDL*	BDL*
43	24/02/2017	54.68	29.57	13.34	33.56	0.27	BDL*	BDL*
44	28/02/2017	90.50	55.40	21.61	42.73	0.56	BDL*	BDL*
45	03/03/2017	85.71	39.57	21.67	39.21	0.56	BDL*	BDL*
46	07/03/2017	71.23	33.74	17.10	25.96	0.37	BDL*	BDL*
47	10/03/2017	92.63	46.65	19.05	35.50	0.41	BDL*	BDL*
48	14/03/2017	68.62	36.66	15.24	30.61	0.49	BDL*	BDL*
49	17/03/2017	95.60	52.48	23.26	24.50	0.46	BDL*	BDL*
50	21/03/2017	87.59	48.74	12.15	32.45	0.13	BDL*	BDL*
51	24/03/2017	74.62	32.49	8.07	21.19	0.32	BDL*	BDL*
52	28/03/2017	89.29	42.49	11.14	27.37	0.21	BDL*	BDL*
53	31/03/2017	96.32	55.40	9.05	23.55	0.11	BDL*	BDL*
	TEST METHOD	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)	Gravimetric-CPCB - Method (Vol.I,May-2011)	IS:5182(Part II):Improved West and Gaeke	IS:5182(Part VI):Modified Jacob & Hochheiser (NaOH-NaAsO ₂)	NDIR Digital Gas Analyzer	SOP: HC: GC/GCMS/Gas analyzer	IS 5182 (Part XI):2006/CPCB Method

*Below detection limit

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)



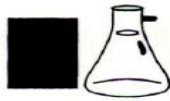
Recognised by MoEF New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

RESULT OF AMBIENT AIR QUALITY MONITORING

PUB/ADANI HOUSE								
Sr. No	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
1	04/10/2016	77.30	42.47	14.95	32.26	0.46	BDL*	BDL*
2	07/10/2016	64.53	36.64	19.74	23.70	0.62	BDL*	BDL*
3	11/10/2016	82.69	52.47	15.85	27.15	0.73	BDL*	BDL*
4	14/10/2016	72.52	41.57	10.48	34.68	0.66	BDL*	BDL*
5	18/10/2016	93.42	45.39	7.92	18.73	0.53	BDL*	BDL*
6	21/10/2016	58.58	23.74	9.97	22.24	0.24	BDL*	BDL*
7	25/10/2016	61.18	34.56	16.89	36.34	0.55	BDL*	BDL*
8	28/10/2016	90.63	54.55	12.92	31.60	0.52	BDL*	BDL*
9	31/10/2016	56.72	22.49	8.74	20.23	0.41	BDL*	BDL*
10	01/11/2016	66.02	20.40	9.54	25.63	0.81	BDL*	BDL*
11	04/11/2016	57.59	32.48	16.76	35.82	0.74	BDL*	BDL*
12	08/11/2016	61.68	34.56	12.81	29.36	0.54	BDL*	BDL*
13	11/11/2016	52.63	22.49	8.78	23.07	0.90	BDL*	BDL*
14	15/11/2016	74.70	33.73	11.21	21.63	0.69	BDL*	BDL*
15	18/11/2016	82.51	45.39	6.21	36.70	0.45	BDL*	BDL*
16	22/11/2016	50.27	28.73	17.50	39.00	0.57	BDL*	BDL*
17	25/11/2016	84.99	48.72	13.26	24.90	0.24	BDL*	BDL*
18	29/11/2016	76.31	42.47	7.93	18.45	0.65	BDL*	BDL*
19	02/12/2016	91.18	52.47	7.18	31.32	0.52	BDL*	BDL*
20	06/12/2016	84.61	47.47	11.89	20.88	0.44	BDL*	BDL*
21	09/12/2016	96.33	44.56	15.75	24.60	0.25	BDL*	BDL*
22	13/12/2016	72.59	36.64	18.62	38.63	0.58	BDL*	BDL*
23	16/12/2016	55.73	23.74	20.61	30.02	0.72	BDL*	BDL*
24	20/12/2016	62.17	26.65	16.68	35.50	0.50	BDL*	BDL*
25	23/12/2016	80.27	38.73	19.69	40.10	0.94	BDL*	BDL*
26	27/12/2016	75.32	35.40	13.78	33.65	0.66	BDL*	BDL*
27	30/12/2016	59.38	22.49	10.37	26.63	0.82	BDL*	BDL*
28	03/01/2017	56.78	30.40	15.27	21.67	0.57	BDL*	BDL*
29	06/01/2017	82.38	50.39	18.87	24.21	0.87	BDL*	BDL*
30	10/01/2017	69.61	32.48	17.01	34.68	0.64	BDL*	BDL*

Continue ...

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)



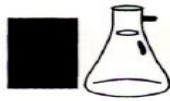
Recognised by MoEF New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

