



हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड

(भारत सरकार का उपक्रम) रजिस्टर्ड ऑफिस : 17, जमशेदजी टाटा रोड, मुंबई 400 020

HINDUSTAN PETROLEUM CORPORATION LIMITED

(A GOVERNMENT OF INDIA ENTERPRISE) REGISTERED OFFICE : 17, JAMSHEDJI TATA ROAD, MUMBAI 400 020

CIN : L23201MH1952GO1008858

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Date: 3rd Dec 2019

SK/2G/ Env Compliance

To
The Deputy Director /Scientist 'C',
Ministry of Environment, Forests & Climate Change,
Northern Regional Office
Bays No. 24-25, Sector-31A,
Dakshin Marg, Chandigarh-160030

Sub: Submission of six-monthly compliance report of stipulated conditions of Environmental Clearance for setting up 2G Ethanol Bio-refinery plant of capacity 100 KLPD at Village- Nasibpura, Tehsil Talwandi Sabo, Bathinda (Punjab) for the period of December 2019

Ref: F.No. J-11011/221/2017-IA II (I) Dated- 14.08.2018

Sir/ Madam

This has reference to the EC vide letter no. **J-11011/221/2017-IA II (I) Dated 14.08.2018** In this regard, we are submitting hereby status report of compliance with the specific and general conditions for period December, 2019. This contains soft copy of the report as CD for your kind perusal. Documents enclosed along with report are mentioned below as

1. Point- wise compliance of stipulated environmental conditions
2. Analysis Reports
3. Supporting Documents

Thanking You

S. Kumar

For M/s- Hindustan Petroleum Corporation Limited

(Authorized Signatory)

Name - Sanjay Kumar
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PURPOSE OF THE REPORT

1.0 Introduction

1.1 About Project: M/s Hindustan petroleum Corporation Limited has proposed to set up 2G Ethanol Bio-Refinery plant of capacity 100 KLPD at village Nasibpura, Tehsil Talwandi Sabo, Bathinda (Punjab).

This Project has obtained Environmental Clearance from Ministry of Environment, Forests and Climate Change Delhi, with certain conditions.

1.2 Purpose of the Report

As per the "Sub Para (i)" of "Para 10" of EIA Notification 2006, it is stated that *"It shall be mandatory for the project proponent to submit half-yearly compliance report in respect of the stipulated prior environmental clearance terms and conditions in hard and soft copies to the concerned regulatory authority, on 1st June and 1st December of each calendar year"* and as per compliance condition mentioned in Environment Clearance Letter.

The regulatory authorities in this case are MoEF& CC Delhi, MoEF& CC, Chandigarh and SPCB, Punjab. Various scheduled Site Visits were conducted by a team of Experts to Monitor Pollution related parameters as defined by CPCB / HSPCB. Samples for water and soil were also collected by NABL/ MoEF approved laboratory for analysis.

Based on the Specific and General Conditions mentioned in the EC Letter, a Compliance Report has been prepared and submitted regularly to the authority.

The Environmental assessment has been carried out to verify:

- 1) The proposed project does not have any adverse effect on the project site as well as it's surrounding.
- 2) There is compliance with the conditions stipulated in the Environmental Clearance Letter.
- 3) The Project proponent is implementing the environmental safeguards in true spirit.
- 4) The project proponent is implementing the environmental pollution mitigative measures as suggested in approved EIA report.

1.3 Methodology for Preparation of Report is as follows:

- 1) Study of EC Letter & Related Documents,
- 2) Monitoring of Environment Parameters, viz. Ambient Air, Water, Noise & Soil by the NABL/MoEF labs.
- 3) Interpretation of Monitoring Results.
- 4) Preparation of half yearly Environmental Compliance Report.

