

Joshi Technologies International, Inc (JTI)

Compliance Report (July-Dec 2023) Wavel Oil Field

EC No: IA-J-11011/92/2020-IA-II(I) dated 31/10/2022



1 INTRODUCTION

1.1 Location of the Block

Block WAVEL geographically located in Gandhinagar Districts of Gujarat.

Location details are as follows:

- Taluka: Gandhinagar
- Districts: Gandhinagar
- State: Gujarat

1.2 Background

As per the Schedule attached to the EIA Notification 2006, as amended till date, project covered under Project or Activity, 1(b), namely Offshore and Onshore Oil and Gas Exploration, Development and Production requires prior Environment Clearance (EC) from the Impact Assessment Authority (IAA), i.e. the Ministry of Environment and Forests (MoEF), New Delhi.

MoEF has granted Environment Clearance for drilling 2 exploratory wells in the Block with further extension vide its letter F. No. **IA-J-11011/92/2020-IA-II(I) dated 31/10/2022**

After Obtaining EC from MoEF and NOC from Gujarat Pollution Control Board, JTI started drilling of well mentioned in **Table 1-1**.

1 well was drilled from the period of March 23 to April-2024 and is under oil and gas production.

Table 1-1: Location Details of Wells


Well Name	Latitude (N)	Longitude (E)	Drilling started	Drilling Completion
WA#08	23°12'7.28"	72°39'18.38"	27.03.2023	13.04.2023

2 COMPLIANCE TO CONDITIONS OF ENVIRONMENTAL CLEARANCE



The Ministry of Environment and Forests had issued vide its letter **EC No: IA-J-11011/92/2020-IA-II(I) dated 31/10/2022** Copy of EC is attached.

Table 2-1: Compliance to Condition Mention in EC

S No	Condition	Compliance
Specific Condition		
1	The project proponent shall prepare a site-specific conservation plan and wildlife management plan in case of the presence of Schedule-1 species in the study area, as applicable to the project, and submit to Chief Wildlife Warden for approval. The recommendations shall be implemented in consultation with the State Forest/Wildlife Department in a time bound manner.	JTI has submitted the site-specific conservation plan to the Chief Conservator of Forest in Gandhinagar on 28/06/2022. Once we receive any recommendations, we will promptly implement them. Copy of conservation plan is attached as Annexure1 .
2	No drilling activities shall be carried out within 500 m from the water bodies.	Complied. Sabarmati river is 1.5km away from site.
3	The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project shall be implemented.	We hereby confirm that we are in compliance with all the stipulated environmental protection measures and safeguards.
4	No pipelines or its part shall be laid in the Forest land/Protected Area without prior permission/approval from the Competent Authority of Forest Department.	No pipelines or their components have been installed in forested areas or protected zones. The drilled well is exclusively linked by an underground pipeline within the JTI premises.

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5	Total fresh water requirement shall not exceed 20 m ³ /day and will be met through Tankers Supply. Prior permission shall be obtained from the concerned regulatory authority.	<p>Total water requirement was not exceeded 20 m³/day. Water requirement is mention below table:</p> <table border="1" data-bbox="451 264 1515 453"> <thead> <tr> <th data-bbox="451 264 565 405">Well</th> <th data-bbox="565 264 784 405">Water Consumption for Drilling (M3/day)</th> <th data-bbox="784 264 1008 405">Water Consumption for Domestic (M3/day)</th> <th data-bbox="1008 264 1154 405">Fire Fighting s/m</th> <th data-bbox="1154 264 1292 405">No. Of Drilling Days</th> <th data-bbox="1292 264 1515 405">Water Consumption / Day (M3)</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 405 565 453">WA#8</td> <td data-bbox="565 405 784 453">16</td> <td data-bbox="784 405 1008 453">2.5</td> <td data-bbox="1008 405 1154 453">0.8</td> <td data-bbox="1154 405 1292 453">20</td> <td data-bbox="1292 405 1515 453">19.3</td> </tr> </tbody> </table>	Well	Water Consumption for Drilling (M3/day)	Water Consumption for Domestic (M3/day)	Fire Fighting s/m	No. Of Drilling Days	Water Consumption / Day (M3)	WA#8	16	2.5	0.8	20	19.3
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6	The project proponent will treat and reuse the treated water within the facility premises and no waste or treated water shall be discharged outside the premises. Mobile ETP coupled with RO shall be installed to reuse the treated water in drilling system. Mobile STP shall also be installed for treatment of sewage. Size of the waste shall be equal to the whole volume+ volume of drill cutting and volume of discarded mud if any. Two feet free board may be left to accommodate rain water. There shall be separate storm water channel and rain water shall not be allowed to mix with waste water. Alternatively, if possible pit less drilling be practiced instead of above.	<p>No waste water had been discharged outside the premises. Domestic waste water had been treated through mobile STP during the drilling of well.</p> <p>Waste water along with drill cuttings have been collected in HDPE lined pit and allowed to be evaporated.</p> <p>The company constructed the storm water channel to prevent the rainwater (if any) to avoid mixing with waste water.</p> 												

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7	As proposed, produced water generated after drilling of proposed wells shall be separated at installation located at, Indroda Taluka and District Gandhinagar and transported to JTI's GGS located at Village Rasikpura, Taluka and District Kheda via road tanker for further treatment in ETP (200 KLPD) and treated effluent is injected into re-injection well. Treated effluent shall meet the water quality standards for re-injection well as per the CPCB/SPCB guidelines. PP shall monitor water quality of treated effluent regularly and maintain records.	<p>The produced water from drilled wells is presently separated at the EPS Wavel of JTI's installation in Indroda, Taluka, and District Gandhinagar. It is then transported to JTI's GGS in Village Rasikpura, Taluka, and District Kheda via road tanker for further treatment in the 200KLPD-capacity Effluent Treatment Plant (ETP). The treated effluent is subsequently injected into a re-injection well.</p> <p>The treated effluent meets the water quality standards specified by the CPCB or SPCB guidelines for re-injection wells. JTI is regularly monitoring the treated effluent's water quality and maintaining comprehensive records of the monitoring results.</p> <p>The treated effluent at JTI GGS Dholka is analyzed by M/s. Kadam Environmental Consultants (NABL accredited) (NABL Certification No: TC-7099, Issue Date: 27-03-2022 Valid Till: 26-03-2024) Certificate attached as Annexure-2 and important parameters are listed below; and reports are attached as in Annexure 3.</p> <table border="1" data-bbox="423 562 1295 1119"> <thead> <tr> <th>Month</th> <th>PH</th> <th>O&G</th> <th>SS</th> </tr> </thead> <tbody> <tr> <td>May 2023</td> <td>6.09</td> <td>1.5</td> <td>7</td> </tr> <tr> <td>June 2023</td> <td>7.72</td> <td>1.2</td> <td>54</td> </tr> <tr> <td>July 2023</td> <td>7.68</td> <td>1.3</td> <td>51</td> </tr> <tr> <td>August 2023</td> <td>7.43</td> <td>1.6</td> <td>15</td> </tr> <tr> <td>Sep 2023</td> <td>8.01</td> <td>1.4</td> <td>26</td> </tr> <tr> <td>Oct 2023</td> <td>7.54</td> <td>1.6</td> <td>21</td> </tr> <tr> <td>Nov 2023</td> <td>7.51</td> <td>1.4</td> <td>9</td> </tr> <tr> <td>Dec 2023</td> <td>8.06</td> <td>1.2</td> <td>15</td> </tr> </tbody> </table>	Month	PH	O&G	SS	May 2023	6.09	1.5	7	June 2023	7.72	1.2	54	July 2023	7.68	1.3	51	August 2023	7.43	1.6	15	Sep 2023	8.01	1.4	26	Oct 2023	7.54	1.6	21	Nov 2023	7.51	1.4	9	Dec 2023	8.06	1.2	15
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8	During production, storage and handling, the fugitive emission of methane, if any, shall be monitored using Infra-red camera/ appropriate technology.	Yes. During production, storage, and handling, any fugitive emission of methane was monitored using fixed type gas detection system and also using portable gas detector daily at site. This monitoring is done as per Oil Mines Regulation 2017 and records for the same is maintained at control room. Copy of such records is attached for your reference in Annexure 4 .																																				
9	The project proponent also to ensure trapping/storing of the CO2 generated, if any, during the process and handling.	We wish to convey that the Wavel field has minimal gas, primarily utilized for internal consumption, resulting in negligible CO2 emissions. Additionally, the three SRP wells are operated using electric motors, contributing to zero CO2 emissions. Therefore, there is No scope for the CO2 trapping/storing.																																				
10	Approach road shall be made pucca to minimize generation of suspended dust.	<p>The drill site was situated adjacent to the existing paved road, eliminating the necessity for preparation. Furthermore, we conducted measurements and analysis of PM 10 & PM 2.5, and the results are outlined below. The detailed report is attached in the Annexure 5.</p> <table border="1" data-bbox="423 1734 1555 1892"> <thead> <tr> <th>Well Site</th> <th>Date of monitoring</th> <th>PM10 (µg/m³)</th> <th>PM2.5 (µg/m³)</th> </tr> </thead> <tbody> <tr> <td colspan="2">Permissible Limit as per G.S.R. No. 826(E) dated 16th November, 2009</td> <td>100 (24 Hrs.)</td> <td>60 (24 Hrs.)</td> </tr> <tr> <td>WA#8</td> <td>10.04.2023</td> <td>59</td> <td>28</td> </tr> </tbody> </table>	Well Site	Date of monitoring	PM10 (µg/m ³)	PM2.5 (µg/m ³)	Permissible Limit as per G.S.R. No. 826(E) dated 16th November, 2009		100 (24 Hrs.)	60 (24 Hrs.)	WA#8	10.04.2023	59	28																								
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11	<p>The project proponent shall make all arrangements for control of noise from the drilling activity. Acoustic enclosure shall be provided for the DG sets along with the adequate stack height as per CPCB guidelines.</p>	<p>Yes. The company made the arrangements for control of noise from the drilling activity by providing DG set with acoustic enclosures.</p> <p>Monitoring report of Noise from is as below. Monitoring was carried out by NABL accredited laboratory of Kadam Environmental consultants.</p> <p>(NABL Certification No: TC-7099, Issue Date: 27-03-2022 Valid Till: 26-03-2024) Certificate attached as Annexure-2 and result are listed below; and reports are attached as in Annexure 6.</p> <table border="1" data-bbox="423 388 1555 779"> <thead> <tr> <th rowspan="2">Location</th> <th colspan="2">WA#8</th> </tr> <tr> <th>Day Time dB(A)</th> <th>Night Time dB(A)</th> </tr> </thead> <tbody> <tr> <td>Industrial category Permissible limit (dB(A) Leq*)</td> <td>75.0</td> <td>70.0</td> </tr> <tr> <td>Maximum</td> <td>72.9</td> <td>58</td> </tr> <tr> <td>Minimum</td> <td>50.6</td> <td>46.1</td> </tr> <tr> <td>Average</td> <td>64.8</td> <td>49.8</td> </tr> </tbody> </table>	Location	WA#8		Day Time dB(A)	Night Time dB(A)	Industrial category Permissible limit (dB(A) Leq*)	75.0	70.0	Maximum	72.9	58	Minimum	50.6	46.1	Average	64.8	49.8
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12	<p>The company shall construct the garland drain to prevent runoff of any oil containing waste into the nearby water bodies. Separate drainage system shall be created for oil contaminated and non-oil contaminated.</p>	<p>Yes. The company constructed the garland drain all around the drilling site to prevent runoff of any oil containing waste into the nearby water bodies.</p> 																	
13	<p>Drill cuttings separated from drilling fluid shall be adequately washed and disposed in HDPE lined pit. Waste mud shall be tested for hazardous contaminants and disposed according to HWMH Rules, 2016.</p> <p>No effluent/drilling mud shall be discharged/disposed off into nearby surface water bodies. The company shall comply with the guidelines for disposal of solid waste, drill cutting</p>	<p>Yes. Drilling wastewater including drill cuttings wash water was collected in disposal pit lined with HDPE lining for solar evaporation.</p>  <p>Yes. The company has complied with the guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation notified vide GSR.546 (E) dated 30th August 2005.</p> <p>Drilling fluid was discharged into HDPE lined pit for evaporation.</p> <p>Waste water was analyzed by M/sf Kadam Environmental consultants.</p> <p>(NABL Certification No: TC-7099, Issue Date: 27-03-2022 Valid Till: 26-03-2024) Certificate attached as Annexure-2 and result are listed below; and reports are attached as in Annexure 7.</p>																	

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		Well No.	pH (scale)	TDS (mg/l)	SS (mg/l)	COD (mg/l)	BOD (mg/l)	Oil & Grease (mg/l)
	and drilling fluids for onshore drilling operation notified vide GSR.546(E) dated 30th August, 2005.	WA#8	8.01	1832	22	<5	<2	<1
14	<p>Oil spillage prevention and mitigation scheme shall be prepared. In case of oil spillage/contamination, action plan shall be prepared to clean the site by adopting proven technology.</p> <p>The recyclable waste (oily sludge) and spent oil shall be disposed of to the authorized recyclers.</p>	<p>Yes. For oil spillage prevention scheme was prepared which is mention below are:</p> <ul style="list-style-type: none"> ➤ Garland drain was constructed all around the well pad to prevent runoff of any oil containing waste into nearby water bodies and separate drainage system was created for collection and disposal. ➤ All chemicals, Diesel & lube oils used for drilling site were kept in the secondary containments. ➤ To control the minor spillage from machineries (DG Set, Compressors) were taken care by containment tray. <p>No oily sludge was generated during drilling. Spent oil was used as lubricant at site.</p>						
15	<p>The project proponent shall take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed.</p> <p>At fixed installations or plants use of ground flare shall be explored. At the place of ground flaring, the overhead flaring stack with knockout drums shall be installed to minimize gaseous emissions during operation.</p>	<p>Yes. The Company took necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. Specific Drilling Emergency Response Plan was developed to control prevent fire hazards, containing oil spill and other hazards. Environment Management Plan was developed along with EIA for soil remediation in case any oil spill occurred at site. But no soil contamination was observed at any drill site.</p> <p>During drilling there was no Oil and gas at the surface and hence No ground flaring was done.</p>						
16	<p>The project proponent shall develop a contingency plan for H2S release including all necessary aspects from evacuation to resumption of normal operations. The workers shall be provided with personal H2S detectors in locations of high risk of exposure along with self-containing breathing apparatus..</p>	<p>The Wavel Oil field is characterized as a Sweet oil field, and since its discovery in the 1960s, there has been no presence of H2S.</p> <p>However, Gas detectors were installed at the drilling site and despite having the same, H2S was not detected.</p>						
17	<p>Blow Out Preventer system shall be installed to prevent well blowouts during drilling operations.</p>	<p>During drilling operations, a suitable Blow Out Preventer (BOP) system was employed to prevent blowouts. The Geo Technical Order (GTO) for each well was prepared and readily available before commencing drilling. Additionally, the drilling fluid's specific gravity was carefully maintained throughout the drilling process, with monitoring being carried out by the Mud Engineering Services and the JTI company man.</p>						

S No	Condition	Compliance
18	<p>On completion of the project, necessary measures shall be taken for safe plugging of wells with secured enclosures to restore the drilling site to the original condition. The same shall be confirmed by the concerned regulatory authority from environment safety angle. In case of hydrocarbon not found economically viable, a full abandonment plan shall be implemented for the drilling site in accordance with the applicable DGH / Indian Petroleum Regulations. After completion of drilling of any well, the owner or operator shall restore the well site, remove or fill all pits used to contain produced fluids or industrial waste and remove all drilling supplies and equipment not needed for production.</p>	<p>After completion of drilling well has been proved to be oil producer. There was no dry well as such plugging of the well and abandonment plan as per applicable Indian Petroleum Regulations was not required to be implemented.</p> <p>Nevertheless, we have diligently prepared the Site Restoration and well abandonment plan for all the wells in the Wavel field, ensuring it aligns with the guidelines set forth by the Ministry of Petroleum, OISD & DGMS and the DGH (Directorate General of Hydrocarbons). Furthermore, we have allocated separate funds each year to support the implementation of this plan as per guidelines.</p>
19	<p>As per the Ministry's OM dated 30.09.2020 superseding the OM dated 01.05.2018 regarding the Corporate Environmental Responsibility (Rs. 0.44 Crores), and as per the action plan proposed by the project proponent to address the socio-economic and environmental issues in the study area, the project proponent, as committed, shall provide education funds in technical training centres/ support in nearby village's schools, support in health care facilities, drinking water supply and funds for miscellaneous activities like solar street lights, battery, solar panel etc., in the nearby villages. The action plan shall to</p>	<p>Yes. The company is spending amount each year and sufficient budgetary provision is being made every year for health improvement, education, water and electricity supply etc. in and around the project.</p> <p>Activities were carried out in the nearby villages as follows;</p> <ul style="list-style-type: none"> ➤ The infrastructure development work was done for Primary schools; total expenditure was ₹ 23.0 Lac. ➤ Road repair work was done; expenditure was ₹ 7.0 Lac. ➤ Happy Nari sanitary napkin vending machines; costing was ₹ 4.0 Lac. ➤ Infrastructure development works were done costing ₹ 2.0 Lac. ➤ Street Light was installed costing: ₹ 2.25 Lac ➤ Yogo workshop was carried out for local people as awareness: ₹ 2.10 Lac ➤ Created Drinking water facility in the Prathamik shala: costing ₹ 9.40 Lac <p>For the Socio-economic growth of the local villagers & health improvement, company is doing works under such categories regularly.</p>