RESULT OF AMBIENT AIR QUALITY MONITORING

PUB/ADANI HOUSE								
Sr. No.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO ₂) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
31	13/01/2017	73.39	41.64	12.17	38.49	0.38	BDL*	BDL*
32	17/01/2017	81.33	45.73	6.45	27.63	0.73	BDL*	BDL*
33	20/01/2017	49.71	28.73	9.92	22.41	0.70	BDL*	BDL*
34	24/01/2017	68.19	31.65	13.18	33.74	0.82	BDL*	BDL*
35	27/01/2017	83.37	42.47	19.27	35.15	0.23	BDL*	BDL*
36	31/01/2017	52.63	23.32	14.41	30.58	0.49	BDL*	BDL*
37	03/02/2017	73.58	40.39	15.12	26.22	0.84	BDL*	BDL*
38	07/02/2017	55.73	31.65	12.06	36.71	0.58	BDL*	BDL*
39	10/02/2017	62.67	27.48	16.97	41.53	0.46	BDL*	BDL*
40	14/02/2017	51.20	22.49	10.65	27.79	0.80	BDL*	BDL*
41	17/02/2017	88.27	52.47	18.90	31.46	0.36	BDL*	BDL*
42	21/02/2017	71.29	44.56	21.36	39.62	0.21	BDL*	BDL*
43	24/02/2017	82.51	38.73	8.78	29.37	0.62	BDL*	BDL*
44	28/02/2017	77.80	34.56	19.36	25.05	0.79	BDL*	BDL*
45	03/03/2017	76.49	27.48	17.73	26.49	0.25	BDL*	BDL*
46	07/03/2017	57.59	24.57	9.85	21.98	0.58	BDL*	BDL*
47	10/03/2017	86.47	31.65	15.11	38.15	0.53	BDL*	BDL*
48	14/03/2017	60.31	33.73	14.01	23.84	0.62	BDL*	BDL*
49	17/03/2017	74.32	46.64	8.98	29.44	0.31	BDL*	BDL*
50	21/03/2017	63.60	29.57	19.94	42.39	0.34	BDL*	BDL*
51	24/03/2017	58.89	22.49	10.60	33.38	0.45	BDL*	BDL*
52	28/03/2017	70.42	34.56	7.25	18.84	0.47	BDL*	BDL*
53	31/03/2017	81.20	30.40	16.90	32.64	0.15	BDL*	BDL*
	TEST METHOD	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)	Gravimetric-CPCB - Method (Vol.I,May-2011)	IS:5182(Part II):Improved West and Gaeke	IS:5182(Part VI):Modified Jacob & Hochheiser (NaOH-NaAsO ₂)	NDIR Digital Gas Analyzer	SOP: HC: GC/GCMS/Gas analyzer	IS 5182 (Part XI):2006/CPCB Method

*Below detection limit

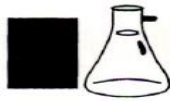
H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)

**RESULT OF AMBIENT AIR QUALITY MONITORING**

AIR STRIP								
Sr. No.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO ₂) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
1	01/10/2016	63.59	30.41	11.83	22.67	0.31	BDL*	BDL*
2	05/10/2016	79.41	42.49	7.15	19.28	0.16	BDL*	BDL*
3	08/10/2016	67.59	37.49	12.62	25.43	0.48	BDL*	2.26
4	12/10/2016	56.80	29.57	5.54	15.68	0.15	BDL*	BDL*
5	15/10/2016	45.62	26.72	13.71	23.57	0.44	BDL*	BDL*
6	19/10/2016	68.32	32.49	10.32	26.28	0.60	BDL*	BDL*
7	22/10/2016	52.80	27.49	6.20	18.37	0.34	BDL*	BDL*
8	26/10/2016	84.20	50.40	15.78	35.60	0.18	BDL*	BDL*
9	28/10/2016	58.19	23.74	9.56	21.43	0.40	BDL*	2.06
10	02/11/2016	85.71	32.49	9.68	17.51	0.13	BDL*	BDL*
11	05/11/2016	69.29	39.57	13.33	21.51	0.25	BDL*	BDL*
12	09/11/2016	50.80	22.49	11.51	25.31	0.37	BDL*	BDL*
13	12/11/2016	65.77	37.49	8.00	35.62	0.32	BDL*	BDL*
14	16/11/2016	80.38	43.74	17.71	30.47	0.15	BDL*	BDL*
15	19/11/2016	57.53	24.58	14.30	33.51	0.39	BDL*	BDL*
16	23/11/2016	62.38	35.41	6.20	16.87	0.23	BDL*	BDL*
17	26/11/2016	77.47	41.65	10.33	22.50	0.11	BDL*	BDL*
18	30/11/2016	53.71	27.49	15.89	32.11	0.48	BDL*	BDL*
19	03/12/2016	52.80	24.58	15.78	36.34	0.52	BDL*	BDL*
20	07/12/2016	45.71	20.41	20.52	38.23	0.22	BDL*	BDL*
21	10/12/2016	62.50	35.41	7.89	24.79	0.33	BDL*	BDL*
22	14/12/2016	76.80	37.49	14.12	20.37	0.16	BDL*	BDL*
23	17/12/2016	55.53	30.41	11.92	30.25	0.41	BDL*	BDL*
24	21/12/2016	70.32	34.57	7.04	18.69	0.23	BDL*	BDL*
25	24/12/2016	65.29	23.74	18.27	23.34	0.19	BDL*	BDL*
26	28/12/2016	84.62	46.65	16.83	28.47	0.36	BDL*	BDL*
27	31/12/2016	58.68	26.66	10.59	15.54	0.27	BDL*	BDL*
28	04/01/2017	46.19	25.41	13.64	31.58	0.54	BDL*	BDL*
29	07/01/2017	62.62	29.57	8.92	17.61	0.30	BDL*	BDL*
30	11/01/2017	82.38	36.66	16.83	26.30	0.21	BDL*	BDL*

Continue ...