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1.4 Generic Structure of Report:

- 1) Purpose of the Report, explaining the need of a Compliance Report and Methodology Adopted for preparation of Report.
- 2) Compliance Report, explaining the entire General & specific conditions in the EC Letter and providing details w.r.t. each condition/ guideline.
- 3) Monitoring Reports & Analysis, showing the level of emission within the project site for various Environment Parameters.
- 4) Photographs showing sample collection for environmental monitoring.
- 5) Supporting Documents which are mandatory for the project.

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ADHERENCE TO SPECIFIC AND GENERAL CONDITIONS

PART A- SPECIFIC CONDITION

S. No.	Conditions of Environmental Clearance	Status of Compliance
[A]	The final product (Ethanol) shall be used exclusively for fuel blending only.	<i>Noted.</i>
[B]	Consent to Establish/Operate for the project shall be obtained from the State Pollution Control Board as required under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.	<i>Consent to Establish (CTE) has been received from PPCB, Bathinda on 27th Nov'19 (Copy enclosed).</i>
[C]	As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged outside the premises	<i>As proposed zero discharge of waste water will be met during operational phase.</i>
[D]	Necessary authorization required under the Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016, Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the Rules shall be strictly adhered to.	<i>Authorization required for hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016, Solid waste Management Rules, 2016 will be obtained as per the requirement.</i>
[E]	To control source and the fugitive emissions, suitable pollution control devices shall be installed to meet the prescribed norms and/or the NAAQS. The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines	<i>Measures will be taken to control fugitive emission, pollution control devices will be installed as per the requirement. Stack of adequate height as per the guidelines will be installed for the gaseous emission dispersion.</i>
[F]	Total fresh water requirement shall not exceed 1800 cum/day, proposed to be met from canal supply.	<i>Prescribed water requirement will not be exceeded.</i>
[G]	Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through a separate conveyance system.	<i>We will ensure that process water is not mixed with storm water.</i>
[H]	The Company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended time to time. All transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.	<i>Noted.</i>

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[I]	The company shall undertake waste minimization measures as below:- i. Metering and control of quantities of active ingredients to minimize waste. ii. Reuse of by-products from the process as raw materials or as raw material substitutes in other processes. iii. Use of automated filling to minimize spillage. iv. Use of Close Feed system into batch reactors. v. Venting equipment through vapour recovery system vi. Use of high pressure hoses for equipment clearing to reduce wastewater generation.	<i>We will comply with the condition as per the requirement to minimise waste generation in the plant-</i> <i>i. Metering and control of quantities of active ingredients will be done regularly.</i> <i>ii. By products will be reused as raw material as much as possible according to requirement.</i> <i>iii. Automated filling will be carried out to minimize spillage</i> <i>iv. Close feed system will be used into batch reactors.</i> <i>v. Water scrubber, vent bottle & flame arrestors will be provided as per requirement.</i> <i>vi. High pressure hoses for equipment clearing will be used to reduce waste water generation.</i>
[J]	The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.	<i>We have submitted Green belt development plan to the MoEF& CC in the EIA report and same will be developed as per the EC requirement.</i>
[K]	All the commitments made regarding issues raised during the public hearing/ consultation meeting shall be satisfactorily implemented.	<i>Noted.</i>
[L]	At least 1% of the total project cost shall be allocated for Corporate Environment Responsibility (CER) and the details along with time bound action plan shall be submitted to the Ministry's Regional Office.	<i>The project is in initial stage and construction is yet to be commenced. CER details will be submitted to the authority in due course of time. .</i>
[M]	For the DG sets, emission limits and the stack height shall be in conformity with the extant regulations and the CPCB guidelines. Acoustic enclosure shall be provided to DG set for controlling the noise pollution.	<i>Acoustically enclosed DG sets will be installed and Stack height will be kept as per the CPCB guidelines.</i>
[N]	The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Fire fighting system shall be as per the norms.	<i>Fire Fighting system will be installed as per the condition.</i>
[O]	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	<i>Regular Health Check-up arrangement will be provided for the workers. A qualified doctor will be appointed.</i>
[P]	There shall be adequate space inside the plant premises earmarked for parking of vehicles for raw materials and finished products, and no parking to be allowed outside on public places.	<i>No parking will be done outside on public places. Plan in this regard has already been submitted to authority.</i>
[Q]	Storage of raw materials shall be either stored in silos or in covered areas to prevent dust pollution and other fugitive emissions.	<i>During operation phase, raw materials will be stored properly in covered areas</i>
[R]	Continuous online (24x7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. For online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the	<i>We will comply.</i>