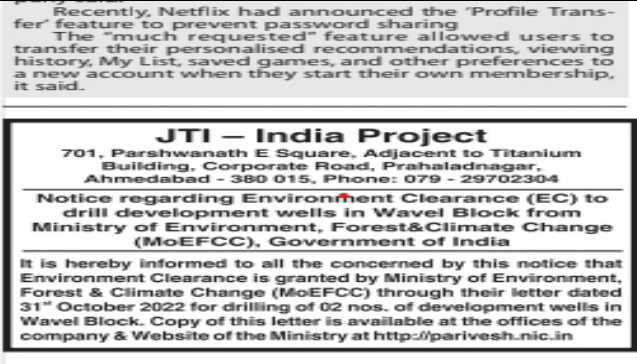

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	be completed within 1 year as proposed.																																																					
20	No lead acid batteries shall be utilized in the project/site.	Yes. No lead acid batteries were utilized at the site.																																																				
21	Occupational health surveillance of the workers shall be carried out as per the prevailing Acts and Rules.	<p>Yes. Occupational Health Surveillance of workers were carried out as per the DGMS requirement i.e. as per FORM-0, sample FORM-0 in Annexure 8.</p> <table border="1" data-bbox="423 464 1557 1234"> <thead> <tr> <th colspan="6" data-bbox="423 464 1557 520">Contractor Medical Check-up Details</th> </tr> <tr> <th data-bbox="423 520 526 625">Sr. No.</th> <th data-bbox="526 520 721 625">Name</th> <th data-bbox="721 520 971 625">Designation</th> <th data-bbox="971 520 1162 625">Medical Check-up Date</th> <th data-bbox="1162 520 1373 625">Details of the Investigation</th> <th data-bbox="1373 520 1557 625">Occupational Health Issues</th> </tr> </thead> <tbody> <tr> <td data-bbox="423 625 526 680">1</td> <td data-bbox="526 625 721 680">Kalesh Panikar</td> <td data-bbox="721 625 971 680">Mines Manager</td> <td data-bbox="971 625 1162 680">1&2/04/2021</td> <td data-bbox="1162 625 1373 680">1-Lung Function Test</td> <td data-bbox="1373 625 1557 680">Nil</td> </tr> <tr> <td data-bbox="423 680 526 732">2</td> <td data-bbox="526 680 721 732">Rajesh Sodagar</td> <td data-bbox="721 680 971 732">Installation Manager</td> <td data-bbox="971 680 1162 732">1&2/04/2021</td> <td data-bbox="1162 680 1373 732">2-Cardiological Assessment</td> <td data-bbox="1373 680 1557 732">Nil</td> </tr> <tr> <td data-bbox="423 732 526 785">3</td> <td data-bbox="526 732 721 785">Jayanti Parmar</td> <td data-bbox="721 732 971 785">Safety Officer</td> <td data-bbox="971 732 1162 785">1&2/04/2021</td> <td data-bbox="1162 732 1373 785">3-Neurological Assessment</td> <td data-bbox="1373 732 1557 785">Nil</td> </tr> <tr> <td data-bbox="423 785 526 837">4</td> <td data-bbox="526 785 721 837">Sagar Pawar</td> <td data-bbox="721 785 971 837">Shift Engineer</td> <td data-bbox="971 785 1162 837">1&2/04/2021</td> <td data-bbox="1162 785 1373 837">4-Chest Radiograph</td> <td data-bbox="1373 785 1557 837">Nil</td> </tr> <tr> <td data-bbox="423 837 526 890">6</td> <td data-bbox="526 837 721 890">Paawan Raina</td> <td data-bbox="721 837 971 890">Shift Engineer</td> <td data-bbox="971 837 1162 890">1&2/04/2021</td> <td data-bbox="1162 837 1373 890">5- Platelets Audiometry</td> <td data-bbox="1373 837 1557 890" rowspan="3">NIL</td> </tr> <tr> <td data-bbox="423 890 526 942">6</td> <td data-bbox="526 890 721 942">Devang Pandya</td> <td data-bbox="721 890 971 942">Material Manager</td> <td data-bbox="971 890 1162 942">12/10/2022</td> <td data-bbox="1162 890 1373 942">6-Lipid Profile</td> </tr> <tr> <td data-bbox="423 942 526 995"></td> <td data-bbox="526 942 721 995"></td> <td data-bbox="721 942 971 995"></td> <td data-bbox="971 942 1162 995"></td> <td data-bbox="1162 942 1373 995">7- Blood Investigation (Urea, Creatine, Tc, Hb, TC, DC, ESR, 8- Urine 9-Stool</td> </tr> </tbody> </table>	Contractor Medical Check-up Details						Sr. No.	Name	Designation	Medical Check-up Date	Details of the Investigation	Occupational Health Issues	1	Kalesh Panikar	Mines Manager	1&2/04/2021	1-Lung Function Test	Nil	2	Rajesh Sodagar	Installation Manager	1&2/04/2021	2-Cardiological Assessment	Nil	3	Jayanti Parmar	Safety Officer	1&2/04/2021	3-Neurological Assessment	Nil	4	Sagar Pawar	Shift Engineer	1&2/04/2021	4-Chest Radiograph	Nil	6	Paawan Raina	Shift Engineer	1&2/04/2021	5- Platelets Audiometry	NIL	6	Devang Pandya	Material Manager	12/10/2022	6-Lipid Profile					7- Blood Investigation (Urea, Creatine, Tc, Hb, TC, DC, ESR, 8- Urine 9-Stool
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22	Oil content in the drill cuttings shall be monitored and report & shall sent to the Ministry's Regional Office.	<p>Yes. Oil content in drill cutting were monitored and analyzed by M/s. Kadam Environmental Consultants (NABL Certification No: TC-7099, Issue Date: 27-03-2022 Valid Till: 26-03-2024) Certificate attached as Annexure-2</p> <p>Oil Content in Drill cuttings was less than 10mg/kg and report is attached as in Annexure 9.</p> <table border="1" data-bbox="423 1472 1474 1591"> <thead> <tr> <th data-bbox="423 1472 548 1545">Well</th> <th data-bbox="548 1472 748 1545">Date of Sampling</th> <th data-bbox="748 1472 954 1545">Permissible Limit</th> <th data-bbox="954 1472 1284 1545">Test Method</th> <th data-bbox="1284 1472 1474 1545">Result (gm/kg)</th> </tr> </thead> <tbody> <tr> <td data-bbox="423 1545 548 1591">WA#8</td> <td data-bbox="548 1545 748 1591">10.04.2023</td> <td data-bbox="748 1545 954 1591">N.A.</td> <td data-bbox="954 1545 1284 1591">APHA: (5520 B) 23rd Edition</td> <td data-bbox="1284 1545 1474 1591">0.8</td> </tr> </tbody> </table>	Well	Date of Sampling	Permissible Limit	Test Method	Result (gm/kg)	WA#8	10.04.2023	N.A.	APHA: (5520 B) 23rd Edition	0.8																																										
Well	Date of Sampling	Permissible Limit	Test Method	Result (gm/kg)																																																		
WA#8	10.04.2023	N.A.	APHA: (5520 B) 23rd Edition	0.8																																																		
23	The project proponent shall prepare operating manual in respect of all activities, which would cover all safety & environment related issues and measures to be taken for protection. One set of environmental manual shall be made available at the drilling site/ project site.	<p>Yes. Company has own HSE department which include the following manuals;</p> <ol style="list-style-type: none"> 1. SOP for BOP Control Unit 2. SOP for Carrier Engine 3. SOP for Casing Line Wire Rope 4. SOP for DG Engine 5. SOP for Generator 6. SOP for Mud Pump Engine 7. SOP for Mud Pump 8. SOP for Trip Tank 																																																				

S No	Condition	Compliance
	<p>Awareness shall be created at each level of the management.</p> <p>All the schedules and results of environmental monitoring shall be available at the project site office. Remote monitoring of site should be done.</p>	<p>9. SOP for Welding Set 10. Emergency Response Plan 11. Legal Register 12. SOP for Standard Safety Practice</p> <p>During the drilling following additional SOPs are being followed;</p> <ol style="list-style-type: none"> 1- SHESR-101 Corporate Standards for PPE. 2- SHESR-102 SHESR Master 3- SHESR-103 Occupational Health & Industrial hygiene Manual. 4- SHESR-104 Environment Management Plan 5- SHESR-105 Hazard Management Process 6- SHESR-106 Emergency Response Plan 7- SHESR-107 Legal Register 8- SHESR-108 Accident Incident Reporting and Investigation. 9- SHESR-109 Road Safety Manual 10- SHESR-110 Risk & Env. Aspect Register 11- SHESR-111 Drilling & Workover SWP Manual 12- SHESR-112 Ground Disturbance Manual <p>An Awareness Session on SHESR Management System has been given to corporate and field level employees.</p> <p>The Results of environment monitoring of all site are available at project site and head office</p>
24	<p>PP shall sensitize and create awareness among the people working within the project area as well as its surrounding area on the ban of Single Use Plastic in order to ensure the compliance of Notification published by MOEFCC on 12th August, 2021. A report along with photographs on the measures taken shall also be included in the six-monthly compliance report being submitted to concerned authority.</p>	<p>We consistently organize drives in our installation on occasions like Republic Day and Independence Day, and attached are occurrences for your reference. This highlights the ongoing efforts to support the justification for implementing a ban on single-use plastics Please see attached report on the same as Annexure 10.</p> <p style="text-align: center;">ઈન્દ્રોડા ખાતે જનજાગૃતિ કાર્યક્રમ યોજાયો</p>  <p>ગાંધીનગર કોર્પોરેશન વિસ્તારમાં સમાવિષ્ટ ઈન્દ્રોડા ગામમાં જનજાગૃતિ કાર્યક્રમનું આયોજન કરવામાં આવ્યું હતું. જે અંતર્ગત પ્લાસ્ટિકનો ઉપયોગ નહીં કરવા અંગેના લોકોએ શપથ ગ્રહણ કર્યા હતા. આ પ્રસંગે ગ્રામજનો તેમજ શાળાના વિદ્યાર્થીઓ ઉપસ્થિત રહ્યા હતા અને કાર્યક્રમમાં જોડાયા હતા.</p>
GENERAL CONDITIONS		

S No	Condition	Compliance								
1	<p>No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment & Forests.</p> <p>In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any</p>	<p>Noted, No further expansion shall be carried out without prior approval from MoEF&CC other than mentioned in the current accorded EC.</p> <p>Ministry of Environment & Forests will be informed and prior approval regarding any modification in the project</p>								
2	<p>The energy source for lighting purpose shall be preferably LED based, or advanced having preference in energy conservation and environment betterment.</p>	<p>All the lights in the EPS Wavel are LED based and with flame proof.</p> 								
3	<p>The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under the Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).</p>	<p>Yes. The overall noise levels in and around the plant area was kept well within the standards by providing noise control measures including acoustic enclosures on DG set. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (night time).</p> <p>The Noise monitoring were carried out by M/s. Kadam Environmental Consultants (NABL accredited) (NABL Certification No: TC-7099, Issue Date: 27-03-2022 Valid Till: 26-03-2024) Certificate attached as Annexure-2 and result of each site are listed below; and reports are attached as in Annexure 6.</p> <table border="1" data-bbox="423 1682 1555 1936"> <thead> <tr> <th data-bbox="423 1682 870 1745" rowspan="2">Location</th> <th colspan="2" data-bbox="870 1682 1555 1745">WA#8</th> </tr> <tr> <th data-bbox="870 1745 1179 1850">Day Time dB(A)</th> <th data-bbox="1179 1745 1555 1850">Night Time dB(A)</th> </tr> </thead> <tbody> <tr> <td data-bbox="423 1850 870 1936">Industrial category Permissible limit (dB(A) Leq*)</td> <td data-bbox="870 1850 1179 1936">75.0</td> <td data-bbox="1179 1850 1555 1936">70.0</td> </tr> </tbody> </table>	Location	WA#8		Day Time dB(A)	Night Time dB(A)	Industrial category Permissible limit (dB(A) Leq*)	75.0	70.0
Location	WA#8									
	Day Time dB(A)	Night Time dB(A)								
Industrial category Permissible limit (dB(A) Leq*)	75.0	70.0								

S No	Condition	Compliance		
		Maximum	72.9	58
		Minimum	50.6	46.1
		Average	64.8	49.8
4	<p>The company shall undertake all relevant measures for improving the socioeconomic conditions of the surrounding area. CER activities shall be undertaken by involving local villages and administration and shall be implemented. The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.</p>	<p>We consistently implement initiatives aimed at enhancing the socioeconomic conditions of the surrounding areas. These include empowering women through education and training in various courses such as beauty parlor, tailoring, handcraft workshops, yoga workshops, first aid, dental camps, and distributing permanent sanitary pads free of cost in villages. Additionally, we have plans to conduct the following initiatives:</p> <ul style="list-style-type: none"> • Students of class 5-6 [2 villages] <ol style="list-style-type: none"> 1. Good touch- bad touch 2. Hygiene 3. Healthy eating 4. Diseases due to unhygienic behavior • Students of [6-8] 2 villages <ol style="list-style-type: none"> 1. Good touch bad touch 2. Health and hygiene 3. Diseases due to unhealthy, unhygienic Behavior 4. Early pregnancy 5. Multiple pregnancy at early age • Woman [20+yrs] <ol style="list-style-type: none"> 1. Health and hygiene 2. Urine infection 3. Unhealthy and unhygienic Behavior causes. 4. Various types of cancer 5. Outline on breast, oral and cervical cancer 		
5	<p>The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/ pollution control measures shall not be diverted for any other purpose.</p>	Noted.		
6	<p>A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zilla Parishad/Municipal</p>	<p>Yes. A copy of clearance letter was sent by the proponent to concerned from whom suggestions / representations, were received while processing the proposal.</p> <p>Environment Clearance letter was sent to all the concerned government departments also.</p>		

S No	Condition	Compliance
	Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.	
7	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF, the respective Zonal Office of CPCB and the GPCB. The Regional Office of this Ministry /CPCB / GPCB shall monitor the stipulated conditions. Environmental Clearance and six monthly compliance status reports shall be posted on the website of the company.	<p>The Environmental Clearance (EC) was issued on October 31, 2022, and the well drilling commenced in April 2023. This marks the initial six-monthly compliance report following the drilling of the well. We hereby submit the compliance report to IRO, Gandhinagar, and GPCB Regional Office, Gandhinagar, in accordance with the prescribed guidelines.</p> <p>The report will soon be made available on our website.</p>
8	The environmental statement for each financial year ending 31 st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail	Complied and Form-V has been uploaded on the GPCB online site at respective XGN ID.
9	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are	Information regarding EC accorded for the project was published in newspapers in English as well as Vernacular languages on 7/11/2022. Please see the pictures below.

S No	Condition	Compliance
	<p>available with the GPCB and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office.</p>	 
10	<p>The project authorities shall inform the Regional Office 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 the project.</p>	<p>Complied and noted.</p>
11	<p>This Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, if any, as may be applicable to this project.</p>	<p>Noted.</p>
12	<p>The Ministry reserves the right to stipulate additional conditions, if found necessary at subsequent stages and the project proponent</p>	<p>Noted.</p>

S No	Condition	Compliance
	shall implement all the said conditions in a time bound manner. The Ministry may revoke or suspend the environmental clearance, if implementation of any of the above conditions is not found satisfactory.	
13	Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.	Noted.
14	Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Noted.
15	The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 read with subsequent amendments therein.	Noted.

Date: 06.06.2022

To,
The Chief Conservator of Forest,
Gandhinagar

Sub: Conservation plan approval for Drilling of Infill Development wells in Wavel field in Gandhinagar Taluka in Gandhinagar District, Gujarat

Dear Sir,

We, Joshi Technologies International Inc -India Project is planning for Drilling of Infill Development wells in Wavel field in Gandhinagar Taluka in Gandhinagar District, Gujarat.

The proposed project is covered under schedule 1(b) as per the Schedule of the EIA Notification dated September 14, 2006, as amended till date.

To meet the requirement of EDS generated by MS, we have submitted the Conservation plan for existing project to your office for approval.

We request you to kindly consider the attached conservation plan as final and approve the same at the earliest.


Thanking You,

Yours Faithfully



Authorized Signatory

Received


આવકો સજા
ગુજરાત રાજ્ય સરકાર
ગાંધીનગર જિલ્લા
૨૬/૬/૨૨



**M/S. JOSHI TECHNOLOGIES
INTERNATIONAL INC-INDIA
PROJECT**

**Conservation Plan for Schedule I
species present in study area for
Drilling of Infill Development wells in
Wavel field in Gandhinagar Taluka in
Gandhinagar District, Gujarat**

JUNE 2022



Kadam

Environmental Consultants
www.kadamenviro.com

Environment *for* Development

JOSHI TECHNOLOGIES INTERNATIONAL INC – INDIA PROJECT Conservation Plan for Schedule I species present in study area for Drilling of Infill Development wells in Wavel field in Gandhinagar Taluka in Gandhinagar District, Gujarat

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QUALITY CONTROL							
Name of Publication	Conservation Plan for Schedule I species present in study area for Drilling of Infill Development wells in Wavel field in Gandhinagar Taluka in Gandhinagar District, Gujarat						
Project Number	1833220206	Report No.	1	Version	0	Released	June 2022
DISCLAIMER							
<p>Kadam has taken all reasonable precautions in the preparation of this report as per its auditable quality plan. Kadam also believes that the facts presented in the report are accurate as on the date it was written. However, it is impossible to dismiss absolutely, the possibility of errors or omissions. Kadam therefore specifically disclaims any <i>liability</i> resulting from the use or application of the information contained in this report. The information is not intended to serve as legal advice related to the individual situation.</p>							

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1 DESCRIPTION OF THE ENVIRONMENT

1.1 Biological Environment

As a part of EIA, this report represents existing biodiversity status of the project site (core zone) and its surrounding environ of the project study area (buffer zone of 10 km. radius). Also, an effort have been made to predict likely impacts of project and its associated activities, and suggests mitigation measures to reduce impacts on various biological components of the project study area.