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)



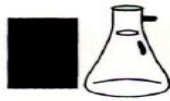
Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

RESULT OF AMBIENT AIR QUALITY MONITORING

AIR STRIP								
Sr. No	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO ₂) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
31	14/01/2017	51.40	21.66	17.83	34.36	0.69	BDL*	BDL*
32	18/01/2017	74.62	42.58	8.90	30.61	0.33	BDL*	BDL*
33	21/01/2017	65.53	27.49	10.43	24.98	0.45	BDL*	BDL*
34	25/01/2017	58.32	20.41	14.40	21.21	0.37	BDL*	BDL*
35	28/01/2017	77.59	40.40	18.52	29.70	0.48	BDL*	BDL*
36	01/02/2017	59.29	28.74	15.12	24.61	0.18	BDL*	BDL*
37	04/02/2017	48.49	18.74	9.78	18.57	0.39	BDL*	BDL*
38	08/02/2017	72.80	32.49	11.44	21.52	0.15	BDL*	BDL*
39	11/02/2017	52.62	24.58	13.56	32.58	0.48	BDL*	BDL*
40	15/02/2017	65.71	30.41	5.56	16.25	0.25	BDL*	BDL*
41	18/02/2017	56.31	27.49	7.92	19.20	0.30	BDL*	BDL*
42	22/02/2017	41.58	17.49	17.49	28.27	0.41	BDL*	BDL*
43	25/02/2017	54.31	31.66	6.34	20.86	0.31	BDL*	BDL*
44	01/03/2017	50.62	28.74	10.59	28.66	0.60	BDL*	BDL*
45	04/03/2017	42.80	18.74	17.59	32.40	0.31	BDL*	BDL*
46	08/03/2017	56.80	23.74	13.19	21.10	0.74	BDL*	BDL*
47	11/03/2017	61.29	31.66	6.42	25.58	0.33	BDL*	BDL*
48	15/03/2017	70.38	26.66	15.88	29.63	0.29	BDL*	BDL*
49	18/03/2017	64.20	33.74	11.51	33.47	0.24	BDL*	BDL*
50	22/03/2017	77.41	43.74	9.59	20.68	0.52	BDL*	BDL*
51	25/03/2017	67.41	25.41	5.58	16.82	0.48	BDL*	BDL*
52	29/03/2017	73.77	38.74	12.79	26.53	0.63	BDL*	BDL*
	TEST METHOD	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)	Gravimetric-CPCB - Method (Vol.I,May-2011)	IS:5182(Part II):Improved West and Gaeke	IS:5182(Part VI):Modified Jacob & Hochheiser (NaOH-NaAsO ₂)	NDIR Digital Gas Analyzer	SOP: HC: GC/GCMS/Gas analyzer	IS 5182 (Part XI):2006/CPCB Method

*Below detection limit

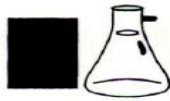
H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)

**RESULT OF AMBIENT AIR QUALITY MONITORING**

NEAR SHANTIVAN COLONY'S STP					
Sr. No.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$
1	03/10/2016	69.57	37.41	9.76	42.70
2	06/10/2016	50.61	20.37	18.42	30.44
3	10/10/2016	79.30	42.40	13.62	29.49
4	13/10/2016	68.58	38.66	10.75	24.54
5	17/10/2016	72.59	18.71	23.53	31.61
6	20/10/2016	67.29	39.49	27.95	38.46
7	24/10/2016	52.27	26.61	6.19	18.64
8	27/10/2016	81.58	44.48	14.32	21.45
9	30/10/2016	71.17	33.67	19.39	28.31
10	03/11/2016	64.52	29.52	12.38	18.39
11	07/11/2016	75.60	40.74	8.09	32.64
12	10/11/2016	56.70	30.76	5.40	19.49
13	14/11/2016	78.31	37.41	19.65	26.21
14	17/11/2016	50.11	23.70	15.19	29.38
15	21/11/2016	72.40	34.50	14.20	33.35
16	24/11/2016	86.07	39.49	24.12	23.46
17	28/11/2016	69.32	27.44	17.20	34.52
18	01/12/2016	70.49	37.41	10.45	27.15
19	05/12/2016	62.80	33.67	8.82	15.79
20	08/12/2016	52.58	21.62	12.69	21.26
21	12/12/2016	69.57	30.76	15.92	34.14
22	15/12/2016	88.72	51.55	21.51	39.29
23	19/12/2016	77.51	43.65	18.70	31.57
24	22/12/2016	50.30	29.52	6.19	25.49
25	26/12/2016	80.28	46.56	20.75	38.10
26	29/12/2016	65.63	23.70	13.49	29.47
27	02/01/2017	56.89	25.36	11.37	25.51
28	05/01/2017	69.32	42.40	7.17	14.24
29	09/01/2017	49.31	22.45	5.68	17.24
30	12/01/2017	53.56	27.44	10.90	28.27

Continue ...

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)



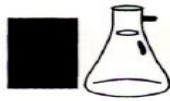
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RESULT OF AMBIENT AIR QUALITY MONITORING

NEAR SHANTIVAN COLONY'S STP					
Sr.No.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$
31	16/01/2017	42.60	20.37	8.90	19.60
32	19/01/2017	60.40	30.35	14.57	21.25
33	23/01/2017	71.17	41.57	16.29	26.14
34	26/01/2017	66.55	28.68	6.50	30.18
35	30/01/2017	52.58	19.54	9.74	18.49
36	02/02/2017	60.27	28.68	16.14	24.90
37	06/02/2017	46.48	20.37	12.83	31.48
38	09/02/2017	56.58	25.36	19.44	28.19
39	13/02/2017	68.58	32.43	7.31	33.19
40	16/02/2017	73.39	39.49	17.58	22.32
41	20/02/2017	50.30	22.45	14.35	25.84
42	23/02/2017	65.69	37.41	11.23	35.30
43	27/02/2017	58.30	19.54	9.80	21.56
44	02/03/2017	67.41	29.52	15.32	30.33
45	06/03/2017	50.30	21.62	13.66	21.60
46	09/03/2017	75.60	37.41	17.92	19.70
47	13/03/2017	68.58	33.67	11.33	24.35
48	16/03/2017	86.38	26.61	14.42	22.31
49	20/03/2017	56.83	23.70	7.14	25.39
50	23/03/2017	82.31	40.74	12.50	17.09
51	27/03/2017	53.62	16.63	9.92	27.98
52	30/03/2017	44.57	15.38	5.41	12.82
	TEST METHOD	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)	Gravimetric- CPCB - Method (Vol.I,May-2011)	IS:5182(Part II):Improved West and Gaeke	IS:5182(Part VI):Modified Jacob & Hochheiser (NaOH-NaAsO2)