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	premises.	
[S]	C0 ₂ generated from the process shall be bottled/made solid ice/value added products and sold to authorize vendors.	<i>Noted.</i>

11.1 Other Generic Conditions:-

S. No.	Conditions of Environmental Clearance	Status of Compliance
i.	The project authorities must strictly adhere to the stipulations made by the state Pollution Control Board (SPCB), State Government and/ or any other statutory authority.	<i>We ensure to follow the guidelines strictly.</i>
ii.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. 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.	<i>Noted.</i>
iii.	The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one stations each is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated	<i>Noted and same will be complied.</i>
iv.	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R No. 826(E) dated 16 th November, 2009 Shall be Complied with.	<i>Noted.</i>
v.	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 Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	<i>We will ensure to keep the noise levels within the standards.</i>
vi.	The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial operations within the plant.	<i>Noted.</i>
vii.	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	<i>Regular training of health & safety will be provided to the employees for chemical handling.</i>
viii.	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	<i>Noted and will be complied as per the requirement.</i>

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	environmental management, risk mitigation measures and public hearing shall be implemented.	
ix.	The company shall undertake all measures for improving socio-economic conditions of the surrounding area. CSR activities shall be undertaken by involving local villagers, administration and other stake holders. Also eco-developmental measures shall be undertaken for overall improvement of the environment.	<i>CSR activities will be undertaken as per the proposed plan.</i>
x.	A separate Environmental Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	<i>Noted.</i>
xi.	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.	<i>Separate funds will be kept for the implementation of the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government.</i>
xii.	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zila Parishad/ Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.	<i>Noted.</i>
xiii.	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status reports shall be posted on the website of the company.	<i>Noted. We are complying with the condition.</i>
xiv.	The environmental statement for each financial year ending 31 st March in Form-Vas is mandated shall be submitted 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 clearance conditions and shall also be sent to the respective Regional offices of MoEF&CC by e-mail.	<i>Noted.</i>
xv.	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 available with the SPCB/Committee and may also be seen at Website of the Ministry at http://moef.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	<i>Copy of advertisements attached.</i>

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	forwarded to the concerned Regional office of the Ministry.	
xvi.	The Ministry reserves the right to stipulate additional conditions, if found necessary at subsequent stages and the project proponent 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.	<i>Noted.</i>
xvii.	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 Trans boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 read with subsequent amendments therein.	<i>Noted.</i>

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DETAILS OF ENVIRONMENTAL MONITORING

3.1 AMBIENT AIR QUALITY MONITORING

3.1.1 Ambient Air Quality Monitoring Stations

Ambient air quality monitoring has been carried out at twelve locations, to assess the ambient air quality of the project site. This will enable to have a comparative analytical understanding about air quality and the changes in the air environment in the study area with respect to the condition prevailing. The locations of the ambient air quality monitoring stations are given in **Table 3.1**.