1.2 Scope, Aim and Objectives

- To inventories floral and faunal components of project area (project site / core zone and buffer zone).
- To locate / demarcate and understand ecological setting of the project area in terms of national parks / wildlife sanctuary / reserve forests / tiger reserve / Eco-sensitive Areas / wetlands etc. within 10 km. radius from project site (if any).
- To identify schedule-I, rare, endemic and endangered species within the project study area and prepare conservation plan for same.
- To identify impact zone and evaluate the likely impact of the proposed project on flora, fauna and ecological setting of the project study area.
- To prepare green belt development plan / conservation plan to mitigate likely impacts and to conserve ecology and biodiversity.

1.3 Ecological Sensitivity / Habitats of the Study Area

S. No.	Sensitive Ecological Features	Name of feature / Location	Distance (km)	Direction	Reason of Significance
1	Ramsar wetland (Ramsar Convention)	NA	-	-	-
2	Wetlands as per National Wetlands Atlas	NA	-	-	-
3	National park	NA	-	-	-
4	Wildlife sanctuary	NA	-	-	-
5	Tiger reserve	NA	-	-	-
6	Biosphere reserve	NA	-	-	-
7	Elephant reserve	NA	-	-	-
8	Important Bird Areas (IBAs)	NA	-	-	-
9	Eco-sensitive zone (EP Act)	NA	-	-	-
10	Forest (Forest Conservation Act) (including protected forests and reserved forests)	NA	-	-	-
11	Wildlife corridor	NA	-	-	-
12	Coastal zones	NA	-	-	-

S. No.	Sensitive Ecological Features	Name of feature / Location	Distance (km)	Direction	Reason of Significance
13	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	NA	-	-	-
14	Endemic species, if any	NA	-	-	-
15	Mangroves	NA	-	-	-

1.4 Survey Methodology

- Secondary Literature Review
- Random sampling plot survey for floral inventory
- Faunal habitat assessment
- Random intensive survey, opportunistic observations
- Diurnal bird observations and bird count
- Active search for reptiles
- Active search for scats and foot prints
- Review of previous studies
- Emphasis has been placed on presence of rare, endemic, migratory and threatened species
- Efforts have been made to verify same in the field and interaction with local people.

Working plan of respective District was referred and Desktop literature review was conducted to identify the representative spectrum of threatened species, population and ecological communities as listed by IUCN, ZSI and BSI and in Indian Wildlife Protection act, 1972. The status of individual species was assessed using the revised IUCN/ SSC category system (14th September 2012).

1.5 Biodiversity of Terrestrial Environment

1.5.1 Biodiversity of Terrestrial Environment

The list of floral species is prepared based on visual observation during site visit and through review of site literatures and secondary data available with various government offices is referred for identifying rare or endangered species in the region.

The dominant trees in the study area were, *Mangifera indica* (Keri), *Azadirachta indica* (Limbadu), *Salvadorapersica* (Piludo), *Salvadora oleoides* (Piludi), *Pithecellobium dulce* (Gorasmlu) and *Acacia nilotica* (Bavalal) which are generally planted as the road side plantation or along the agriculture fields for shades.

A total of 83 plant species are observed in the study area out of which 25 tree species, 12 shrubs species and 30 herbs, 9 climbers, 2 twiner, and 5 grasses are observed. Details pertaining to flora observed in the study area have been collected from District Forest Department, District Gazetteer and Field Observation is presented in a tabular format as in **Table 1-1**

Table 1-1: List of Flora in the study area

Sr.No.	Scientific Name	Local Name	Status
TREES			
1.	<i>Acacia nilotica</i>	Baval	C
2.	<i>Acacia Senegal</i>	Gorad	C
3.	<i>Alangium lamarkii</i>	Ankol	C
4.	<i>Albizia lebbek</i>	Siris	C

Sr.No.	Scientific Name	Local Name	Status
5.	<i>Azadirachta indica</i>	Limdo	C
6.	<i>Butea monosperma</i>	Khakhro	C
7.	<i>Casearia tomentosa</i>	Umbh	C
8.	<i>Cassia fistula</i>	Amaltas	C
9.	<i>Cassia siamea</i>	Kasid	C
10.	<i>Cordial dichotoma</i>	Gundo	C
11.	<i>Dalbergia sisoo</i>	Sissoo	C
12.	<i>Delonix regia</i>	Gulmohar	C
13.	<i>Diosphros Montana</i>	Dheki	C
14.	<i>Emblica officinalis</i>	Amla	C
15.	<i>Ficus benghalensis</i>	Vad	C
16.	<i>Ficus religiosa</i>	Pipalo	C
17.	<i>Ficus glomerata</i>	Gular	C
18.	<i>Holoptelea integrifolia</i>	Charal	C
19.	<i>Gymnosporia Montana</i>	Viklo	C
20.	<i>Ficus infectoria</i>	Pipal	C
21.	<i>Madhuca latifolia</i>	Mahuda	C
22.	<i>Mangifera indica</i>	Ambo	C
23.	<i>Mimusops hexandra</i>	Rayan	C
24.	<i>Peltophorum ferruginium</i>	-	C
25.	<i>Zizyphus mauritiana</i>	Bordi	C
SHRUBS			
1.	<i>Achyranthes aspers</i>	Aghedo	C
2.	<i>Adhatoda vasica</i>	Ardusi	C
3.	<i>Balanites roxburghii</i>	Ingor	C
4.	<i>Calotropis procera</i>	Nano Akdo	C
5.	<i>Capparis aphylla</i>	Kerdo	C
6.	<i>Cassia auriculata</i>	Aval	C
7.	<i>Cassia tora</i>	Pumvadiyo	C
8.	<i>Holarrhena antidysenterica</i>	Kado	C
9.	<i>Jatropha cureas</i>	Ratanjyot	C
10.	<i>Tecoma stans</i>	Vasant	C
11.	<i>Vitex negundo</i>	Nagod	C
12.	<i>Zizyphus nummularia</i>	Chanibor	C
HERBS			
1.	<i>Acalypha indica</i>	Dadarjo	C
2.	<i>Achyranthes aspera</i>	Anghedi	C
3.	<i>Aerva lanata</i>	Gorakh ganjo	C
4.	<i>Aeschynomene indica</i>	--	C
5.	<i>Aeschynomene procumbens</i>	--	C
6.	<i>Hygrophila auriculata</i>	Kantashelio	C
7.	<i>Amaranthus spinosus</i>	--	C
8.	<i>Argemone mexicana</i>	Darudi	C
9.	<i>Bacopa monnieri</i>	Bam	C
10.	<i>Blumea eriantha</i>	--	C

Sr.No.	Scientific Name	Local Name	Status
11.	<i>Brassica juncea</i>	Rai	C
12.	<i>Brassica nigra</i>	Jangliraj	C
13.	<i>Cassia tora</i>	Kunvandio	C
14.	<i>Catharanthus roseus</i>	Barmasi	C
15.	<i>Celosia argentea</i>	--	C
16.	<i>Chenopodium album</i>	Chilni Bhaji	C
17.	<i>Colocasia esculenta</i>	--	C
18.	<i>Leucas aspera</i>	Kubi	C
19.	<i>Lycopersicum esculantum</i>	Tamata	Cu
20.	<i>Martynia diandra</i>	--	C
21.	<i>Musa paradisiaca</i>	Kela	Cu
22.	<i>Ocimum basilicum</i>	Damro	C
23.	<i>Ocimum sanctum</i>	Tulsi	C
24.	<i>Oldenlandia corymbosa</i>	Parpat	C
25.	<i>Physalis minima</i>	--	C
26.	<i>Typha angustata</i>	Ramban	C
27.	<i>Polygonum glabrum</i>	--	C
28.	<i>Portulaca oleracea</i>	Motiluni	C
29.	<i>Solanum nigrum</i>	--	C
30.	<i>Xanthium strumarium</i>	--	C
CLIMBERS			
1.	<i>Bongainvillea spectabilis</i>	Boganvel	C
2.	<i>Coccinia grandis</i>	Ghiloda	C
3.	<i>Cucurbita maxima</i>	Kolu	C
4.	<i>Dregia volubilis</i>	Nilsoti	C
5.	<i>Luffa acutangula</i>	Turiya	Cu
6.	<i>Mimordica charntia</i>	Karela	Cu
7.	<i>Mucuna pruriens</i>	Kuvech	C
8.	<i>Quisqualis indica</i>	Madhu Malti	C
9.	<i>Tinospora cordifolia</i>	Gulvel	C
TWINNERS			
1.	<i>Abrus precatorius</i>	Chanothi	C
2.	<i>Cuscuta Chinensis</i>	Amarvel	C
GRASSES			
1.	<i>Cymbopogon.martini</i>	Roicha Ghas	C
2.	<i>Cymbopogon citratus</i>	--	C
3.	<i>Cyndon dactylon</i>	Darb	C
4.	<i>Dendrocalamus strictus</i>	Narvans	C
5.	<i>Paspalidium flavidium</i>	Gorju	C

1.5.1 Cultivated Plants in the study area

The agricultural practices have occupied the majority of available the landscape.

Major Crops

Major crops in the study area are Rice (*Oryza sativa* L.) and Wheat (*Triticum aestivum*) Mug (*Vigna radiate*), Til (*Sesamum indicum*), Castor (*Ricinus communis*).

Minor Crops

The minor crops of this region are Bajra (*Pennisetum typhoides*), Jowar (*Sorghum bicolor*), Groundnut (*Arachis hypogaea*), Cotton (*Gossypium herbaceum*) and Vegetables; Guvar (*Cyamopsis tetragonoloba*) Choli (*Vigna unguilata*), Tomato(*Lycopersicon lycopersicum*) etc.)

1.5.2 Rare and Endangered flora in the study area

Among the enumerated flora in the study area, none of them were assigned any threat category, by RED data book of Indian Plants. (Nayar and Sastry, 1990) and Red list of threatened Vascular plants (IUCN, 2010, BSI, 2003)

1.5.3 Endemic plants of the study area

Among recorded plant species, during the survey period, none can be assigned the status of endemic plant of this region.

1.5.4 Status of Forest and their category in the study area

No natural forest land was observed in the study area except few scattered scrub cover in the barren lands and area demarcated for grazing.

1.6 Faunal Biodiversity in the study area

For the documentation of the faunal biodiversity of the study area with respect to birds, reptiles, amphibians, and butterfly species.

1.6.1 Birds of the study area

The most commonly spotted water bird species of this area were; Cattle Egret, Intermediate Egret, Little Egret, Indian Cormorant, Black-winged Stilt, Red-wattled Lapwing, Red-naped Ibis, Black-headed Ibis, White-breasted Water hen. Systematic account of the birds in the study area with the status of occurrence is given in the **Table 1-2**.

Table 1-2: Systematic List of birds in the study area

S. No.	Scientific Name	Common Name	Schedule/ IUCN Category
BIRDS			
1.	<i>Pavo cristatus</i>	Common Peafowl	I
2.	<i>Acredotheres ginginianus</i>	Bank Myna	IV
3.	<i>Dicrurusadsimilis</i>	Black Drongo	IV
4.	<i>Elanus caerulus</i>	Blackwinged Kite	LC
5.	<i>Himantopus himantopus</i>	Blackwinged Stilt	IV
6.	<i>Columba livia</i>	Blue Rock Pigeon	IV
7.	<i>Bulbulcus ibis</i>	Cattle Egret	IV
8.	<i>Turdoides caudatus</i>	Common Babbler	LC
9.	<i>Corvus splendens</i>	Common Crow	V
10.	<i>Acredotheres tristis</i>	Common Myna	IV
11.	<i>Tringa hypoleucos</i>	Common Sandpiper	IV

S. No.	Scientific Name	Common Name	Schedule/ IUCN Category
12.	<i>Rhipidura aureola</i>	Fantail Flycatcher	IV
13.	<i>Ardea cinerea</i>	Grey Heron	IV
14.	<i>Lanius excubitor</i>	Grey shrike	IV
15.	<i>Motacilla cinerea</i>	Grey Wagtail	IV
16.	<i>Passer domesticus</i>	House Sparrow	LC
17.	<i>Eudynamys scolopacea</i>	Indian Koel	IV
18.	<i>Saxicoloides fulicata</i>	Indian Robin	LC
19.	<i>Coracias benghalensis</i>	Indian Roller	LC
20.	<i>Turdoides striatus</i>	Jungle Babbler	IV
21.	<i>Corvus macrorhynchos</i>	Jungle Crow	LC
22.	<i>Phalacrocorax niger</i>	Little Cormorant	IV
23.	<i>Copsychus saularis</i>	Magpie Robin	LC
24.	<i>Circus aeruginosus</i>	Marsh Harrier	LC
25.	<i>Anthus novaeseelandiae</i>	Paddyfield Pipit	IV
26.	<i>Milvus migrans</i>	Pariah Kite	LC
27.	<i>Ardeola grayii</i>	Pond Heron	IV
28.	<i>Nectarinia asiatica</i>	Purple Sunbird	LC
29.	<i>Streptoplia tranquebarica</i>	Red Turtle Dove	IV
30.	<i>Pycnonotus cafer</i>	Red vented Bulbul	IV
31.	<i>Vanellus indicus</i>	Red Wattled Lapwing	LC
32.	<i>Sterna ablifrons</i>	River Tern	LC
33.	<i>Psittacula krameri</i>	Rose ringed Parakeet	IV
34.	<i>Merops orientalis</i>	Small Green Bee-Eater	LC
35.	<i>Orthotomus sutorius</i>	Tailor Bird	LC
36.	<i>Halcyon smyrensis</i>	White Breasted Kingfisher	IV
37.	<i>Threskiornis melanocephalus</i>	Black-headed Ibis	IV
38.	<i>Mycteria leucocephala</i>	Painted stork	IV

1.6.2 Herpetofauna :

Reptiles document in the region is given in the **Table 1-3**.

Table 1-3: Reptiles in the study area

S. No.	Scientific Name	Common Name	Schedule/ IUCN Category
1.	<i>Naja naja</i>	Cobra	II
2.	<i>Lycodon aulicus</i>	Common Wolf Snake	LC
3.	<i>Acrochordus granulatus</i>	File snake	LC
4.	<i>Ptyas mucosus</i>	Rat Snake	II
5.	<i>Eryx johnii</i>	Red Sand Boa	LC

Not sighted but included as per the information provided by villagers ,during the interaction with them with pictorial presentation.

1.6.3 Mammals

The wild mammals observed other than domesticated ones from study area is documented in the **Table 1-4**.

Table 1-4: Mammals in the study area

S. No.	Scientific Name	Common Name	Schedule/ IUCN Category
1.	<i>Presbytis entellus</i>	Common Langur	II
2.	<i>Funambulus pennanti</i>	Striped Squirrel	IV
3.	<i>Herpestes edwardsi</i>	Common Mongoose	II
4.	<i>Boselaphus tragocermalus</i>	Nilgai	III
5.	<i>Sus scrofa</i>	Wild Pig	III
6.	<i>Lepus sp.</i>	Indian Hare	IV

* = Not sighted but included as per the information provided by villagers, during the interaction with them with pictorial presentation.

1.6.4 Rare and Endangered fauna of the study area

As per IUCN RED (2010) list

The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world. With its strong scientific base, the IUCN Red List is recognized as the most authoritative guide to the status of biological diversity.

A taxon is Near Threatened, when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable categories, but is close to qualifying or is likely to qualify for a threatened category in the near future. As per IUCN Red list of threatened species (2012), among the sighted animal species three birds are grouped under near threatened category Painted stork (*Mycteria leucocephala*), Black-headed Ibis (*Threskiornis melanocephalus*),

Table 1-5: Threatened and Near Threatened birds of the study area

Species	Habitat	Threat status (IUCN,2010)
Black-headed Ibis (<i>Threskiornis melanocephalus</i>)	Shallow water bodies, Paddy fields	Near threatened ver.3.1
Painted stork (<i>Mycteria leucocephala</i>)	Shallow water bodies, Paddy fields	Near threatened ver.3.1

Source: IUCN Red list of threatened species, 2012.2 and Bird life international 2010

As per Indian Wild Life (Protection) Act, 1972

Wild Life (Protection) Act, 1972, as amended on 17th January 2003, is an Act to provide for the protection of wild animals, birds and plants and for matters connected therewith or ancillary or incidental thereto with a view to ensuring the ecological and environmental security of the country.

Some of the sighted fauna were given protection by the Indian Wild Life (Protection) Act, 1972 by including them in different schedules. Among the birds in the study area, Pea fowl (*Pavo cristatus*), is included in schedule I of Wild life protection Act (1972), while many other birds are included in schedule IV.

Among the reptiles, Indian Cobra (*Naja naja*), and Common rat snake (*Ptyas mucosus*) were provided protection as per Schedule-II of Wild life protection act, (1972).