*Below detection limit

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)

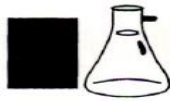
**RESULTS OF NOISE LEVEL MONITORING****Result of Noise level monitoring [Day Time]**

SR. NO.	Name of Location	T1 TERMINAL NR.MARINE BUILDING					
		Result [Leq dB(A)]					
		07/10/2016	08/11/2016	06/12/2016	20/01/2017	17/02/2017	17/03/2017
1	6:00-7:00	58.4	61.9	58.1	59.2	64.2	68.3
2	7:00-8:00	62.4	62	65.1	62.4	67.1	64.4
3	8:00-9:00	65.4	60.7	68.4	62.8	67.8	62.4
4	9:00-10:00	62.5	63.5	61.4	68.4	66.3	68.4
5	10:00-11:00	69.8	69.8	63.4	68.1	70.3	64.4
6	11:00-12:00	72.8	72.5	66.4	63.4	68.3	64.2
7	12:00-13:00	71.6	71.5	62.1	69.8	63.5	68.5
8	13:00-14:00	69.4	65.3	70.4	72.4	67.3	68.4
9	14:00-15:00	70.4	64.8	68.1	74.8	63.6	68.9
10	15:00-16:00	65.1	64.5	65.4	69.8	65.2	72.5
11	16:00-17:00	63.4	68.8	63.4	67.1	68.4	65.3
12	17:00-18:00	62.8	63.4	66.8	62.4	64.2	63.9
13	18:00-19:00	69.4	67.9	62.8	60.4	67.3	66.8
14	19:00-20:00	67.1	71.2	69.1	63.1	70.2	65.4
15	20:00-21:00	65.1	70.8	66.4	61.7	65.2	68.3
16	21:00-22:00	63.2	61.9	62.8	65.4	64.5	64.4
Day Time Limit*		75 Leq dB(A)					

Result of Noise level monitoring [Night Time]

SR. NO.	Name of Location	T1 TERMINAL NR.MARINE BUILDING					
		Result [Leq dB(A)]					
		07/10/2016	08/11/2016	06/12/2016	20/01/2017	17/02/2017	17/03/2017
1	22:00-23:00	65.1	62.9	67.1	63.4	67.3	67.4
2	23:00-00:00	68.1	66.1	65.4	61.7	64.2	65.7
3	00:00-01:00	62.4	63.4	60.4	66.4	65.3	62.5
4	01:00-02:00	59.4	60.8	65.8	59.4	62.1	60.5
5	02:00-03:00	62.1	61.4	64.1	62.1	67.3	64.2
6	03:00-04:00	63.1	63.5	63.8	65.1	66.3	62.7
7	04:00-05:00	62.4	65.8	59.4	62.8	63.9	65.7
8	05:00-06:00	61.7	63.8	60.4	61.8	61.5	63.5
Night Time Limit*		70 Leq dB(A)					

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)

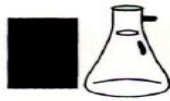
**RESULTS OF NOISE LEVEL MONITORING****Result of Noise level monitoring [Day Time]**

SR. NO.	Name of Location	NEAR FIRE STATION					
		Result [Leq dB(A)]					
	Sampling Date & Time	14/10/2016	11/11/2016	23/12/2016	10/01/2017	14/02/2017	14/03/2017
1	6:00-7:00	66.4	66.9	68.4	68.4	68.4	65.4
2	7:00-8:00	61.4	68.7	65.4	70.4	65	66.3
3	8:00-9:00	68.4	65.4	62.4	65.4	67.3	66.9
4	9:00-10:00	70.4	70	68.1	65.1	63.5	67.4
5	10:00-11:00	69.4	71.4	61.5	69.8	74.2	63.2
6	11:00-12:00	65.4	70.9	73.4	65.2	71.3	62.4
7	12:00-13:00	65.8	67.4	70.4	68.4	69.3	67.4
8	13:00-14:00	62.4	64.5	68.1	71.8	67.1	65.3
9	14:00-15:00	61.7	72.4	66.4	71.4	70.3	62.5
10	15:00-16:00	67.8	71.9	67.4	69.1	65.2	68.4
11	16:00-17:00	62.8	70.6	62.4	63.4	61.3	68.3
12	17:00-18:00	69.4	65.3	63.8	62.8	63.2	68.7
13	18:00-19:00	65.1	64.8	68.4	68.1	65.3	64.3
14	19:00-20:00	66.8	70.2	66.4	62.8	68.2	62.7
15	20:00-21:00	63.7	62.9	62.8	65.1	60.1	65.8
16	21:00-22:00	67.4	66.9	65.1	66.9	65.2	63.6
Day Time Limit*		75 Leq dB(A)					

Result of Noise level monitoring [Night Time]