Table 3.1 Details of Ambient Air Quality Monitoring Stations

S. No.	Location	Location Name/ Description
1.	AAQ1	Near Project site
2.	AAQ2	Jiwan Singh Wala
3.	AAQ3	Maawala
4.	AAQ4	Mahi Nangal
5.	AAQ5	Leleana
6.	AAQ6	Baghi Bandar
7.	AAQ7	Nasibpura
8.	AAQ8	Kothbhara
9.	AAQ9	Kot Kashmir
10.	AAQ10	GehriBoghi
11.	AAQ11	Chathewala
12.	AAQ12	KotFatta
13.	AAQ13	Near Project Site

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14	AAQ14	Jiwan Singh Wala
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3.1.2 3.1.2 Ambient Air Quality Monitoring Methodology

Monitoring was conducted in respect of the following parameters:

1. Particulate Matter 2.5 (PM 2.5)
2. Particulate Matter 10 (PM 10)
3. Sulphur Dioxide (SO₂)
4. Oxides of Nitrogen (NO₂)
5. Carbon Monoxide (CO)
6. Ammonia (NH₃)
7. Lead (Pb)
8. Benzene (C₆H₆)
9. Benzo(a)pyrene
10. Ozone (O₃)
11. Arsenic (As)
12. Nickel (Ni)
13. Volatile Organic Carbon (VOCs)
14. Hydrocarbon (as Methane)

Installation of Respirable Dust sampler (RDS) & Fine Particulate Sampler (FPS) was done with the attachment for the 24 hourly ambient air quality monitoring as per Gazette Notification 16th November 2009.

The air samples were analyzed as per standard methods specified by Central Pollution Control Board (CPCB) and IS: 5182. The techniques used for ambient air quality monitoring and minimum detectable levels are given in **Table 3.2**.

Fine Particulate Sampler instruments have been used for monitoring Particulate Matter 2.5 (PM_{2.5} i.e. <2.5 microns), and Respirable Dust Sampler was used for sampling Repairable fraction (<10 microns), gaseous pollutants like SO₂, and NO₂. Bladder and Aspirator bags were used for collection Carbon monoxide samples. Gas Chromatography techniques have been used for the estimation of CO.

Table 3.2 Techniques used for Ambient Air Quality Monitoring

S. No.	Parameter	Technique	Technical Protocol
1	Particulate Matter 2.5	Fine Particulate Sampler, Gravimetric Method	#SOP No. VEL/SOP/01, Section No. SP 63
2	Particulate Matter 10	Respirable Dust Sampler, with cyclone separator, Gravimetric Method	IS: 5182 (P-23), 2006
3	Sulphur dioxide	Modified West and Gaeke	IS: 5182 (P-6)
4	Oxides of Nitrogen	Jacob & Hochheiser	IS: 5182 (P-2)
5	Carbon Monoxide	Gas Chromatography	IS:11255(P-6)
6	Ammonia	Distillation Method	IS: 5182 (P-22)
7	Lead	Atomic Absorption Spectro-photometer	IS: 5182 (P-10)

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8	Benzene	Gas Chromatography	IS: 5182 (P-11)
9	Benzo(a)pyrene	Gas Chromatography	IS: 5182 (P-12)
10	Ozone	Colorimetry	IS: 5182 (P-9)
11	Arsenic	Atomic Absorption Spectro-photometer	IS: 5182 (P-22)
12	Nickel	Atomic Absorption Spectro-photometer	IS: 5182 (P-22)
13	Volatile Organic Carbon (VOCs)	IS:5182 (P-11)	IS:5182 (P-11)
14	Hydrocarbon (as Methane)	IS:5182 (P-17), 1979	IS:5182 (P-17), 1979

3.1.3 Ambient Air Quality Monitoring Results

Table 3.3 Ambient Air Quality Monitoring Results (1-4 Location)