Among mammals; Common Mongoose (*Herpestes edwardsi*), is a schedule –II animals. Hares and five striped squirrels are included in schedule IV of Wild Life Protection act 1972.

Photo Documentation



Aegle marmelos in the study area



open billed Stork observed in the study area



Thick *Prosopis sp.* patch in the study area



Avenue Plantation in the study area
(*Azadirachta indica* and *Acacia* species)



Thick Prosopis Patch in the study area



Common Peafowl in the study area

2 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

2.1 Ecological Impact Assessment Methodology

Impacts on ecological components were identified by following various steps which are explained in detail in following sections.

2.1.1 Determination of Activities Likely Impacting Ecological Components

Broader level determination of ecological components like Terrestrial Flora (TFL), Terrestrial Fauna (TFA) etc has been performed on the basis of activities and associated activities involved at the different phases of project.

2.1.2 Scoring the Impact Consequence

The consequences on various ecological components have been ranked into 5 levels ranging from insignificant to extensive consequence and are given in **Table 2-1**. This table covers Flora, fauna and habitat / ecosystem level impacts.

Table 2-1: Impact Scoring System – Consequence Assessment

S. No.	Ecological Components Likely Impacted	Impact and Score				
		Insignificant Consequence (+/-) 1 point	Minor Consequence (+/-) 2 points	Moderate Consequence (+/-) 3 points	Major Consequence (+/-) 4 points	Severe Consequence (+/-) 5 points
C1	C2	C3	C4	C5	C6	C7
1	Flora / Fauna Habitat/ Ecosystem	<ul style="list-style-type: none"> • Site specific loss (removal) of common floral species (but not any tree or trees). • Vegetation composition does not form a habitat character for any species of conservation significance. • No short term or long term impacts are likely to adversely affect the surrounding habitat / ecosystem. • Site specific disturbance to common / generalist faunal species (e.g. movement pattern, displacement etc.). • No negative impacts on surrounding ecosystem functioning or habitat ecology. 	<ul style="list-style-type: none"> • Site specific loss (removal) of some saplings of trees. • Minor temporary impacts on ecosystem functioning or habitat ecology of common / generalist species. • Minor short term / long term impacts on surrounding / immediate / adjacent habitats and are resilient to changes in habitat structure or condition. • Impact on surrounding agro-ecosystem / agriculture when environmental data / parameters are within permissible limits. 	<ul style="list-style-type: none"> • Site specific loss (removal) of some common well grown tree / trees species. • Site specific loss of nesting / breeding habitat of common / generalist species of flora-fauna but will not result in permanent loss of habitat. • Short term or long term impacts are likely to adversely affect the surrounding habitat character/ habitat ecology/ functioning of ecosystem. • Impact on surrounding agro-ecosystem / agriculture when physical parameters with marginal increase but can be mitigated. 	<ul style="list-style-type: none"> • Site specific impact on threatened species but impacted species is widely distributed outside the project site. Short term impacts may lead to loss of abundance or extent, but unlikely to cause local population extinction. • Site specific habitat loss of fauna listed in IUCN, WCMC, Birdlife International, or any other international literature - secondary information. • Impacts on habitats / ecosystems of international importance. 	<ul style="list-style-type: none"> • Impact on threatened species listed in as a endemic / Schedule-I as per IWPA 1972, BSI, Red Data Book, ZSI, BSI or literature published by any State Govt. Institute, University and Collage etc. • Loss of habitat of above said flora-fauna. • Impact on genetic diversity Impact on NP /PF /WLS /ESZ /IBA / tiger reserve / elephant corridor / corridor. • Impact on ecosystem like river, forest, wetland (e.g. RAMSAR site etc.) etc.

2.1.3 Quantifying the Probability of Occurrence of the Impact

After identifying the consequence severity, the probability of occurrence also needs to be estimated to arrive at a complete picture of environmental impact. **Table 2-2** provides probability / likelihood ratings on a scale of 1 to 5. These ratings are used for estimating the likelihood of each occurrence.

Table 2-2: Probability of Impact Occurrence

Probability	Chance of Occurrence	Scoring
Definite / Every day	> 90 % chance of occurrence	5
Probable	60 – 90 % chance of occurrence	4
Possible	30 – 60 % chance of occurrence	3
Improbable	20-30 % chance of occurrence	2
Indefinite / Rare	< 10 % chance of occurrence	1

2.1.4 Quantifying Ecological Impact

The level of environmental impact risk is calculated by multiplying the consequence score and the probability of occurrence together. Thus,

Significance of Impact = Consequence Score × Probability of Occurrence

The final score is in relative point score, rather than actual impact. The impact estimation is carried out assuming an implementation of sound management programme to maintain healthy ecological conditions. **Table 2-3** assigns significance criteria, based on the scale of 1-25, used for prioritizing mitigation measures for reducing the environmental impact and thereafter, formulating and implementing Environmental Management Plans (EMPs).

To do this, environmental impact risk levels are first scored and identified as mentioned earlier and then evaluated on the evaluation scale that follows in **Table 2-3**.

Table 2-3: Ecological Impact Significance Criteria

Probability	Severity				
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Extensive (5)
Indefinite / Rare (1)	1	2	3	4	5
Improbable (2)	2	4	6	8	10
Possible (3)	3	6	9	12	15
Probable (4)	4	8	12	16	20
Definite / Every day (5)	5	10	15	20	25

2.1.5 Categorization of Ecological Risk

Ecological severities are clubbed in to five levels from Minor / Negligible to Extremely Severe (**Table 2-4**). Extreme risk activities are unacceptable in current form and need to be stopped or should be modify such that they are brought to the lower level of ecological risk. Similarly, high and moderate risk activities, although acceptable, require being evaluated and mitigated in that manner those consequences / probabilities are lowered, with more focus on high risk activities vis-à-vis moderate risk activities. Less severe activities do not require any mitigation measures unless escalation of risk is possible while minor / negligible do not require any particular mitigation measures.

Table 2-4: Ecological Risk Categorization

Score	Type of Risk	Action Required
21-25	Extremely Severe	Activity should not proceed in current form
13-20	Highly Severe	Activity should be modified to include remedial planning and actions and be subject to detailed ecological assessment
7-12	Moderate Severe	Activity can operate subject to management and / or modification
4-6	Less Severe	No immediate action required unless escalation of risk is possible. However surveillance is required.
1-3	Negligible	No immediate action required. However surveillance is required.

2.2 Likely Impacts on Flora fauna

2.2.1 Identification of Impact Zone

As Though the concentrations of the emitted pollutants will be kept within permissible levels through the various engineering controls, it is essential to have eco-management in the Likely Impact Zone (LIZ) for safeguard and enhanced of ecological environment of the project area. So, EIA coordinator suggested assuming LIZ of 1.5 kilometer around the project site.

2.2.2 Determination of Ecological Components Likely Impacted

Following components are determined which may face likely impacts in different phases due to various project activities. Details are tabulated in the **Table 2-5**.

Table 2-5: Impact Assessment and Mitigation Measures

S. No.	Aspect Description	Likely Impacts on Ecology and Biodiversity (EB)	Impact Consequence – Probability Description / Justification	Impact Scoring			Remarks	Mitigation Measures	EMP Required
				Magnitude, M	Frequency, F	Final Score M x F			
C1	C2	C3	C4	C3	C4	C5	C6	C7	
1. Pre-Construction Phase									
1.1	Removal of site vegetation like herbs, shrubs and grasses (except trees)	<p>Impact-1: Site specific loss of common floral diversity</p> <p>Impact-2: Site specific loss of associated faunal diversity</p> <p>Impact-3: Site specific loss of habitat / habitat diversity</p>	<p>Impact-1: Site possesses common floral species clearing of these common herbs, shrubs and grasses will not result in loss of flora in true sense.</p>	1	5	5	Less Severe	No immediate action required. However Greenbelt / plantation will be developed in project site and in periphery of the project boundary, which will improve floral and faunal diversity of the project area.	-
			<p>Impact-2: Faunal species reported from site are common species and uses wide variety of habitats of the local environment so there is no threat of loss of faunal diversity.</p>	1	5		Less Severe		
			<p>Impact-3: Project site forms common habitat structure which is very common component of the buffer zone habitats.</p>	1	5		Less Severe		
3. Operation Phase									
3.1	Drilling Process	<p>Impact-5: Impact on surrounding vegetation and associated biodiversity.</p>	<p>Impact-5: Drilling activity will have impact on surrounding faunal diversity due to generation of noise and vibration</p>	3	1	3	Less Severe	Implementation of proper safety measures and control devices (engineering control) will be implemented. However, green belt development with suitable species will help to mitigate likely cumulative impacts.	

S. No.	Aspect Description	Likely Impacts on Ecology and Biodiversity (EB)	Impact Consequence – Probability Description / Justification	Impact Scoring			Remarks	Mitigation Measures	EMP Required
				Magnitude, M	Frequency, F	Final Score M x F			
3.2	Leakage of oil and grease during transportation	Impact 7- <i>Impact on surrounding vegetation and associated biodiversity.</i>	Impact-7: in case of leakage proper Disaster management plan has been prepared by the company and immediate action will be taken but considering cumulative impact (due to industrial area), minor short term impacts are expected on surrounding flora and associated fauna which may be resilient.	2	5	10	Moderate Severe	Implementation of proper safety measures and control devices (engineering control) will be implemented in case of leakage	

3 ECOLOGICAL MANAGEMENT AND MONITORING PLAN

3.1 Green Belt Development

Green belt not only provides habitat for faunal species but also helps to suppress air and noise pollutants up to some extent. This will not only mitigate the ecological problem but also enhance the beauty of project area that will attract avifauna, small mammals & insect species, and by this way ecological balance can be maintained to great extent.

3.2 Greenbelt Designing

Following parameters have been considered to design green belt,

3.2.1 Selection of Plant Species

Considering the environmental status of project area four main parameters like salinity, draught, fire resistance, species with faster growth rate and ever green nature have been considered while selecting the species. Facts considered during selection of plant species for greenbelt development are:

- Agro climatic zone (Semi-arid to dry sub humid – as per CPCB) of the project area
- Evergreen species to mitigate cumulative impacts due to other industries also.
- Type of pollutant (mainly air) likely to disperse from project activities.
- Biological-filter Efficiency: Absorption of gases, Dust capturing and Noise control.

3.2.2 Location of Proposed Greenbelt

Greenbelt will be developed within project site boundary and within various identified locations of LIZ of 1.5 km.

3.2.3 3.2.3 Greenbelt in the LIZ Area (within 1.5 Km. Radius)

Additional plantation for green belt development will be carried out in the various places (around water bodies, in school and temple premises) of LIZ to improve habitat status of the project area. This activity will be carried out as a part of conservation plan of Schedule-I reported from the study area, so species recommended for plantation and budget allocation for same is given in the conservation plan section.

Greenbelt will be developed within project site boundary and within various identified locations of LIZ of 1.5 km.

Budget Allocation for Greenbelt within Project Site

Table 3-1: Budget for Proposed Greenbelt Development within Project Site

S. No	Work or Activity	1 st year	2 nd Year	3 rd Year	4 th Year	5 th Year	Budget (INR)
1	Total 2500 plants will be planted every year for 5 years (Approx. Cost @ Rs. 300 per plant)						
	Saplings Required	500	500	500	500	500	4,50,000
	Amount	1,50,000	1,50,000	1,50,000	1,50,000	1,50,000	
2	Maintenance of Greenbelt in plant premise						45,000

3.3 Plantation Technique and Care

3.3.1 Plantation Technique

Following basic procedures need to be followed for greening the area.

- Since the project area having poor / slightly saline soil quality, plantation of tree species required approx. 1m³ pit for soil enrichment
- Pit should be filled with imported soil with 3:1:1 the ratio of sand, silt and farm yard manure
- Procure well grown saplings of recommended species from the nearby Forest Department nursery
- Make 1m diameter ring bund around the planted saplings for water retention
- Watering of sapling is species specific, therefore watering need to be done daily in monsoon and once in 2 days in other seasons for a period of two years.

3.3.2 Monitoring Protocol

- The plantations need to be managed by regular watering, soil enrichment work, applying manure, weeding and provide proper protection.
- Replacement of sapling (replanting) required whenever mortality occurs in the plantation during the growth stage.
- Plantation requires after care for a period of minimum five years till the saplings attain matured tree stage.
- Any damage to the developed greenbelt due to any natural or cattle activity should be redeveloped and maintained by the agency.

3.4 Conservation Plan of Indian Peafowl

Indian Peafowl or Indian peafowl (*Pavo cristatus*) is a familiar and universally known large pheasant. It is a National Bird of India, belongs to Schedule I of the Wildlife (Protection) Act 1972 was reported from the some villages of the study area. The male has a spectacular glossy green long tail feathers that may be more than 60 percent of the bird's total body length. These feathers have blue, golden green and copper colored celli (eyes). The long tail feathers are used for mating rituals like courtship displays. The feathers are arched into a magnificent fan shaped form across the back of the bird and almost touching the ground on both sides. Females do not have these graceful tail feathers. They have the fan like crest with whitish face and throat, chestnut brown crown and hind neck, metallic green upper breast and mantle, white belly and brown back rump and tail. Their primaries are dark brown.

3.4.1 Indian Peafowl Survey

Buffer zone of the study area has been reported as a habitat of Schedule I species *Pavo cristatus* commonly known as Indian Peafowl, more effort was made to assess their status in term of movements and habitat use in and around the study area. At first, a detailed biological survey of the core zone and buffer zone (10 km radius from periphery of the mining site) was carried out to understand the status distribution of the species in the study area. Also, questionnaire survey was carried out to understand the recent status of Indian Peafowl sightings and their movements. Overall, 15 people from three villages were interviewed randomly. The conclusion of the survey discussed the potential sightings & habitat use, and movement and food habits of Indian Peafowl in the study area

3.4.2 Habitats in the Study Area

No Indian Peafowl was sighted in the core zone. All the direct sightings of the Indian Peafowl were located near the human dominated and forest areas. This species is well adapted to natural village environment setting. According to the villagers, Indian Peafowl is present in both, village and forest areas. Day time they temporarily move towards the surrounding agriculture areas for feeding while during night time they roost on the trees present in the village.

3.4.3 General Food Habits

Peafowls are omnivores, eating plant parts, flower petals, seed heads, insects and other arthropods, reptiles and amphibians. In the study area, dense tree canopy cover supports good insect diversity which is very common food for peafowl.

3.4.4 Study Area as a Indian Peafowl Habitat (Buffer Zone) - Conclusion

Present survey of the peafowl in the buffer zone of the project site cleared that peafowl use both, village adjacent habitats and forest habitats within the buffer zone

3.4.5 Conservation through Habitat Improvement

Habitat improvement programme will be undertaken through plantation of suitable tree species. Saplings of *Azadirachta indica* (Limdo), *Mangifera indica* (Aam), *Tamarindus indica* (Imli), *Ficus benghalensis* (Vad), *Butea monosperma* (Palas), *Aegle marmelos* (Bel), *Ficus religiosa* (Pipal), *Thespesia populnea* (Paras Pipal) will be distributed in the nearest five villages (as per year wise schedule). Species recommended by local forest department will also be added in the present plantation program. In consultation of the forest department, following Conservation Measures will be adapted for Peacock conservation

- Habitat improvement programme in the different villages will be undertaken in the buffer zone area for shelter and roosting of peacocks. This will be achieved by plantation of locally adapted species near villages in buffer area.
- School level and Panchayat level awareness programmes will be conducted for conservation of wild life.

For above mentioned activities, proponent has proposed a sum of Rs. 3, 50, 000/- for the “Wild Life” conservation plan under the following heads up to five years in consultation with local forest department.

3.4.6 Habitat Improvement through Plantation in LIZ

In identified LIZ area, plantation will be carried out at four levels
1. Plantation around water bodies of LIZ area and
2. Plantation in schools and temple premises of nearby village.

Table 3-2: List of plant species for Plantation in LIZ Area

S. No	Scientific Name	Common Name	Ecological performance	Locations
1	<i>Aegle marmelos</i>	Bel	CN, DC	3
2	<i>Azadirachta indica</i>	Neem	CN, OGE, DC	1,2,3
3	<i>Delbergia sissoo</i>	Shisham	DC, DR, FR	2,3
4	<i>Delonix regia</i>	Gulmohar	DC	2,3
5	<i>Ficus bengalensis</i>	Banyan, Vad	CN, DC	1,2,3
6	<i>Ficus religiosa</i>	Peepal	CN, OGE, DC	1,2,3
7	<i>Syzygium cumini</i>	Jamun, Jambu	CN, DC	1,3
8	<i>Terminalia catappa</i>	Desi Badam	CN, OGE, DC	1,3

Ecological performance: CN –Control Noise level, OGE – Absorb Gas emission (Sexena 1991)¹ and (Abbasi & Khan 2000)², DC - Dust Controller (CPCB 2007)³.
Locations: 1- Near Water body, 2 – In School premises, 3- In Temple premises.

1

¹ Saxena, V.S. 1991. Afforestation as a tool for environmental improvement. In: Executive development program on greening the townships. Vaniki Prashikshan Sansthan, Jaipur. Pp 13-44.

² Greenbelts for Pollution Control: Concepts, Design, Applications. 2000. Abbasi, S.A. and F.I. Khan. Discovery Publishing House, New Delhi.

³ Phytoremediation of particulate matter from ambient environment through dust capturing plant species. Published 2007 by Central Pollution Control Board, Ministry of Environment & Forests, Govt. of India in Delhi.