SR. NO.	Name of Location	NEAR FIRE STATION					
		Result [Leq dB(A)]					
	Sampling Date & Time	14/10/2016	11/11/2016	23/12/2016	10/01/2017	14/02/2017	14/03/2017
1	22:00-23:00	62.1	67.9	68.4	67.2	63.2	63.2
2	23:00-00:00	60.4	63.4	65.1	65.1	65.3	59.4
3	00:00-01:00	58.1	60.9	65.8	62.1	69.3	60.3
4	01:00-02:00	56.4	64.3	65.3	65.8	69.4	60.3
5	02:00-03:00	62.1	62.7	60.4	61.7	67.3	65.3
6	03:00-04:00	61.2	68.8	63.4	61.4	67.3	62.3
7	04:00-05:00	63.4	63.2	68.4	61.4	69.3	60.2
8	05:00-06:00	64.1	61.3	62.4	62.8	65.4	62.4
Night Time Limit*		70 Leq dB(A)					

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)

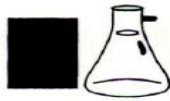
**RESULTS OF NOISE LEVEL MONITORING****Result of Noise level monitoring [Day Time]**

SR. NO.	Name of Location	PUB/ADANI HOUSE					
		Result [Leq dB(A)]					
	Sampling Date & Time	04/10/2016	01/11/2016	20/12/2016	03/01/2017	10/02/2017	21/03/2017
1	6:00-7:00	62.4	62.8	62.5	63.4	65.3	60.3
2	7:00-8:00	65.1	63.5	66.4	60.4	67.8	63.4
3	8:00-9:00	62.4	68.4	69.4	68.4	67.3	62.3
4	9:00-10:00	65.7	64.9	62.4	65.1	70.2	67.4
5	10:00-11:00	67.1	71.2	72.1	72.4	72.3	65.6
6	11:00-12:00	62.8	73.1	70.8	70.5	66.4	68.4
7	12:00-13:00	68.1	67.4	65.4	65.8	66.9	70.4
8	13:00-14:00	63.1	68.6	62.4	63.4	69.3	65.3
9	14:00-15:00	65.1	62.9	68.4	61.5	65.3	69.4
10	15:00-16:00	72.4	66.8	66.4	68.4	63	69.7
11	16:00-17:00	69.4	68.9	63.4	70.4	64.1	67.3
12	17:00-18:00	68.1	65.8	65.1	67.1	62.3	65.3
13	18:00-19:00	65.4	66.1	61.7	67.8	62.4	63.8
14	19:00-20:00	66.1	67.5	68.4	65.1	60.2	64.3
15	20:00-21:00	68.1	67.3	66.7	61.4	64.2	67.4
16	21:00-22:00	62.8	62.8	62.4	62.8	65.1	63.8
Day Time Limit*		75 Leq dB(A)					

Result of Noise level monitoring [Night Time]

SR. NO.	Name of Location	PUB/ADANI HOUSE					
		Result [Leq dB(A)]					
	Sampling Date & Time	04/10/2016	01/11/2016	20/12/2016	03/01/2017	10/02/2017	21/03/2017
1	22:00-23:00	62.1	64.8	65.4	65.1	67.3	67.4
2	23:00-00:00	66.4	65.3	63.4	61.5	67.1	68.3
3	00:00-01:00	62.4	61.4	63.8	63.4	64.2	63.2
4	01:00-02:00	58.7	60.9	68.4	59.5	65.3	60.1
5	02:00-03:00	54.1	62.7	61.4	60.4	68.2	60.4
6	03:00-04:00	59.2	61.7	63.7	60.8	67.2	62.4
7	04:00-05:00	60.4	62	60.4	65.4	62.8	65.3
8	05:00-06:00	61.7	64.8	62.4	64.2	65.4	63.6
Night Time Limit*		70 Leq dB(A)					

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)

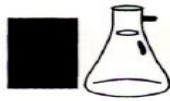
**RESULTS OF NOISE LEVEL MONITORING****Result of Noise level monitoring [Day Time]**

SR. NO.	Name of Location	AIRSTRIP					
		Result [Leq dB(A)]					
		26/10/2016	16/11/2016	21/12/2016	05/01/2017	21/02/2017	15/03/2017
1	6:00-7:00	50.4	54	52.4	52.1	52.4	54.3
2	7:00-8:00	52.4	65.5	56.1	55.1	55.6	51.3
3	8:00-9:00	61.4	61.3	56.4	59.1	61.3	58.4
4	9:00-10:00	59.8	58.9	62.1	62.4	59.5	60.3
5	10:00-11:00	63.4	62.3	59.4	60.4	62.3	62.4
6	11:00-12:00	65.1	54.8	63.4	65.4	55.3	65.3
7	12:00-13:00	62.4	62.8	62.4	62.4	59.5	63.2
8	13:00-14:00	61.8	68.4	62.9	63.8	60.3	68.3
9	14:00-15:00	64.7	57.8	66.4	65.8	60.8	68.3
10	15:00-16:00	68.1	59.3	65.4	68.4	61.4	65.3
11	16:00-17:00	66.4	60	62.7	62.4	58.3	64.2
12	17:00-18:00	67.1	59.6	59.4	61.7	57.3	65.2
13	18:00-19:00	62.4	64.8	59.1	61.5	57.2	61.3
14	19:00-20:00	65.4	61.6	63.4	64.8	57.3	64.2
15	20:00-21:00	63.8	62	61.4	68.4	62.4	63.2
16	21:00-22:00	61.8	65.7	61.7	62.4	60.1	65.3
Day Time Limit*		75 Leq dB(A)					

Result of Noise level monitoring [Night Time]