S. No.	Parameter	Test Result				NAAQS*
		AAQ1	AAQ2	AAQ3	AAQ4	
1.	Particulate Matter (PM _{2.5}), µg/m ³	40.21	44.31	41.80	43.88	60
2.	Particulate Matter (PM ₁₀), µg/m ³	72.65	78.60	76.67	76.60	100
3.	Nitrogen Dioxide (NO ₂), µg/m ³	24.82	17.31	19.86	20.91	80
4.	Sulphur Dioxide (SO ₂),	8.02	10.49	13.50	9.70	80
5.	Ammonia (NH ₃), µg/m ³	8.74	11.08	9.78	8.83	400
6.	Lead (Pb), µg/m ³	**BDL (*DL 0.05 µg/m ³)	1			
7.	Carbon Monoxide (CO) mg/m ³	0.86	0.76	0.92	0.79	4
8.	Benzene (C ₆ H ₆), µg/m ³	**BDL (*DL 0.05 µg/m ³)	**BDL (*DL 0.1 µg/m ³)	**BDL (*DL 0.1 µg/m ³)	**BDL (*DL 0.1 µg/m ³)	05
9.	Benzo(a)pyrene, ng/m ³	**BDL (*DL 0.1 ng/m ³)	**BDL (*DL 1.0 ng/m ³)	**BDL (*DL 1.0 ng/m ³)	**BDL (*DL 1.0 ng/m ³)	01
10.	Ozone (O ₃), µg/m ³	**BDL (*DL 1.0 ng/m ³)	18.65	16.88	15.89	180
11.	Arsenic As, ng/ m ³	**BDL (*DL 5.0ng/ m ³)	6			
12.	Nickel Ni, ng/ m ³	**BDL (*DL 5.0ng/ m ³)	20			
13.	Volatile Organic Carbon	**BDL (*DL 5.0 µg/m ³)	--			
14.	Hydrocarbon (as Methane)	*BDL(*DL 0.2 ppm(v/v))	*BDL(*DL 0.2 ppm(v/v))	*BDL(*DL 0.2 ppm(v/v))	*BDL(*DL 0.2ppm(v/v))	--

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009

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Table 3.4 Ambient Air Quality Monitoring Results (5-8 Location)

S. No.	Parameter	Test Result				NAAQS*
		AAQ5	AAQ6	AAQ7	AAQ8	
1.	Particulate Matter (PM _{2.5}), µg/m ³	39.42	32.14	42.96	46.88	60
2.	Particulate Matter (PM ₁₀), µg/m ³	57.28	52.62	62.45	84.91	100
3.	Nitrogen Dioxide (NO ₂), µg/m ³	21.45	26.51	29.62	17.10	80
4.	Sulphur Dioxide (SO ₂),	17.98	10.35	22.57	9.55	80
5.	Ammonia (NH ₃), µg/m ³	8.98	14.56	10.78	9.26	400
6.	Lead (Pb), µg/m ³	**BDL (*DL 0.05 µg/m ³)	1			
7.	Carbon Monoxide (CO) mg/m ³	0.82	0.99	0.90	0.83	4
8.	Benzene(C ₆ H ₆), µg/m ³	**BDL (*DL 0.1 µg/m ³)	05			
9.	Benzo(a)pyrene, ng/m ³	**BDL (*DL 1.0 ng/m ³)	01			
10.	Ozone (O ₃), µg/m ³	20.54	16.83	26.98	21.47	180
11.	Arsenic As, ng/ m ³	**BDL (*DL 5.0ng/ m ³)	6			
12.	Nickel Ni, ng/ m ³	**BDL (*DL 5.0ng/ m ³)	20			
13.	Volatile Organic Carbon	**BDL (*DL 5.0 µg/m ³)	--			
14.	Hydrocarbon (as Methane)	*BDL(*DL 0.2 ppm(v/v))	*BDL(*DL 0.2 ppm(v/v))	*BDL(*DL 0.2 ppm(v/v))	*BDL(*DL 0.2ppm(v/v))	--

*NAAQS - National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009

Table 3.5 Ambient Air Quality Monitoring Results (9-12 Location)

S. No.	Parameter	Test Result				NAAQS*
		AAQ9	AAQ10	AAQ11	AAQ12	
1.	Particulate Matter (PM _{2.5}), µg/m ³	42.16	47.14	40.39	36.69	60
2.	Particulate Matter (PM ₁₀), µg/m ³	59.42	84.90	64.56	68.44	100
3.	Nitrogen Dioxide (NO ₂), µg/m ³	25.62	24.50	24.21	18.32	80
4.	Sulphur Dioxide (SO ₂),	8.47	9.78	7.75	8.95	80
5.	Ammonia (NH ₃), µg/m ³	13.59	13.86	9.10	12.14	400
6.	Lead (Pb), µg/m ³	**BDL (*DL 0.05 µg/m ³)	1			