Table 3-3: Budget for Additional Greenbelt and Biodiversity Conservation

Activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Grand Total	Total Budget
Plantation approximately 100 per year	20000					20000	1,00,000
		20000				20000	
			20000			20000	
				20000		20000	
					20000	20000	
Awareness programme for "Wild Life" conservation Education Program	50000					50000	2,50,000
		50000				50000	
			50000			50000	
				50000		50000	
					50000	50000	
Total Budget							3,50,000

Note: Conservation budget of INR 3,50,000 will be allotted to District Forest Department and activities will be carried out with the consultation of Forest Department.



Environment for Development

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Kadam Environmental Consultants

871/B/3, GIDC Makarpura, Vadodara- 390010, Gujarat

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including Open cast/ Underground mining	1	1 (a) (i)	A
2	Offshore and onshore oil and gas exploration, development & production	2	1 (b)	A
3	Thermal power plants	4	1 (d)	A
4	Coal Washeries	6	2 (a)	A
5	Mineral beneficiation including pelletisation	7	2 (b)	A
6	Metallurgical industries (ferrous & non ferrous)	8	3 (a)	A
7	Cement plants	9	3 (b)	B
8	Petroleum refining industry	10	4 (a)	A
9	Coke oven plants	11	4 (b)	A
10	Chlor-alkali industry	13	4 (d)	A
11	Soda ash Industry	14	4 (e)	A
12	Chemical Fertilizers	16	5 (a)	A
13	Pesticides industry and pesticide-specific intermediates (excluding formulations)	17	5 (b)	A
14	Petro-chemical complexes	18	5 (c)	A
15	Manmade fibers manufacturing	19	5 (d)	A
16	Petrochemical based processing	20	5 (e)	A
17	Synthetic organic chemicals industry	21	5 (f)	A
18	Distilleries	22	5 (g)	A
19	Integrated paint industry	23	5 (h)	B
20	Pulp & paper industry	24	5 (i)	A
21	Oil & gas transportation pipeline	27	6 (a)	A
22	All ship breaking yards including ship breaking units	30	7 (b)	A
23	Industrial estates/ parks/ complexes/ Areas	31	7 (c)	B
24	Common hazardous waste treatment, storage and disposal facilities (TSDFs)	32	7 (d)	A
25	Bio-medical waste treatment facilities	32A	7 (da)	B
26	Ports, harbours, breakwaters and dredging	33	7 (e)	A
27	Highways	34	7 (f)	B
28	Common effluent treatment plants (CETPs)	36	7 (h)	B
29	Common Municipal Solid Waste Management Facility (CMSWMF)	37	7 (i)	B
30	Building and construction projects	38	8 (a)	B
31	Townships and Area Development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated Sep. 14, 2021 and supplementary minutes dated Dec. 14, 2021 and Mar.25, 2022 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/22/2319 dated Apr.19, 2022. The accreditation needs to be renewed before the expiry date by Kadam Environmental Consultants, Vadodara following due process of assessment.

Sr. Director, NABET
Dated: Apr. 19, 2022

Certificate No.
NABET/EIA/2023/SA 0164

Valid up to
Mar. 19, 2023

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.





TC-7099

**KADAM ENVIRONMENTAL CONSULTANTS**

An ISO 9001-2015 Certified Company

(MoEF Approved)

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001**ENVIRONMENTAL MONITORING REPORT****LABORATORY TEST REPORT – EFFLUENT****REPORT NO.: MAY23/085/02 (ULR- TC709923000010268F)****SAMPLE DETAILS**

1.	Name & Address of Client: M/s. Joshi Technologies International Inc., - India Projects B-701 & 702, 7th Floor, Sankalp Iconic Tower, Opp. Vikram Nagar, ISCON Temple Cross Road, Sarkhej-Gandhinagar Highway, Sanidhya, Ahmedabad-380054, Gujarat, India.(Dholka-oilfield)		
2.	Sample ID: 2252228246-085MY23EF02	3.	Client Representative: Ms. Palak Kharadi
4.	Sample Date: 10.05.2023	5.	Sample Collected By: Mr.Shubham
6.	Analysis commenced on: 17.05.2023	7.	Analysis Completed on: 23.05.2023
8.	Reporting Date : 24.05.2023	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed ✓	11.	Group : Pollution and Environment
12.	Sampling Location : ETP Outlet	13.	Product: Waste Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 17.05.2023

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Specification/SPCB Norms/BIS Standards	Method Used
1.	pH	:	6.09	6.5 – 8.5	APHA 23 rd Edition 4500-H ⁺ B
2.	Total Dissolved Solids	mg/L	6192	2100	APHA 23 rd Edition 2540 C
3.	Suspended Solids	mg/L	7	100	APHA 23 rd Edition 2540 D
4.	COD	mg/L	911	100	APHA 23 rd Edition 5220 B
5.	BOD (3 days at 27 °C)	mg/L	265	30	IS 3025 (Part 44) : 1993
6.	Oil & Grease	mg/L	1.5	10	APHA 23 rd Edition 5520 B

Remark :

Authorised By

Name : Sapana Amin

Designation : Lab Incharge

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 - 2) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
 - 3) The results reported above relate to the sample identified under Sample Details.

-----END OF REPORT-----

TEST REPORT FORMAT - EFFLUENT

DOC. NO.: LAB-FMT-050	Issue No.: 02	Revision No.: 04
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021



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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – EFFLUENT

REPORT NO.: JUN23/098/09 (ULR- TC709923000012461F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International Inc., - India Projects B-701 & 702, 7th Floor, Sankalp Iconic Tower, Opp. Vikram Nagar, ISCON Temple Cross Road, Sarkhej-Gandhinagar Highway, Sanidhya, Ahmedabad-380054, Gujarat, India.(Dholka-oilfield)		
2.	Sample ID: 2252228246-098JN23EF02	3.	Client Representative: Ms. Palak Kharadi
4.	Sample Date: 14.06.2023	5.	Sample Collected By: Mr.Shubham
6.	Analysis commenced on: 20.06.2023	7.	Analysis Completed on: 23.06.2023
8.	Reporting Date : 28.06.2023	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed ✓	11.	Group : Pollution and Environment
12.	Sampling Location : ETP Outlet	13.	Product: Waste Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 20.06.2023

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Specification/SPCB Norms/BIS Standards	Method Used
1.	pH	:	7.72	6.5 – 8.5	APHA 23 rd Edition 4500-H ⁺ B
2.	Total Dissolved Solids	mg/L	8180	2100	APHA 23 rd Edition 2540 C
3.	Suspended Solids	mg/L	54	100	APHA 23 rd Edition 2540 D
4.	COD	mg/L	725	100	APHA 23 rd Edition 5220 B
5.	BOD (3 days at 27 °C)	mg/L	208	30	IS 3025 (Part 44) : 1993
6.	Oil & Grease	mg/L	1.2	10	APHA 23 rd Edition 5520 B

Remark :

Authorised By:

Name : Bhavisha Pandya

Designation : Sr.Chemist

NOTE :

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-----END OF REPORT-----

TEST REPORT FORMAT - EFFLUENT

DOC. NO.: LAB-FMT-050	Issue No.: 02	Revision No.: 04
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021



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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – EFFLUENT

REPORT NO.: JUL23/123/02 (ULR- TC709923000015126F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International Inc., - India Projects B-701 & 702, 7th Floor, Sankalp Iconic Tower, Opp. Vikram Nagar, ISCON Temple Cross Road, Sarkhej-Gandhinagar Highway, Sanidhya, Ahmedabad-380054, Gujarat, India.(Dholka-oilfield)		
2.	Sample ID: 2252228246-123JL23EF02	3.	Client Representative: Ms. Palak Kharadi
4.	Sample Date: 14.07.2023	5.	Sample Collected By: Mr.Shubham
6.	Analysis commenced on: 15.07.2023	7.	Analysis Completed on: 26.07.2023
8.	Reporting Date : 26.07.2023	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed ✓	11.	Group : Pollution and Environment
12.	Sampling Location : ETP Outlet	13.	Product: Waste Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 15.07.2023

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Specification/SPCB Norms/BIS Standards	Method Used
1.	pH	:	7.68	6.5 – 8.5	APHA 23 rd Edition 4500-H ⁺ B
2.	Total Dissolved Solids	mg/L	7284	2100	APHA 23 rd Edition 2540 C
3.	Suspended Solids	mg/L	51	100	APHA 23 rd Edition 2540 D
4.	COD	mg/L	983	100	APHA 23 rd Edition 5220 B
5.	BOD (3 days at 27 °C)	mg/L	283	30	IS 3025 (Part 44) : 1993
6.	Oil & Grease	mg/L	1.3	10	APHA 23 rd Edition 5520 B

Remark :

Authorised By -

Name : Bhavisha Pandya

Designation : Sr.Chemist

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-----END OF REPORT-----

TEST REPORT FORMAT - EFFLUENT

DOC. NO.: LAB-FMT-050	Issue No.: 02	Revision No.: 04
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021



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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – EFFLUENT

REPORT NO.: AUG23/021/02 (ULR- TC709923000017059F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International Inc., - India Projects B-701 & 702, 7th Floor, Sankalp Iconic Tower, Opp. Vikram Nagar, ISCON Temple Cross Road, Sarkhej-Gandhinagar Highway, Sanidhya, Ahmedabad-380054, Gujarat, India.(Dholka-oilfield)		
2.	Sample ID: 2252228246 - 021AU23EF02	3.	Client Representative: Ms. Palak Kharadi
4.	Sample Date: 08.08.2023	5.	Sample Collected By: Mr.Shubham
6.	Analysis commenced on: 11.08.2023	7.	Analysis Completed on: 15.08.2023
8.	Reporting Date : 22.08.2023	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed ✓	11.	Group : Pollution and Environment
12.	Sampling Location : ETP Outlet	13.	Product: Waste Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 11.08.2023

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Specification/SPCB Norms/BIS Standards	Method Used
1.	pH	:	7.43	6.5 – 8.5	APHA 23 rd Edition 4500-H ⁺ B
2.	Total Dissolved Solids	mg/L	920	2100	APHA 23 rd Edition 2540 C
3.	Suspended Solids	mg/L	15	100	APHA 23 rd Edition 2540 D
4.	COD	mg/L	41	100	APHA 23 rd Edition 5220 B
5.	BOD (3 days at 27 °C)	mg/L	12	30	IS 3025 (Part 44) : 1993
6.	Oil & Grease	mg/L	1.6	10	APHA 23 rd Edition 5520 B

Remark :

Authorised By

Name : Bhavisha Pandya

Designation : Sr.Chemist

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-----END OF REPORT-----

TEST REPORT FORMAT - EFFLUENT

DOC. NO.: LAB-FMT-050	Issue No.: 02	Revision No.: 04
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021



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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – EFFLUENT

REPORT NO.: SEP23/095/11 (ULR- TC709923000018845F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International Inc., - India Projects B-701 & 702, 7th Floor, Sankalp Iconic Tower, Opp. Vikram Nagar, ISCON Temple Cross Road, Sarkhej-Gandhinagar Highway, Sanidhya, Ahmedabad-380054, Gujarat, India.(Dholka-oilfield)		
2.	Sample ID: 2252228246-095SE23EF02	3.	Client Representative: Ms. Palak Kharadi
4.	Sample Date: 11.09.2023	5.	Sample Collected By: Mr.Shubham
6.	Analysis commenced on: 16.09.2023	7.	Analysis Completed on: 20.09.2023
8.	Reporting Date : 28.09.2023	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed ✓	11.	Group : Pollution and Environment
12.	Sampling Location : ETP Outlet	13.	Product: Waste Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 16.09.2023

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Specification/SPCB Norms/BIS Standards	Method Used
1.	pH	:	8.01	6.5 – 8.5	APHA 23 rd Edition 4500-H ⁺ B
2.	Total Dissolved Solids	mg/L	90172	2100	APHA 23 rd Edition 2540 C
3.	Suspended Solids	mg/L	26	100	APHA 23 rd Edition 2540 D
4.	COD	mg/L	1040	100	APHA 23 rd Edition 5220 B
5.	BOD (3 days at 27 °C)	mg/L	312	30	IS 3025 (Part 44) : 1993
6.	Oil & Grease	mg/L	1.4	10	APHA 23 rd Edition 5520 B

Remark :

Authorised By -

Name : Bhavisha Pandya

Designation : Sr.Chemist

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-----END OF REPORT-----

TEST REPORT FORMAT - EFFLUENT

DOC. NO.: LAB-FMT-050	Issue No.: 02	Revision No.: 04
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021



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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – EFFLUENT

REPORT NO.: OCT23/022/02 (ULR- TC709923000020405F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International Inc., - India Projects B-701 & 702, 7th Floor, Sankalp Iconic Tower, Opp. Vikram Nagar, ISCON Temple Cross Road, Sarkhej-Gandhinagar Highway, Sanidhya, Ahmedabad-380054, Gujarat, India.(Dholka-oilfield)		
2.	Sample ID: 2252228246 - 022OC23EF02	3.	Client Representative: Ms. Palak Kharadi
4.	Sample Date: 03.10.2023	5.	Sample Collected By: Mr.Shubham
6.	Analysis commenced on: 07.10.2023	7.	Analysis Completed on: 11.10.2023
8.	Reporting Date : 19.10.2023	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed ✓	11.	Group : Pollution and Environment
12.	Sampling Location : ETP Outlet	13.	Product: Waste Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 07.10.2023

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Specification/SPCB Norms/BIS Standards	Method Used
1.	pH	:	7.54	6.5 – 8.5	APHA 23 rd Edition 4500-H ⁺ B
2.	Total Dissolved Solids	mg/L	5644	2100	APHA 23 rd Edition 2540 C
3.	Suspended Solids	mg/L	21	100	APHA 23 rd Edition 2540 D
4.	COD	mg/L	1492	100	APHA 23 rd Edition 5220 B
5.	BOD (3 days at 27 °C)	mg/L	448	30	IS 3025 (Part 44) : 1993
6.	Oil & Grease	mg/L	1.6	10	APHA 23 rd Edition 5520 B

Remark :

Authorised By :

Name : Bhavisha Pandya

Designation : Sr.Chemist

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-----END OF REPORT-----

TEST REPORT FORMAT - EFFLUENT

DOC. NO.: LAB-FMT-050	Issue No.: 02	Revision No.: 04
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021



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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – EFFLUENT

REPORT NO.: NOV23/034/02 (ULR- TC709923000022323F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International Inc., - India Projects B-701 & 702, 7th Floor, Sankalp Iconic Tower, Opp. Vikram Nagar, ISCON Temple Cross Road, Sarkhej-Gandhinagar Highway, Sanidhya, Ahmedabad-380054, Gujarat, India.(Dholka-oilfield)		
2.	Sample ID: 2252228246 - 034NO23EF02	3.	Client Representative: Ms. Palak Kharadi
4.	Sample Date: 02.11.2023	5.	Sample Collected By: Mr.Shubham
6.	Analysis commenced on: 08.11.2023	7.	Analysis Completed on: 11.11.2023
8.	Reporting Date : 24.11.2023	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed ✓	11.	Group : Pollution and Environment
12.	Sampling Location : ETP Outlet	13.	Product: Waste Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 08.11.2023

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Specification/SPCB Norms/BIS Standards	Method Used
1.	pH	:	7.51	6.5 – 8.5	APHA 23 rd Edition 4500-H ⁺ B
2.	Total Dissolved Solids	mg/L	7124	2100	APHA 23 rd Edition 2540 C
3.	Suspended Solids	mg/L	9	100	APHA 23 rd Edition 2540 D
4.	COD	mg/L	528	100	APHA 23 rd Edition 5220 B
5.	BOD (3 days at 27 °C)	mg/L	152	30	IS 3025 (Part 44) : 1993
6.	Oil & Grease	mg/L	1.4	10	APHA 23 rd Edition 5520 B

Remark :

Authorised By

Name : Bhavisha Pandya

Designation : Sr.Chemist

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-----END OF REPORT-----

TEST REPORT FORMAT - EFFLUENT

DOC. NO.: LAB-FMT-050	Issue No.: 02	Revision No.: 04
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021



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TC-7099

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – EFFLUENT

REPORT NO.: DEC23/093/12 (ULR- TC70992400000953F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International Inc., - India Projects B-701 & 702, 7th Floor, Sankalp Iconic Tower, Opp. Vikram Nagar, ISCON Temple Cross Road, Sarkhej-Gandhinagar Highway, Sanidhya, Ahmedabad-380054, Gujarat, India.(Dholka-oilfield)		
2.	Sample ID: 2252228246-093DC23EF02	3.	Client Representative: Ms. Palak Kharadi
4.	Sample Date: 20.12.2023	5.	Sample Collected By: Mr.Mayur Patel
6.	Analysis commenced on: 26.12.2023	7.	Analysis Completed on: 07.01.2024
8.	Reporting Date : 09.01.2024	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed ✓	11.	Group : Pollution and Environment
12.	Sampling Location : ETP Outlet	13.	Product: Waste Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 26.12.2023

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Specification/SPCB Norms/BIS Standards	Method Used
1.	pH	:	8.06	6.5 – 8.5	APHA 23 rd Edition 4500-H ⁺ B
2.	Total Dissolved Solids	mg/L	9108	2100	APHA 23 rd Edition 2540 C
3.	Suspended Solids	mg/L	15	100	APHA 23 rd Edition 2540 D
4.	COD	mg/L	670	100	APHA 23 rd Edition 5220 B
5.	BOD (3 days at 27 °C)	mg/L	176	30	IS 3025 (Part 44) : 1993
6.	Oil & Grease	mg/L	1.2	10	APHA 23 rd Edition 5520 B