SR. NO.	Name of Location	AIRSTRIP					
		Result [Leq dB(A)]					
		26/10/2016	16/11/2016	21/12/2016	05/01/2017	21/02/2017	15/03/2017
1	Sampling Date & Time	26/10/2016	16/11/2016	21/12/2016	05/01/2017	21/02/2017	15/03/2017
2	22:00-23:00	58.1	52.1	56.1	56.4	56.4	59.4
3	23:00-00:00	56.4	51.9	58.4	50.7	52.4	54.4
4	00:00-01:00	54.1	50	51.4	57.1	46.6	54.8
5	01:00-02:00	50.4	54.8	51.8	48.7	48.4	58.3
6	02:00-03:00	58.1	54.2	46.5	52.1	48.4	50.3
7	03:00-04:00	52.4	55.7	47.1	52.9	53.4	50.2
8	04:00-05:00	57.1	52.9	50.4	58.1	55.6	51.4
9	05:00-06:00	55.8	55.1	51.8	61.7	58.8	56.4
Night Time Limit*		70 Leq dB(A)					

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)

**RESULTS OF NOISE LEVEL MONITORING****Result of Noise level monitoring [Day Time]**

SR. NO.	Name of Location	NEAR SHANTIVAN STP					
		Result [Leq dB(A)]					
	Sampling Date & Time	20/10/2016	21/11/2016	16/12/2016	23/01/2017	23/02/2017	27/03/2017
1	6:00-7:00	56.1	58.9	56.1	59.4	58.3	58.3
2	7:00-8:00	62.4	59.6	59.7	62.4	60.1	56.5
3	8:00-9:00	59.4	65.4	62.4	63.8	60.4	63.5
4	9:00-10:00	60.8	68.6	62.5	69.8	64.2	68.4
5	10:00-11:00	68.4	64.3	69.5	74.1	67.2	65.2
6	11:00-12:00	65.4	67.5	65.4	70.4	65.2	61.3
7	12:00-13:00	68.1	68.3	62.4	62.5	68.2	67.4
8	13:00-14:00	65.2	68.9	70.4	68.7	67.2	68.3
9	14:00-15:00	65.1	70.1	63.4	68.1	68.7	65.2
10	15:00-16:00	62.8	71.6	68.1	65.2	66.2	64.2
11	16:00-17:00	68.1	70.8	66.4	62.5	62.1	68.9
12	17:00-18:00	62.4	68.4	62.8	65.1	67.2	65.3
13	18:00-19:00	69.4	65.3	59.8	61.4	65.3	66.7
14	19:00-20:00	65.8	69	62.4	63.8	65.1	69.3
15	20:00-21:00	64.2	68.4	58.1	65.4	63.1	62.4
16	21:00-22:00	62.7	67.6	56.8	64.8	64.2	65.7
Day Time Limit*		75 Leq dB(A)					

Result of Noise level monitoring [Night Time]

SR. NO.	Name of Location	NEAR SHANTIVAN STP					
		Result [Leq dB(A)]					
	Sampling Date & Time	20/10/2016	21/11/2016	16/12/2016	23/01/2017	23/02/2017	27/03/2017
1	22:00-23:00	63.4	60.1	62.4	65.4	61.2	64.3
2	23:00-00:00	61.2	61.2	55.4	62.1	65.3	62.4
3	00:00-01:00	59.4	58.4	58.1	58.4	65.8	60.5
4	01:00-02:00	57.1	57.3	57.1	58.1	66.4	62.6
5	02:00-03:00	60.4	63.8	57.9	58.6	62.3	58.3
6	03:00-04:00	63.1	68.9	60.4	60.4	65.1	61.7
7	04:00-05:00	58.1	62.4	61.4	63.7	61.3	63.5
8	05:00-06:00	62.1	60.1	61.8	61.5	61.6	62.7
Night Time Limit*		70 Leq dB(A)					

H. T. Shah
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)



Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

RESULT OF STACK MONITORING

SR. NO.	TEST PARAMETERS	UNIT	STD. LIMIT	THERMIC FLUID HEATER (BITUMEN)	HOT WATER SYSTEM-1	HOT WATER SYSTEM-2	TEST METHOD
OCTOBER 16							
1	Particulate Matter	mg/Nm ³	150	14.63	25.82	21.57	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	5.99	9.59	7.62	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	32.40	33.31	35.47	IS:11255 (Part-VII):2005
NOVEMBER 16							
1	Particulate Matter	mg/Nm ³	150	22.83	32.75	27.63	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	4.02	7.51	8.61	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	31.27	39.76	33.52	IS:11255 (Part-VII):2005
DECEMBER 16							
1	Particulate Matter	mg/Nm ³	150	15.80	28.60	---	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	3.20	5.65	---	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	27.94	34.43	---	IS:11255 (Part-VII):2005
JANUARY 17							
1	Particulate Matter	mg/Nm ³	150	11.72	---	---	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	4.80	---	---	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	35.83	---	---	IS:11255 (Part-VII):2005
FEBRUARY 17							
1	Particulate Matter	mg/Nm ³	150	---	---	---	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	---	---	---	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	---	---	---	IS:11255 (Part-VII):2005
MARCH 17							
1	Particulate Matter	mg/Nm ³	150	18.62	34.34	29.34	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	5.75	6.57	8.54	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	31.56	39.60	34.50	IS:11255 (Part-VII):2005

*Below detection limit

Results on 11 % O₂ Correction when Oxygen is greater than 11 %.**H. T. Shah**
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)



MINIMUM DETECTION LIMIT [MDL]

Water parameter(mg/L)		
Sr. No.	Test parameter	MDL
1	Total Suspended Solids	1
2	Oil & Grease	1
3	BOD	3
4	COD	5
5	Total Dissolved Solids	3
6	Sulphate	0.3
7	Ammonical Nitrogen	0.05
8	Nickel	0.01
9	Phenolic Compound	0.001
10	Fluoride	0.01
11	Copper	0.013
12	Sulphide	0.01
13	Cyanide	0.0001
14	Residual Chlorine	0.1
15	Boron	0.02
16	Insecticides/Pesticides	0.01
17	Nitrate Nitrogen	0.15
18	Phosphorous	0.15
19	Petroleum Hydrocarbon	0.01
20	Lead	0.005
21	Mercury	0.0005
22	Zinc	0.022
23	Cadmium	0.001
24	Arsenic	0.00015
Sediment parameter(mg/kg)		
1	Petroleum Hydrocarbon	0.2

Stack parameter		
Sr. No.	Test parameter	MDL
1	Particulate Matter (mg/Nm3)	10
2	Sulphur Dioxide(ppm)	1.52
3	Oxides of Nitrogen (ppm)	2.65

Ambient Air Parameter		
Sr. No.	Test parameter	MDL
1	Particulate Matter (PM10)	10
2	Particulate Matter (PM 2.5)	10
3	Sulphur Dioxide (SO2) (µg/m3)	5
4	Oxides of Nitrogen (NO2) (µg/m3)	5
5	Benzene as C6H6 (µg/m3)	2
6	Carbon Monoxide as CO (mg/m3)	0.1
7	Hydrocarbon as CH4 (mg/m3)	0.15
8	Hydrogen Sulphide (H2S) (µg/m3)	6

H. T. Shah
Lab Manager



Dr. Arun Bajpai
Lab Manager (Q)

Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

RESULTS OF BORE HOLE WATER

SR. NO	TEST PARAMETERS	UNIT	RESULTS					TEST METHOD
			OPP. DRUB RAILWAY STATION		NEAR PUB BUILDING		SEZ MAIN GATE NEAR FLYOVER BRIDGE	
	GPS Location		N 22° 43.073' S 069° 39.861'		N 22° 46.761' S 069° 40.999'		N 22° 48.446' S 069° 42.238'	
	Sampling Date		18/10/2016	18/01/2017	18/10/2016	18/01/2017	18/10/2016	
	Sampling Time		10:45	11:25	10:25	11:50	9:50	
	Status of Tide		L-09:17 & 1.51 m	H-10:48 & 4.91 m	L-09:17 & 1.51 m	H-10:48 & 4.91 m	L-09:17 & 1.51 m	
			L-21:27 & 0.67 m	L-16:52 & 2.17 m	L-21:27 & 0.67 m	L-16:52 & 2.17 m	L-21:27 & 0.67 m	
1	pH	--	7.57	7.92	7.95	8.11	7.48	IS3025(P11)83Re.02
2	Salinity	mg/L	15.24	22.20	4.58	5.37	0.194	APHA 2520B
3	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)5520D
4	Hydrocarbon	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	GC/GC-MS
5	Lead as Pb	mg/L	0.011	0.012	BDL*	BDL*	BDL*	AAS APHA(22 nd Edi)3111 B
6	Arsenic as As	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA 3114 B
7	Nickel as Ni	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA(22 nd Edi)3111 B
8	Total Chromium as Cr	mg/L	0.02	0.019	0.022	0.018	BDL*	AAS 3111B
9	Cadmium as Cd	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA(22 nd Edi)3111 B
10	Mercury as Hg	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
11	Zinc as Zn	mg/L	0.104	0.93	0.056	0.047	BDL*	AAS APHA(22 nd Edi)3111 B
12	Copper as Cu	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA(22 nd Edi)3111 B
13	Iron as Fe	mg/L	0.098	0.083	0.48	0.37	0.024	AAS APHA(22 nd Edi)3111 B
14	Insecticides/Pesticides	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	GC/GC-MS
15	Depth of Water Level from Ground Level	meter	1.75	1.90	2.20	1.82	2.40	--


H. T. Shah
Lab Manager




Dr. Arun Bajpai
Lab Manager (Q)

Annexure - 5

Cost of Environmental Protection Measures

Sr. No.	Activity	Cost incurred (INR in Lakh)			Budgeted Cost (INR in Lakh)
		2014 - 15	2015 - 16	2016 - 17	2016 - 17
1.	Environmental Study / Audit and Consultancy	29.87	45.45	36.78	49.98
2.	Legal & Statutory Expenses	11.26	3.30	4.76	7.88
3.	Environmental Monitoring Services	23.76	26.80	27.95	32.82
4.	Hazardous Waste Management & Disposal	9.56	34.56	12.52	12.75
5.	Environment Day Celebration	7.01	7.18	6.71	12.00
6.	Treatment and Disposal of Bio-Medical Waste	1.00	1.22	1.27	1.44
7.	Mangrove Plantation	127.97	53.28	46.18	30.00
8.	Mangrove Monitoring & Conservation	36.75	20.36	26.20	40.00
9.	Horticulture Expenses	380.27	434.72	555.00	516.00
10.	O&M of Sewage Treatment Plant and Effluent Treatment Plant (including STP, ETP of Port & SEZ & Common Effluent Treatment Plant)	30.78	18.18	61.50	98.85
11.	Expenditure of Environment Dept. (Apart from above head)	184.91	135.90	131.83	130.32
Total		843.14	837.73	910.70	932.04

Annexure - 6

APSEZL/EnvCell/2016-17/055

Date: 17.02.2017

To,
Regional Officer
Regional Office,
Gujarat Pollution Control Board (East – Kutch),
Sector No. 8, Gandhidham,
Kutch – 370201.

Subject: Submission of compliance to observation/suggestion/instruction made by GPCB officials during inspection.

Reference: GPCB Inspection letter dated 09.02.2017, PCB ID: 17739 (**Annexure – 1**)

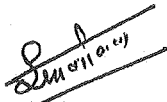
Dear Sir,

With reference to the above mentioned subject, APSEZL is submitting the compliance details of your observations as below:

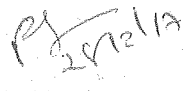
- ✓ **Our Reply against your Observation:** APSEZL will obtain CC&A-Amendment for new Edible Oil storage tanks after getting CTE-Amendment.