Remark :

Authorised By:

Name : Bhavisha Pandya

Designation : Sr.Chemist

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-----END OF REPORT-----

TEST REPORT FORMAT - EFFLUENT

DOC. NO.: LAB-FMT-050	Issue No.: 02	Revision No.: 04
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021

GAS DETECTOR LOG SHEET

Date : 05/04/23

TIME of Check Methane (Ch4)	SEPERATOR	BATH HEATER	T/F HEATER	WA#2A	WA#7	OHT	SIGN
	LEL	LEL	LEL	LEL	LEL	LEL	
7:00	0	0	0	0	0	0	<u>K.V. Patel</u>
8:00	0	0	0	0	0	0	
9:00	0	0	0	0	0	0	
10:00	0	0	0	0	0	0	
11:00	0	0	0	0	0	0	
12:00	0	0	0	0	0	0	
13:00	0	0	0	0	0	0	
14:00	0	0	0	0	0	0	
15:00	0	0	0	0	0	0	
16:00	0	0	0	0	0	0	
17:00	0	0	0	0	0	0	<u>D. Kalyan</u>
18:00	0	0	0	0	0	0	
19:00	0	0	0	0	0	0	
20:00	0	0	0	0	0	0	
21:00	0	0	0	0	0	0	
22:00	0	0	0	0	0	0	
23:00	0	0	0	0	0	0	<u>S.A. Bhat</u>
24:00	0	0	0	0	0	0	
1:00	0	0	0	0	0	0	
2:00	0	0	0	0	0	0	
3:00	0	0	0	0	0	0	
4:00	0	0	0	0	0	0	
5:00	0	0	0	0	0	0	
6:00	0	0	0	0	0	0	

P.B. Dey

GAS DETECTOR LOG SHEET

Date : 11/04/23

TIME of Check Methane (Ch4)	SEPERATOR	BATH HEATER	T/F HEATER	WA#2A	WA#7	OHT	SIGN	
	LEL	LEL	LEL	LEL	LEL	LEL		
7:00	0	0	0	0	0	0	D. Patil	
8:00	0	0	0	0	0	0		
9:00	0	0	0	0	0	0		
10:00	0	0	0	0	0	0		
11:00	0	0	0	0	0	0		
12:00	0	0	0	0	0	0		
13:00	0	0	0	0	0	0		
14:00	0	0	0	0	0	0		
15:00	0	0	0	0	0	0		S.A. Bhat
16:00	0	0	0	0	0	0		
17:00	0	0	0	0	0	0		
18:00	0	0	0	0	0	0		
19:00	0	0	0	0	0	0		
20:00	0	0	0	0	0	0		
21:00	0	0	0	0	0	0		
22:00	0	0	0	0	0	0		
23:00	0	0	0	0	0	0	H. Arora	
24:00	0	0	0	0	0	0		
1:00	0	0	0	0	0	0		
2:00	0	0	0	0	0	0		
3:00	0	0	0	0	0	0		
4:00	0	0	0	0	0	0		
5:00	0	0	0	0	0	0		
6:00	0	0	0	0	0	0		

B. B. Dey

GAS DETECTOR LOG SHEET

Date : 22/04/23

TIME of Check Methane (Ch4)	SEPERATOR	BATH HEATER	T/F HEATER	WA#2A	WA#7	OHT	SIGN	
	LEL	LEL	LEL	LEL	LEL	LEL		
7:00	0	0	0	0	0	0	K.V. Patel	
8:00	0	0	0	0	0	0		
9:00	0	0	0	0	0	0		
10:00	0	0	0	0	0	0		
11:00	0	0	0	0	0	0		
12:00	0	0	0	0	0	0		
13:00	0	0	0	0	0	0		
14:00	0	0	0	0	0	0		
15:00	0	0	0	0	0	0		D. Kalb
16:00	0	0	0	0	0	0		
17:00	0	0	0	0	0	0		
18:00	0	0	0	0	0	0		
19:00	0	0	0	0	0	0		
20:00	0	0	0	0	0	0		
21:00	0	0	0	0	0	0		
22:00	0	0	0	0	0	0		
23:00	0	0	0	0	0	0	S.A.R. +	
24:00	0	0	0	0	0	0		
1:00	0	0	0	0	0	0		
2:00	0	0	0	0	0	0		
3:00	0	0	0	0	0	0		
4:00	0	0	0	0	0	0		
5:00	0	0	0	0	0	0		
6:00	0	0	0	0	0	0		

P.B. Sodaye



TC-7099



KADAM ENVIRONMENTAL CONSULTANTS

An ISO 9001-2015 Certified Company

(MoEF Approved)

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBIENT

REPORT NO.: APR23/056/03 (ULR- TC709923000008247F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International, 701, Parshwanath Esquare, Corporate Road, Prahlad Nagar, Satellite, Ahmedabad-380015, Gujarat, India. (Oilfield)				
2.	Sample ID: 1833158246 – 056AP23AQ01	3.	Client Representative: Ms.Palak Kharadi		
4.	Sample Date: 10.04.2023	5.	Sampling Location: Near WA - 08		
6.	Sampling Time: 11:30 hr	7.	Sampling Duration: 24 Hrs		
8.	Analysis commenced on: 20.04.2023	9.	Analysis Completed on: 20.04.2023		
10.	Reporting Date: 24.04.2023	11.	Discipline: Chemical		
12.	Sample Collected By: Mr.Shubham	13.	Group: Atmospheric Pollution		
14.	Sampling Procedure: IS Method	15.	Product: Ambient Air		
16.	Description of Sample:	Sampling Bottles: Sealed <input checked="" type="checkbox"/>	Filter Paper: Packed <input checked="" type="checkbox"/>	Bladder: Clamped <input checked="" type="checkbox"/>	
17.	Environment Condition:	Temp: Normal	Humidity: Medium	Wind speed: Smooth	Cloud cover: Clear sky
	Rain: No Rain	Wind Direction: Down wind	Wind blowing from: -	Station category: Industrial	
18.	Sample Received Date: 20.04.2023				

TEST RESULTS

S.No	Parameters	Unit (SI)	Results	Specification / SPCB Norms / BIS Standards	Method Used
1.	PM ₁₀	µg /m ³	59	100	IS 5182(Part 23): 2006 (RA 2017)
2.	PM _{2.5}	µg /m ³	28	60	NAAQMS Manual by CPCB (Volume-I)
3.	Sulphur Dioxide (SO ₂)	µg /m ³	6.42	80	IS 5182(Part 2): 2001 (RA 2017)
4.	Oxides of Nitrogen (NO _x)	µg /m ³	9.61	80	IS 5182(Part 6): 2006 (RA 2017)
5.	Ammonia(NH ₃)	µg /m ³	<10	400	NAAQMS Manual by CPCB (Volume-I)
6.	Lead (pb)	µg /m ³	<1	1	USEPA(2000)-Method 29
7.	Ozone	µg /m ³	<1	100	IS 5182(Part 9): 1974 (RA 2014)

Remark :

Authorized By

Name : Bhavisha Pandya

Designation : Sr.Chemist

- NOTE: 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re analysis of sample will be done, if requested within 7 days from the date of Reporting of sample if the samples are not consumed during analysis.
3) The results reported above relate to the sample identified under Sample Details.

-----END OF REPORT-----

LABORATORY TEST REPORT FORMAT

DOC. NO.: LAB-FMT-051	Issue No.: 02	Revision No.: 03
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021



TC-7099

**KADAM ENVIRONMENTAL CONSULTANTS**

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(MoEF Approved)

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001**ENVIRONMENTAL MONITORING REPORT****LABORATORY TEST REPORT - NOISE****REPORT NO.: APR23/056/08 (ULR- TC709923000008249F)****SAMPLE DETAILS**

1	Name & Address of Client: M/s. Joshi Technologies International, 701, Parshwanath Esquare, Corporate Road, Prahlad Nagar, Satellite, Ahmedabad-380015, Gujarat, India. (Oilfield)		
2	Sample ID: 1833158246 - 056AP23N01	3	Client Representative: Ms.Palak Kharadi
4	Sample Date: 10.04.2023	5	Sample Collected By: Mr.Shubham
6	Analysis commenced on: 10.04.2023	7	Analysis Completed on: 11.04.2023
8	Reporting Date: 24.04.2023	9	Sampling Location: Near WA - 08
10	Discipline: Chemical	13	Sample Received Date: 11.04.2023
11	Group: Atmospheric Pollution		
12	Product: Ambient Noise Levels		

TEST RESULTS

Time (day)	Reading dB(A) Leq	Time (night)	Reading dB(A) Leq	Method Used
06.00 AM	62.9	22.00 PM	50.6	IS 9989: 1981
07.00 AM	61.5	23.00 PM	48.9	IS 9989: 1981
08.00 AM	64.0	24.00 PM	46.1	IS 9989: 1981
09.00 AM	70.4	01.00 AM	46.2	IS 9989: 1981
10.00 AM	69.2	02.00 AM	47.9	IS 9989: 1981
11.00 AM	72.0	03.00 AM	49.2	IS 9989: 1981
12.00 PM	72.9	04.00 AM	48.6	IS 9989: 1981
13.00 PM	71.9	05.00 AM	52.3	IS 9989: 1981
14.00 PM	71.6	06.00 AM	58.0	IS 9989: 1981
15.00 PM	71.9			IS 9989: 1981
16.00 PM	71.6			IS 9989: 1981
17.00 PM	60.6			IS 9989: 1981
18.00 PM	60.5			IS 9989: 1981
19.00 PM	59.4			IS 9989: 1981
20.00 PM	56.7			IS 9989: 1981
21.00 PM	53.7			IS 9989: 1981
22.00 PM	50.6			IS 9989: 1981
Average	64.8	Average	49.8	
Max.	72.9	Max.	58.0	
Min.	50.6	Min.	46.1	

Remark : GPCB limits : Day Time - 75 dB(A) (06.00 AM to 10.00 PM)
Night Time - 70 dB(A) (10.00 PM to 06.00 AM)

Authorized By

Name : Bhavisha Pandya

Designation : Sr.Chemist

NOTE :

- 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
- 2) Re analysis of Sample will be done, if requested within 7 days from the date of Reporting of Sample if the Samples are not consumed during analysis.
- 3) The results reported above relate to the Sample identified under Sample Details.

-----END OF REPORT-----

LABORATORY TEST REPORT - NOISE

DOC. NO.: LAB-FMT-087	Issue No.: 01	Revision No.: 03
Effective Date: 01.03.2021	Issue Date: 01-05-2015	Revision Date: 01.03.2021



TC-7099



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871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – EFFLUENT

REPORT NO.: APR23/056/05 (ULR- TC70992300008248F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International, 701, Parshwanath Esquare, Corporate Road, Prahlad Nagar, Satellite, Ahmedabad-380015, Gujarat, India. (Oilfield)		
2.	Sample ID: 1833158246 – 056AP23EF01	3.	Client Representative: Ms.Palak Kharadi
4.	Sample Date: 11.04.2023	5.	Sample Collected By: Mr.Shubham
6.	Analysis commenced on: 17.04.2023	7.	Analysis Completed on: 21.04.2023
8.	Reporting Date: 24.04.2023	9.	Discipline: Chemical
10.	Packing Condition & Quantity: Sealed ✓	11.	Group: Pollution and Environment
12.	Sampling Location: Pit Water (WA - 08)	13.	Product: Waste Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 17.04.2023

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	pH	:	8.01	N.A.	APHA 23 rd Edition 4500-H ⁺ B
2.	Elec. Conductivity	µmhos/cm	3060	N.A.	APHA 23 rd Edition 2510 B
3.	COD	mg/L	<5	N.A.	APHA 23 rd Edition 5220 B
4.	BOD (3 days at 27 °C)	mg/L	<2	N.A.	IS 3025 (Part 44) : 1993
5.	Total Dissolved Solids	mg/L	1832	N.A.	APHA 23 rd Edition 2540 C
6.	Suspended Solids	mg/L	22	N.A.	APHA 23 rd Edition 2540 D
7.	Oil & Grease	mg/L	<1	N.A.	APHA 23 rd Edition 5520 B
8.	Mercury	mg/L	<0.02	N.A.	APHA 23 rd Edition 3112-B

Remark :

Authorised By -

Name : Bhavisha Pandya

Designation : Sr.Chemist

- NOTE :
- 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
 - 2) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
 - 3) The results reported above relate to the sample identified under Sample Details.

-----END OF REPORT-----

TEST REPORT FORMAT - EFFLUENT

DOC. NO.: LAB-FMT-050	Issue No.: 02	Revision No.: 04
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021

FORM O
(See rules 29F (2) and 29L)
REPORT OF MEDICAL EXAMINATION UNDER RULE 29B
(To be issued in triplicate)**

Certificate No. 90

Certified that Shri/Shrimati* KALESHKUMAR employed as
..... in mine, Form B No has been examined for an
initial / periodic medical examination. He/she* appears to be 55 years of age. The findings of the
examining authority are given in the attached sheet. It is considered that
Shri/Shrimati* KALESHKUMAR

- (a)* is medically fit for any employment in mines.
- (b)* is suffering from..... and is medically unfit for
- (i) any employment in mine; or
 - (ii) any employment below ground; or
 - (iii) any employment or work
- (c) * is suffering from....., and is should get this disability* cured / controlled and should be again examined within a period of months. He / She will appear for re-examination with the result of test of..... and the opinion ofSpecialist from He / She may be permitted / not* permitted to carry on his duties during this period.



Sandip
Signature of the examining authority
Dr. SANDIP A. PATIL
(M.B.B.S.)
Reg. No. G-41898

[Signature]
Name and designation in Block letters
Superintendent
Community Health Centre
Navagam, Dist. Kheda.

Place: Kheda

Date: 02/05/2021

* Delete whatever is not applicable.
** One copy of the certificate shall be handed over to the person concerned and another copy shall be sent to the manager of the mine concerned by registered post, and the third copy shall be retained by the examining authority,
(* to be tested in special cases)

Report of the examining authority

(to be filled in for every medical examination whether initial or periodical or re-examination or after cure/control of disability).

Annexure to Certificate No. 90 as result of medical examination on 02/04/2024
Identification Mark note on (R) side of chin

Left thumb impression of the candidate

1. General development: Good / Fair / Poor
2. Height: 150 cms
3. Weight: 55 cms kg
4. Eyes:
 - (i) Visual acuity—Distance vision (with/without glasses) Right Eye 6/6 Left Eye 6/6
 - (ii) Any organic disease of the eyes
 - (iii) *Night blindness
 - (iv) *Colour blindness
 - (v) *Squint

(* to be tested in special cases)
5. Ears:
 - (i) Hearing Right ear Normal Left ear Normal
 - (ii) Any organic disease NO
6. Respiratory system
Chest measurement:
 - (i) After full inspiration 91 cms
 - (ii) After full expiration 88 cms
7. Circulatory system
Blood Pressure 164/100 mm Hg
Pulse 85/min
8. Abdomen:
Tenderness NO
Liver Normal
Spleen Normal
Tumour NO
9. Nervous system:
History of fits or epilepsy NO
Paralysis NO
Mental health Normal
10. Locomotor System Normal
11. Skin Normal
12. Hernia NO
13. Hydrocele NO
14. Any other abnormality NO
15. Urine:
Reaction Acidic
Albumin Nil
Sugar Nil
16. Skiagram of chest: NAD
17. Any other "C" test considered necessary by the examining authority: NO
18. Any opinion of specialist considered necessary NO

Place: Kherda

Sandip
Dr. SANDIP A. PATEL
(M.B.B.S.)
Reg. No. 541893
Signature of the examining authority

**Report off Medical Examination under Mines Rules 29B as per the recommendations of
National Safety Conferences in Mines**

(To be used in continuation with Form O)

Certificate No: 90

Name: KALESHKUMAR

Identification Marks: mark on (R) side of chin

Result of Lung Function Test (Spirometry)

Parameters	Predicted Value	Performed Value	% of Predicted
Forced Vital Capacity (FVC)	<u>02.34</u>	<u>02.06</u>	<u>088</u>
Forced Expiratory Volume 1 (FEV1)	<u>01.81</u>	<u>02.01</u>	<u>111</u>
FEV1/FVC	<u>77.35</u>	<u>97.57</u>	<u>126</u>
Peak Expiratory Flow	<u>06.11</u>	<u>07.53</u>	<u>123</u>

Spirometry report encloses

1. Cardiological Assessment:

Auscultation	S1	<u>Normal</u>
	S2	<u>Normal</u>
	Additional Sound	<u>NO</u>
Electrocardiograph (12 leads) findings		<u>Normal</u> / Abnormal

Enclosed ECG

2. Neurological Assessment:

Findings	Normal / Abnormal
Superficial reflexes	<u>Normal</u>
Deep reflexes	<u>Normal</u>
Peripheral Circulation	<u>Normal</u>
Vibration syndromes	<u>Normal</u>

3. ILO Classification of Chest Radiograph:

Profusion of Pneumoconiotic opacities	Grade	Types
Present / <u>Absent</u>	<u>NA</u>	<u>NA</u>

Enclosed Chest Radiograph

4. Audiometry Findings:

Conduction Type	Left Ear	Right Ear
Ear Conduction	<u>Normal</u> / Abnormal	<u>Normal</u> / Abnormal
Bone Conduction	<u>Normal</u> / Abnormal	<u>Normal</u> / Abnormal

Enclosed Audiometry Report

5. Pathological / Microbiological Investigations:


S. No.	Tests	Findings
1.	Blood - TC, DC, Hb, ESR, Platelets	<u>WNL</u> / Abnormal
2.	Blood Sugar - Fasting & PP	<u>WNL</u> / Abnormal
3.	Lipid Profile	<u>WNL</u> / Abnormal
4.	Blood Urea, Creatinine	<u>WNL</u> / Abnormal
5.	Urine Routine	<u>WNL</u> / Abnormal
6.	Stool Routine	<u>WNL</u> / Abnormal

Enclosed Investigation Reports

6. Special Test for Mn exposure

Behavioral Disturbances		Present / <u>Not Present</u>
Neurological Disturbances	Speech Defect	Present / <u>Not Present</u>
	Tremor	Present / <u>Not Present</u>
	Adiadocokinesia	Present / <u>Not Present</u>
	Emotional Changes	Present / <u>Not Present</u>

7. Any other Special Test Required: No


Dr. SANDIP A. PATEL
 Signature of the Examination Authority
 Reg. No. G-41898

FORM O
(See rules 29F (2) and 29L)
REPORT OF MEDICAL EXAMINATION UNDER RULE 29B
(To be issued in triplicate)**

Certificate No 28

Certified that Shri/Shrimati* RAJESH SODAGAR employed as
..... in mine, Form B No has been examined for an
initial / periodic medical examination. He/she* appears to be 41 years of age. The findings of the
examining authority are given in the attached sheet. It is considered that
Shri/Shrimati* RAJESH SODAGAR

(a) * is medically fit for any employment in mines.