APSEZL is submitting the compliances regularly and hope the above mentioned submission is in line with requirement.

Thanking you,
For, **Adani Ports and Special Economic Zone Ltd.**


Authorised Signatory

Copy to: Head Office, Gujarat Pollution Control Board, Gandhinagar – 382010.


Gujarat Pollution Control Board
Sector No. 10 A,
Gandhinagar - 382 010

Adani Ports and Special Economic Zone Ltd
Adani House
PO Box No 1
Mundra, Kutch 370 421
Gujarat, India
Tel +91 2838 25 5000
Fax +91 2838 25 5110
info@adani.com
www.adani.com

APSEZL/EnvCell/2016-16/055

Date: 17.02.2017

To,
✓ **Regional Officer**
Regional Office,
Gujarat Pollution Control Board (East – Kutch),
Sector No. 8, Gandhidham,
Kutch – 370201.

Subject: Submission of compliance to observation/suggestion/instruction made by GPCB officials during inspection.

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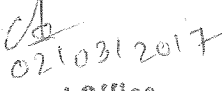
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Thanking you,
For, **Adani Ports and Special Economic Zone Ltd.**


Authorised Signatory

Copy to: Head Office, Gujarat Pollution Control Board, Gandhinagar – 382010.


**Regional Office
Gujarat Pollution Control Board
Kutch (East)**



ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ

આદેશિક કચેરી : કચ્છ (પૂર્વ)

કંડલા પોર્ટ ટ્રસ્ટનું વહીવટી મકાન રૂમ નં. ૨૧૧, ૨૧૬, ૨૧૭ માળ,
સેક્ટર નં. ૮, ગાંધીધામ-૩૭૦૨૦૧, કચ્છ

તપાસ માટે દાખલ થવાની સૂચના (નોટીસ)

પાછી અધિનિયમ ૧૯૭૪ ની કલમ - ૨૩, હવા અધિનિયમ ૧૯૮૧ ની કલમ - ૨૪ અને પર્યાવરણ (સુરક્ષા) અધિનિયમ - ૧૯૮૬ની કલમ-૧૦ હેઠળ બાયો મેડિકલ વેસ્ટ નિયમ-૨૦૦૮ હેઠળ અમોને મળેલ સત્તાની રૂએ અમો નીચે સહી કરનાર અમોને જરૂરી લાગે તેની સહાય લઈને તમામ સમયે નીચેના હેતુઓ માટે આપની જગ્યામાં દાખલ થવાનો અને તપાસ કરવાનો અધિકાર ધરાવીએ છીએ.

- (૧) અમોને સોંપેલા રાજ્ય બોર્ડ/કેન્દ્ર સરકારના કાર્ય બજાવવાના હેતુ માટે
- (૨) આવા કોઈ કાર્યો બજાવવાના છે કે કેમ અને તેમ હોય તો કઈ રીતે બજાવવાના છે અથવા આ અધિનિયમ અથવા તે હેઠળ કરેલા નિયમોની અથવા આ અધિનિયમ હેઠળ બજાવેલી કોઈ નોટીસની, કરેલા કોઈ હુકમની, આદેશની અથવા આપેલા કોઈ અધિકાર પત્રની કોઈ બેગવાઈનું પાલન કરવામાં આવી રહ્યું છે કે પાલન કરવામાં આવ્યું છે કે કેમ તે નક્કી કરવાના હેતુ માટે.
- (૩) કોઈ સાધન સામગ્રી, ઔદ્યોગિક પ્લાન્ટ રેકર્ડ, રજીસ્ટર, દસ્તાવેજ અથવા અન્ય કોઈ મહત્વની વસ્તુની તપાસ કરવા અને તેની કસોટી કરવાના હેતુ માટે અથવા જે જગ્યામાં તેને એમ માનવાને કારણ હોય કે આ કાયદા કે તે હેઠળ કરેલા નિયમો મુજબ કોઈ ગુનો કરવામાં આવ્યો છે, અથવા થવાની તૈયારીમાં છે, તેવી કોઈ જગ્યાની ઝડપી લેવા માટે અને તેને એમ માનવાને કારણ હોય કે આ કાયદા કે તે હેઠળ કરેલ નિયમો હેઠળ કરેલ શિક્ષાપાત્ર કોઈ ગુનો કર્યાનો પુરાવો, તેવા સાધન સામગ્રી ઔદ્યોગિક પ્લાન્ટ, રેકર્ડ, રજીસ્ટર, દસ્તાવેજ અથવા અન્ય મહત્વની વસ્તુ કબજે લેવા માટે અમે નીચે જણાવેલ સમયે દાખલ થઈએ છીએ.

ઉદ્યોગ/.....માં દાખલ થવાનો સમય : સવારના / સાંજના ૧૫-૧૫ વા. ૧/૦૨/૨૦૧૭

ર. પાસે સાથે સહાય માટે નીચેની વ્યક્તિઓ પણ છે.

૧. R. R. Viradia (AEE)

૨. _____

૩. _____

સહાયક કચ્છ : -

(1) CTE amendment now
GIL CAT amendment
જાણ્ય.

પ્રતિ,
Adani Ports & Special Economic
Zone Ltd. (Gas Storage Terminal
at Navinal Island only)

નકલ મળેલ છે. Tal - Mundra, Kutch

આ સૂચના (નોટીસ) મેળવનારની સહી

સહી : R.H. Jivani

નામ : R. H. Jivani

હોદ્દો : S.O.

Santosh Parmar
Asst Manager.

Annexure - 7

Annexure - 7

Organogram of Environment Management Cell, APSEZ, Mundra