(b) * is suffering from..... and is medically unfit for

- (i) any employment in mine; or
- (ii) any employment below ground; or
- (iii) any employment or work

(c) * is suffering from....., and is should get this disability* cured / controlled and should be
again examined within a period of months. He / She will appear for re-examination with the result of
test of..... and the opinion of Specialist from
..... He / She may be permitted / not* permitted to carry on his duties during this period.



Sandip
Signature of the examining authority
DR. SANDIP A. PATEL
(M.B.B.S.)

S
Name and designation in Block letters
Reg. No. G-41898
Superintendent
Community Health Centre
Navagam. Dist. Kheda.

Place: Kheda

Date: 01/04/2021

* Delete whatever is not applicable.
** One copy of the certificate shall be handed over to the person concerned and another copy shall be sent to the manager of the mine concerned by registered post, and the third copy shall be retained by the examining authority.
(* to be tested in special cases)

Report of the examining authority

(to be filled in for every medical examination whether initial or periodical or re-examination or after cure/control of disability).

Annexure to Certificate No. 28 as result of medical examination on 01/04/2021
Identification Mark Injury mark above left eyebrow

Left thumb impression of the candidate

1. General development: Good / Fair / Poor
2. Height: 172 cms
3. Weight: 91 cms kg
4. Eyes:
 - (i) Visual acuity - Distance vision (with or without glasses) Right Eye 6/6 Left Eye 6/6
 - (ii) Any organic disease of the eyes
 - (iii) *Night blindness
 - (iv) *Colour blindness
 - (v) *Squint(* to be tested in special cases)
5. Ears:
 - (i) Hearing Right ear Normal Left ear Normal
 - (ii) Any organic disease NO
6. Respiratory system
Chest measurement:
 - (i) After full inspiration 108 cms
 - (ii) After full expiration 102 cms
7. Circulatory system
Blood Pressure 124/80 mm Hg
Pulse 74 /min
8. Abdomen:
Tenderness NO
Liver Normal
Spleen Normal
Tumour NO
9. Nervous system:
History of fits or epilepsy NO
Paralysis NO
Mental health Normal
10. Locomotor System Normal
11. Skin Normal
12. Hernia NO
13. Hydrocele NO
14. Any other abnormality NO
15. Urine:
Reaction Acidic
Albumin NT
Sugar NT
16. Skiagram of chest: NAD.
17. Any other "C" test considered necessary by the examining authority: NO
18. Any opinion of specialist considered necessary NO

Place: Khedra

Sanchi
Signature of the examining authority
(M.B.B.S.)
Reg. No. G-41898

**Report off Medical Examination under Mines Rules 29B as per the recommendations of
National Safety Conferences in Mines**

(To be used in continuation with Form O)

Certificate No: 28

Name: RAJESH SODAGAR

Identification Marks: Injury mark above left eyebrow

Result of Lung Function Test (Spirometry)

Parameters	Predicted Value	Performed Value	% of Predicted
Forced Vital Capacity (FVC)	02.65	02.23	084
Forced Expiratory Volume 1 (FEV1)	02.17	02.10	097
FEV1/FVC	81.89	94.17	115
Peak Expiratory Flow	06.72	06.69	100

Spirometry report encloses

1. Cardiological Assessment:

Auscultation	S1	Normal
	S2	Normal
	Additional Sound	No
Electrocardiograph (12 leads) findings		Normal / Abnormal

Enclosed ECG

2. Neurological Assessment:

Findings	Normal / Abnormal
Superficial reflexes	Normal
Deep reflexes	Normal
Peripheral Circulation	Normal
Vibration syndromes	Normal

3. ILO Classification of Chest Radiograph:

Profusion of Pneumoconiotic opacities	Grade	Types
Present / Absent	NA	NA

Enclosed Chest Radiograph

4. Audiometry Findings:

Conduction Type	Left Ear	Right Ear
Ear Conduction	Normal / Abnormal	Normal / Abnormal
Bone Conduction	Normal / Abnormal	Normal / Abnormal

Enclosed Audiometry Report

5. Pathological / Microbiological Investigations:

S. No.	Tests	Findings
1.	Blood - TC, DC, Hb, ESR, Platelets	WNL / Abnormal
2.	Blood Sugar - Fasting & PP	WNL / Abnormal
3.	Lipid Profile	WNL / Abnormal
4.	Blood Urea, Creatinine	WNL / Abnormal
5.	Urine Routine	WNL / Abnormal
6.	Stool Routine	WNL / Abnormal

Enclosed Investigation Reports

6. Special Test for Mn exposure

Behavioral Disturbances		Present / Not Present
Neurological Disturbances	Speech Defect	Present / Not Present
	Tremor	Present / Not Present
	Adiadocokinesia	Present / Not Present
	Emotional Changes	Present / Not Present

7. Any other Special Test Required: M

Sandip

Dr. SANDIP A. PATEL

Signature of the Examination Authority

Ref. No. G-41898



ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SOLID WASTE

REPORT NO.: APR23/056/06

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Joshi Technologies International, 701, Parshwanath Esquare, Corporate Road, Prahlad Nagar, Satellite, Ahmedabad-380015, Gujarat, India. (Oilfield)		
2.	Sample ID: 1833158246 – 056AP23HW01	3.	Client Representative: Ms.Palak Kharadi
4.	Sample Date: 10.04.2023	5.	Sampling Location: Drill Cutting Sample (WA - 08)
6.	Analysis commenced on: 15.04.2023	7.	Analysis Completed on: 18.04.2023
8.	Reporting Date: 24.04.2023	9.	Sample Collected By: Mr.Shubham
10.	Physical Status: Solid	11.	Discipline: Chemical
12.	Sample Category: -	13.	Group: Pollution and Environment
14.	Colour: Brown	15.	Product: Solid Waste
16.	Description of Sample :	Packed and Sealed in Polythene bags. ✓	
17.	Sample Received Date: 15.04.2023		

PARAMETER DETAILS

S.No.	Parameters	Unit (SI)	Results	Specification/SPCB Norms/BIS Standards	Method Used
1.	Mercury	gm/kg	<0.0004	N.A.	APHA 23 rd Edition 3112-B
2.	Oil & Grease	gm/kg	0.8	N.A.	APHA 23 rd Edition 5520 B

Remark : 5 % leachate solution prepared in DM Water.

Authorised By :

Name : Bhavisha Pandya

Designation : Sr.Chemist

- NOTE :
- 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
 - 2) Re analysis of sample will be done, if requested within 7 days from the date of Reporting of sample if the samples are not consumed during analysis.
 - 3) The results reported above relate to the sample identified under Sample Details.

-----END OF REPORT-----

TEST REPORT FORMAT - SOLIDWASTE

DOC. NO.: LAB-FMT-053	Issue No.: 02	Revision No.: 03
Effective Date: 01.03.2021	Issue Date: 01-01-2015	Revision Date: 01.03.2021

A Report on **“Plastic Free Campaign”** **(Swachhata Hi Seva-2024)**



Organized by

Joshi Technologies International, Inc. - India Projects
Dholka & Wavel Field



Joshi Technologies International, Inc. - India Projects.

Conceptualized By:

Mrs. Palak kharadi

Team Members

Mr. Jayantibhai Parmar

Mr. Shreepad Nakare

Mr. Chiragsinh Vaghela

Appeal

“Save the EARTH

From

Plastic Pollution”

About JTI

Joshi Technologies International, Inc. – India projects is operating Dholka oil block since 1995 under production sharing contract signed with the government of India (MoP&NG, New Delhi). We are following the oil mines regulations 1984 to carry out our all operations safely, and to look after the safety of our workers as well as nearby localities. Moreover we are also governed by the safety standards of oil industry safety directorates – a body working under the MoP&NG, to supervise the operations of all oilfield operators.

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Introduction to Plastic Pollution

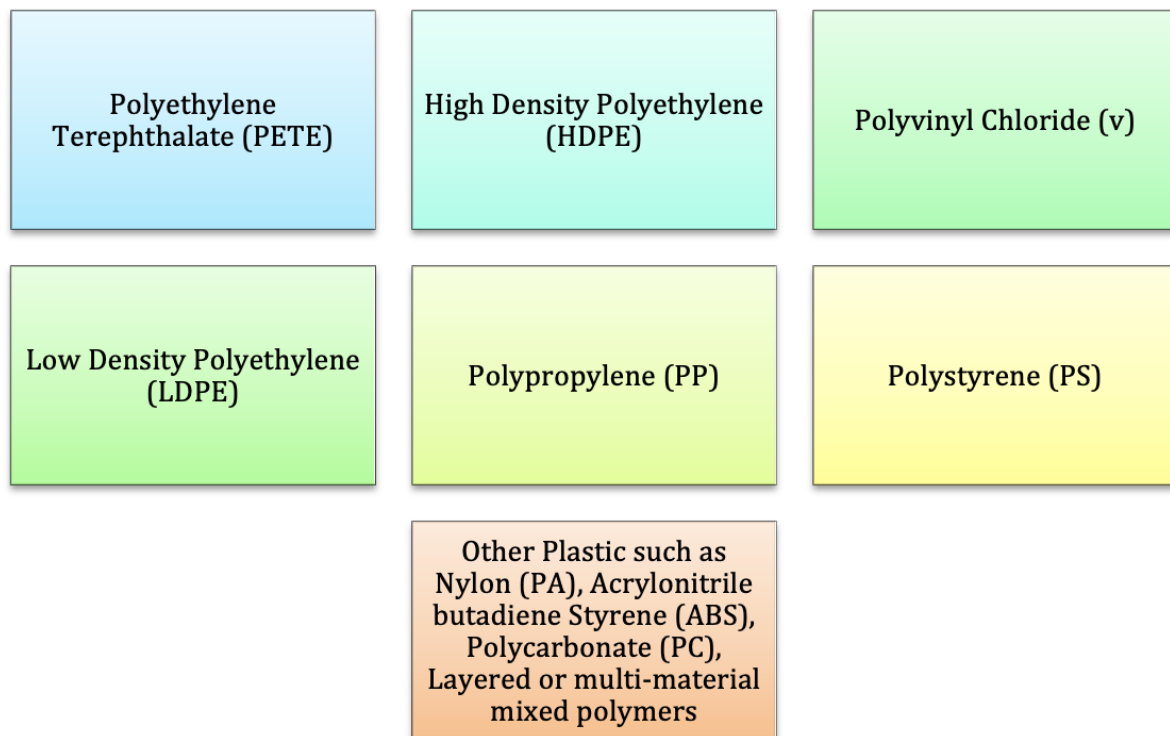
1. Introduction to Plastic

Plastic pollution is the accumulation of plastic particles and objects in the Earth's environment that adversely affect humans, wildlife and wildlife habitat. Pollutants are substances that adversely affect the health, activities or survival of a population. Every day, thousands of tons of pollutants are discarded into the air by natural events and human actions. Far more damaging are the substances discharged into the atmosphere by human actions. Plastics acting as pollutants can be classified based on their sizes into three aspects which are: micro debris plastic, mega debris plastic, and micro debris plastic. According to mega plastics and micro plastics have accumulated in highest densities in the Northern Hemisphere, which is concentrated around the current carrying the debris, plastic can be found off the coast of some islands. Mega-plastics and micro-plastics are normally used in the manufacturing of packaging materials (such as plastic bottles, plastic bags etc.), footwear and other domestic items. These are later found being washed off of ships or discarded in landfills. Some of the items used in fishing activities are also found around remote islands. All these are still known as micro-plastic, meso-plastic and macro-plastic.

Plastics are inexpensive and durable. These are the reason why the plastic production by humans are very high and the demand keeps on increasing day by day. Human activities have the potential to endanger human life and the natural ecosystems. This is experienced when plastics such as plastic bottle, plastic bags etc. are being utilised/used for packaging, after they are being utilised, it is realised that they are discarded recklessly without thinking of what will be the consequence. These plastic wastes litters everywhere when not well discarded/disposed affecting the wildlife, wildlife habitat, humans and producing choking, and pungent odour. Therefore, plastic pollution can affect land, waterways and oceans. Most plastics have chemical structure which makes them to be highly resistant to many natural processes of degradation and as a result of this it takes them a long period of time to degrade. These two factors have resulted into enormous presence of plastic pollution in the environment and at the same time affecting human health adversely. As the human population grows exponentially, so do the demands for plastic increases without thinking about the consequences after being used/utilised when discarded/disposed. This population continue to grow as the amount of garbage produced by people increases. These disposable products such as bottles of water, soda cans, plastic bag etc. are discarded/disposed easily, but the accumulation of these products have resulted to increase in the amounts of plastics pollution around the world.

1.1 Types of plastics

Plastic means a material consisting of a polymer, to which additives or other substances may have been added, and which can function as a main structural component of final products, with the exception of natural polymers that have not been chemically modified.



1.1.1 Single use plastics (sups)

United Nations Environment Report (2018) defines SUP as plastic, 'items intended to be used only once before they are thrown away or recycled'.

The SUPs are designed to be disposed after single usage. SUPs can include disposable plastic items often used in packaging consumer products, cosmetics, and healthcare items, etc. SUPs mean a product that is made wholly or partly from plastic and that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to a producer for refill or re-used for the same purpose for which it was conceived.



According to the UNEP Report (2018), plastic pollution is a defining challenge of our times... Single-use throw away plastics are the biggest contributor every year, millions of plastic bags end up in the environment, thus polluting soil, water bodies, rivers, oceans.

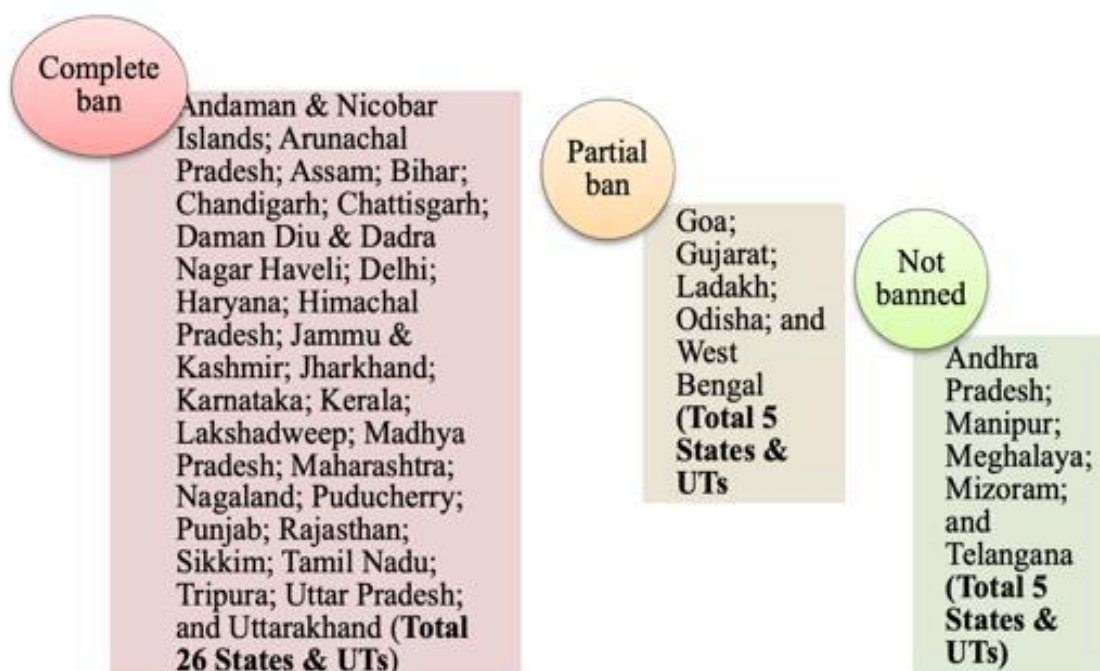
1.1.2 SUP ban in India

For taking effective steps towards regulating plastic manufacturing, usage, and waste generation, the Government of India introduced the Plastic Waste Management Rules, 2016, where plastic carry bags and sheets less than fifty microns in thickness have been prohibited. A complete ban on sachets using plastic material used for storing, packing or selling tobacco and pan masala. The Government of India came out with the Ban on Single-use Plastic Bill, 2019. The Bill aims at a complete ban on the manufacture, use, distribution, selling, or trading of single use plastic items.

The bill requires the State Governments to ensure complete ban on the production and use of plastics except for exigent reasons and increase recycling and reuse of SUP items already in the environment to the extent possible. The bill also requires the State Governments to take necessary measures to promote sustainable alternatives to SUP by providing conducive environment for research and development of bio and renewable resources as a sustainable alternative to plastic usage and organizing public awareness programs to avoid usage of SUP items. The bill also prescribes the following penal charges

Use of plastic items for the first time	Rs.500/- fine
Littering plastic items for the first time	Rs.500/- fine which may extend up to Rs.5,000/-
Using and Littering plastic items for second time	Rs.10,000/- fine
Using and littering plastic items for third time	Rs.25,000/- fine and imprisonment for a term which may extend up to three months
Producing plastic material	Rs.5,00,000/- fine which may extend up to Rs.50,00,000/- in addition to sealing of the manufacturing unit at once and imprisonment for a term which shall not be less than five years which may extend up to fifteen years
Using plastic as a packaging or wrapping material	Rs.5,00,000/- which may extend up to Rs.50,00,000/- and imprisonment for a term which shall not be less than five years which may extend up to fifteen years

The status of state-wise ban on SUPs is represented below (as on 12.02.2021):



2. Gujarat state observations (Ref. Annual report CPCB 2020-21)

Highlights of plastic waste management status in Gujarat state have been enumerated in this section.

Gujarat:

- The estimated plastic waste generation in the state is approximately 337693.96 TPA during 2020-21.
- Total 287 plastic manufacturing, 03 compostable units are registered in the state. There is no unregistered plastic manufacturer/recycler present in the state.
- As per provision '5(b)' of PWM rules, 2018 approximately 94101.93 MT of plastic waste has been used for co-processing in cement plants.
- The use of plastic carry bags is banned in the city of Gandhinagar vide notification: No. VN (14)/ENV - 10-2008-2100-E, dated: 28.06.2011.
- In case of violation, board & local body take necessary action against violating units. Show-cause notices have been issued to 44 plastic units, direction (closures) issued to 19 and notice of direction issued to 19 plastic units against the violation of rules.

3. Causes of plastic pollution.

Fishing Nets: Fishing is an agricultural activity normally practised all over the world. The commercial aspect of fishing is an economic necessity in which people consume fish for their daily survival and maintenance of good balanced diet. The ocean has faced different

problems of plastics pollution created by the fishing industry. The nets used for large scale fishing activities are usually made of plastic. At the initial stage, these fishing nets become submerged in water, on spending much time it releases toxin at will. Later, they get broken up. This kills and harms the local wildlife, but it ensures that pollutants enter the water and fish of the area.

Plain Old Trash: Plastics are found everywhere along the streets and roads of every cities and towns in Nigeria making them to be untidy. The cartons of some products such as can-milk, can-beverages, and can-tomatoes are lined with plastics so as to allow proper packaging. Plastic drinking bottles, water bottles, straws and stirrers used for soft drinks in hotels, restaurants and events centres for entertainment during conferences, seminars, symposiums, wedding receptions, Annual General Meetings (AGMs) etc. are disposed/discarded littering everywhere by the participants and invited guests ignoring the environmental consequence. Some of these products may even contain tiny plastic beads. Whenever one of these items is being discarded/disposed or washed down a sink, the toxic pollutants pose threats to the environment there by causing harm. Trash dumps and landfills are major problems because the pollutants are allowed to get into the ground thereby affecting the wildlife and groundwater.

Disposing of Plastic and Garbage: Plastics have complex chemical composition. This makes plastic to be durable and do not break down easily. Plastics and resins have different properties related to contaminant absorption and adsorption depending on their chemical composition. The polymer degradation takes a long period of time due to saline environments and cooling effect of the sea. These are contributory factors to the persistence of plastic debris in certain environments. Findings carried out by the marine experts have made them to predict the rates of decomposition of different plastic products. It is estimated that a plastic beverage holder will take 400 years, a foam plastic cup will take 50 years, a disposable nappy will take 450 years, and fishing line will take 600 years, to degrade. The burning of plastic is toxic which can harm the atmospheric conditions resulting to deadly illness.

Over-utilisation of Plastics: This refers to plastics being over-used. It is less expensive and durable. These enable both the privileged and less privileged people in the society to afford patronising plastic materials/items. It is one of the most widely available and over – used item in the world today. When plastic is disposed/ discarded, it does not decompose easily there by polluting the land or air nearby when burnt in the open air. Also, plastic items that are not properly discarded can be carried to oceans through storm waters.

3.1 Environmental effects of plastic pollution

Plastics consist of major toxic pollutants having the potential to cause important harm to the environment in the form of water, land and air pollution. Plastic is a material that is non-biodegradable, hence it can wreak havoc on natural environment resulting into long-term issues for animals, plants and humans. The distribution of plastic debris varies due to some factors among which are wind and ocean currents, urban areas, coastline geography, and trade routes. The population of humans in some areas also plays a large role in this. Plastic are normally found in enclosed regions such as nooks and crannies of

cities and towns thereby affecting the environment. This plays the role of distribution of organisms to remote coasts that are not their natural environments. Among the effects plastic pollution has on our environments are groundwater pollution, upsetting of the food chain, killings of animals, land pollution, poisonous ability, air pollution, expensiveness.

Groundwater Pollution: Groundwater is water that is present in rocks or unconsolidated materials below the Earth's surface. Groundwater forges a link between surface water systems and the material in Earth's Crust. According to, groundwater in its natural state tends to be relatively free of contaminant in most areas. Because it is a widely used source of drinking water, the contamination of groundwater can be a very serious problem. Our drinking water, whether we buy it in bottles or get it out of the tap, originally comes from streams and lakes on Earth's surface or from groundwater. This shows that the world's water is in great danger due to the leaking of plastics and waste. When rain falls, all these garbage dumps, landfills, and plastic wastes that litters everywhere become leached into the groundwater supplies which is part of our drinking water. Groundwater and reservoirs are susceptible to leaking environmental toxins thereby resulting into contaminated water. Plastics have littered and polluted the world's ocean having adverse effects on it. This has caused devastating environmental consequences on many marine species thereby creating adverse effects on the people consuming fish and other marine life for their nutrients.

It Upsets the Food Chain: A food chain is a linear sequence of who eats whom in an ecosystem. Most species belong to more than one food chain, especially when they are at a low feeding level. An ecosystem consists of one or more communities of organisms interacting with one another and with the physical environment through a flow of energy and a cycling of materials. According to, each species in an ecosystem has its own position in a hierarchy of feeding levels/trophic levels. A key factor in how any ecosystem functions is the transfer of energy from one of its feeding level to another. The food chain consists of producers, consumers and decomposers. Most of the organism in the food chain feeds on the plastic wastes. The plastic wastes come in different sizes be it large or small. Due to this, the tiniest organism in the world such as plankton is being. Affected by plastic pollution. When these organisms, being producers, feed on plastics, they become ingested and poisoned, thereby causing problem for the higher animals, being consumers that depend on them for food in the food chain. This leads to obstruction in the food chain and ecosystem as whole. Also, this can cause a lot of ingestion of highly toxic carcinogens and chemicals in plankton, fish, and mainly the humans, through the food chain.

Killings of Animals: The availability of plastic wastes such as plastic bags and containers, six-ring plastic can holders etc. in the crannies and nooks of the environment that are being discarded each day has resulted in the death of some animals such as duck, dolphins, fish, fowl, turkey, tortoises etc. in the environment when they become trapped in them or poisoned from the toxins released by plastics wastes. This causes adverse effects to the surrounding animals thereby affecting the ecosystem. According to, many marine organisms such as fish, turtles, birds etc. have become entangled in plastic debris which is responsible for their deaths. These animals become caught along the way in the debris and end up suffocating or drowning. Due to their inability to untangle themselves, they also die from starvation or from their inability to escape predators. Being entangled also often results in severe lacerations and ulcers. It was estimated that at least 267

different animal species have suffered from entanglement and ingestion of plastic debris in the 2006 report known as plastic debris in the World's Oceans. Said that the economic damage caused by plastic waste is vast. Studies reveal that the total economic damage to the world's marine ecosystem amounts to at least 3 billion dollar yearly. It has also impact on the tourism, fishing and shipping industries.

Land pollution: Plastic waste are normally dumped in landfills. When this takes place, there is interaction with water there by forming hazardous chemicals. When these chemicals seep underground, the quality of water become degraded. Wind has contributed to plastic pollution thereby carrying and depositing plastic from one place to another, increasing the land litter. The plastic wastes can also get stuck on trees, fences, towers, poles, traffic lights, roofs etc. and the animals coming in contact with them in the surrounding and might suffocate them leading to death. According to, the supply of open land and a free- enterprise system of waste collection and disposal led most American communities to opt for dumping urban refuse in landfills. In earlier periods, most of these were simply open dumps on the land, a menace to public health and esthetical blot on the landscape. Beginning in the 1960s, more stringent Federal controls began to require waste disposal in what was considered a more environmentally sound manner called the sanitary landfill. This involves depositing refuse in a natural depression or excavated trench, compacting it, and then covering it each day with soil to seal it

Poisonous Ability: The plastic pollution is poisonous. Plastic pollution has the potential to poison animals, which can then adversely affect human food supplies. A number of toxic chemicals are artificially used by man to produce plastic. Generally, the use of and exposure to plastics has been linked to numerous health concerns which is affecting people all over the world. The plastic pollution is highly detrimental to large marine mammals. It poses single greatest threat to them. Some marine species, such as sea turtles, have been found to contain large proportions of plastics in their stomach. When this occurs, the animal because starved. This is because the plastic blocks the digastric tract of the animal. Sometimes, marine mammals become entangled in plastic products such as nets, which can harm or kill them. The processes of producing, storing, using, disposing of, and just being around plastics can be totally dangerous/detrimental to living things. Toxins from emissions, fly ash, and slag in a burn pile can travel long distances and deposit in soil and water, eventually entering human bodies after being accumulated in the tissues of animals and plants.

Air Pollution: It is the presence of chemicals in the atmosphere in concentrations high enough to harm organisms, ecosystem, or human made materials, or to alter climate. Today, air pollution is a global problem; areas far from the polluting source may be adversely affected as at atmospheric, circulation moves pollutants freely without regard to political boundaries. When plastics are burnt in the open air, landfills or incinerators, poisonous/toxic chemicals are released thereby causing environmental pollution. Also, discarded plastics contribute to Greenhouse gas emission to the atmosphere having adverse effects on both humans and animals when inhaled. Therefore, the polluted air when inhaled by animals and humans affect their health thereby causing endocrine and respiratory problems etc.

Expensiveness: Plastic pollution is expensive. As landfills and incinerators are common everywhere, it costs millions of Naira's/Dollars every year to clean up the affected areas

after being exposed. This has led to the loss of life to animals, plants, and humans inhaling toxically chemicals from plastic wastes. The land becomes more valuable as it is being used for different purposes and to find a place to put garbage and trash has become a problem in many parts of the world. Excess pollution results into decrease in tourism and recreational centres in the affected areas thereby affecting the economy.

4. How can we help to manage the plastic pollution?

To save the environment from plastic waste, it is now very important to be aware and practice responsible use of plastic. Each one of us has a very important role to play in restricting plastic pollution. For this, the following R's are to be kept in mind:

1. Refuse- say no to plastic, particularly single use plastic as much as possible.
2. Reduce- limit or reduce the use of plastic in daily life.
3. Reuse- reuse plastic products as much as possible, before disposing them.
4. Recycle- Plastic products should be recycled into other usable products. This reduces the demand for manufacturing virgin (raw) plastic required to make various plastic products.

4.1 Goal and Scope of the Strategy to prevent plastic pollution.



Objective A. Reduce pollution during plastic production

A1. Reduce the production and consumption of single-use, unrecyclable, or frequently littered plastic products.



A2. Minimize pollution across the life cycle of plastic products

Objective B. Improve post-use materials management

B1. Conduct a study of the effectiveness of existing public policies and incentives upon the reuse, collection, recycling, and conservation of materials.

B2. Develop or expand capacity to maximize the reuse of materials.

B3. Facilitate more effective composting and degradation of certified compostable products.



B4. Increase solid waste collection and ensure that solid waste management does not adversely impact communities, including those overburdened by pollution.

B5. Increase public understanding of the impact of plastic mismanagement and how to appropriately manage plastic products and other waste.

B6. Explore possible ratification of the Basel Convention and encourage environmentally sound management of scrap and recyclables traded with other countries.

Objective C. Prevent trash and micro/ Nano plastics from entering waterways and remove escaped trash from the environment.

C1. Identify and implement policies, programs, technical assistance, and compliance assurance actions that effectively prevent trash/ micro/Nano plastics from getting into waterways or remove such waste from waterways once it is there.



C2. Improve water management to increase trash and micro/ Nano plastic capture in waterways and storm water/wastewater systems.

C3. Increase and improve measurement of trash loadings into waterways to inform management interventions.



C4. Increase public awareness of the impacts of plastic products and other types of trash in waterways.

C5. Increase and coordinate research on micro/Nano plastics in waterways and oceans.



5. Finding and suggestions

- Plastic bags and garbage that are thrown into the ocean have devastating effect on sea animals.
- Over 60% of the trash that ends in dustbin could be recycled.
- Plastic bags that are thrown into the ocean kill over a million sea creatures a year.
- Plastic pollution threatens food safety and quality, human health, coastal tourism, and contributes to climate change.
- Americans normally use over two and a half million plastic bottles every thirty minutes, and most of them are simply thrown away rather than recycled.
- Findings show that bodies of 90% of Seabirds contain plastic debris.
- Plastics contribute to approximately 10% of discarded waste
- Research suggested that by 2050, there could be more plastic than fish in the oceans by weight.
- Findings show that there are ten (10) largest emitters of oceanic plastic pollution worldwide which are from the most to the least: China, Indonesia, Philippines, Vietnam, Sri Lanka, Thailand, Egypt, Malaysia, Nigeria, and Bangladesh.

About plastic free campaign (swachhata hi seva - 2024)

Objective:

* With the aim of creating Plastic Free Environment, JTI – India project employees has fixed following objectives under the “**Plastic Free Campaign**”:

- To create awareness among the people on the hazards of single use of plastic and to motivate them towards the use paper or fabric (Cotton or Jute) bags.
- To create a plastic free environment at the adjoining areas of JTI Oil Field areas.

6. Activities under the campaign

ACTIVITIES UNDERTAKEN

1. On the 26th January (Republic Day), Pledge were taken to stop the use of single plastic and posters with Hindi and Gujarati translations were also put up at Indroda village and Wavel plant:







ઈન્દ્રોડા ખાતે જનજાગૃતિ કાર્યક્રમ યોજાયો



ગાંધીનગર કોર્પોરેશન વિસ્તારમાં સમાવિષ્ટ ઈન્દ્રોડા ગામમાં જનજાગૃતિ કાર્યક્રમનું આયોજન કરવામાં આવ્યું હતું. જે અંતર્ગત પ્લાસ્ટિકનો ઉપયોગ નહીં કરવા અંગેના લોકોએ શપથ ગ્રહણ કર્યા હતા. આ પ્રસંગે ગ્રામજનો તેમજ શાળાના વિદ્યાર્થીઓ ઉપસ્થિત રહ્યા હતા અને કાર્યક્રમમાં જોડાયા હતા.

2. Door to door Awareness by distributing pamphlets about plastic waste & its Pollution waste in the Villages at the adjoining areas of JTI Oil Field:









3. Conveyed message to stop single use plastic in Indroda village by installing sound system in rickshaw:





The following one village have been undertaken Under “Plastic Free campaign” by JTI oil field employees.

1- Indroda village

The Plastic Free Cleanliness Drive was started on 26th January 2024 with the “**Awareness Campaign about Plastic Waste at door to door**” at the undertaken villages. This campaign will be organized on 26th January 2024 and two drives in a single day (one at morning and one at evening) have been organized.

Under this campaign, senior officers from the JTI – Oil Field Company are going door to door by distributing pamphlets also conveyed message by installing sound system in rickshaw to make awareness about plastic waste from village’s area. They are also educating people on the use of paper or fabric (Cotton or Jute) bags instead of plastic bags which creates many health and environment hazards. As the main motive of the “Plastic Free Cleanliness Drive” is to seize the plastic waste villages.

To Refuse and reduce plastic, the best way is to switch over to alternatives, especially for single use plastics. Examples of such alternatives are- paper or metal straws, cutlery made of steel, disposable plates and bowls made of leaves (Patravali/ Pattal), and carry bags made of cloth or paper. Each day we can take simple actions such as those mentioned below to reduce our dependence on plastic products:

1. Always carry a cloth bag for shopping
2. Use reusable/ biodegradable plates and cutlery
3. Use steel water bottles
4. Encourage peers and family members to use alternatives to plastic
5. Spread knowledge about plastic pollution and ways to tackle it.

Each small or large initiative against plastic pollution can make a significant difference. Each one of us can be a part of this Movement. Let us all pledge to our bit to reduce and remove single use plastics from the Earth.

Expected outcomes:

This drive will create awareness among the people about the harmful effects of the single use plastic as a result they will be motivated towards the use of paper or fabric (Cotton or Jute) bags.