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7.	Carbon Monoxide (CO) mg/m ³	0.85	0.91	0.78	0.76	4
8.	Benzene(C ₆ H ₆) ,µg/m ³	**BDL (*DL 0.1 µg/m ³)	05			
9.	Benzo(a)pyrene, ng/m ³	**BDL (*DL 1.0 ng/m ³)	01			
10.	Ozone (O ₃) ,µg/m ³	16.21	13.86	10.55	15.11	180
11.	Arsenic As, ng/ m ³	**BDL (*DL 5.0ng/ m ³)	6			
12.	Nickel Ni, ng/ m ³	**BDL (*DL 5.0ng/ m ³)	20			
13.	Volatile Organic Carbon	**BDL (*DL 5.0 µg/m ³)	**BDL (*DL 5.0 µg/m ³)	**BDL (*DL 5.0 µg/m ³)	**BDL (*DL 5.0µg/m ³)	--
14.	Hydrocarbon (as Methane)	*BDL(*DL 0.2 ppm(v/v))	*BDL(*DL 0.2 ppm(v/v))	*BDL(*DL 0.2 ppm(v/v))	*BDL(*DL 0.2ppm(v/v))	--

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009

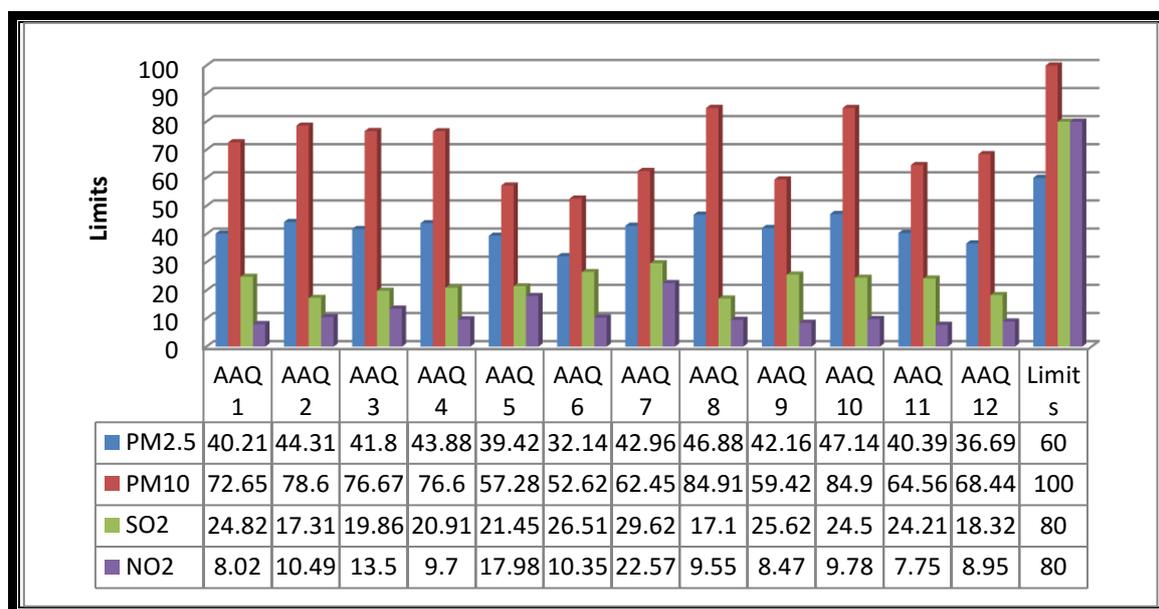


Figure 3.1 Location-wise Variation of Ambient Air Quality

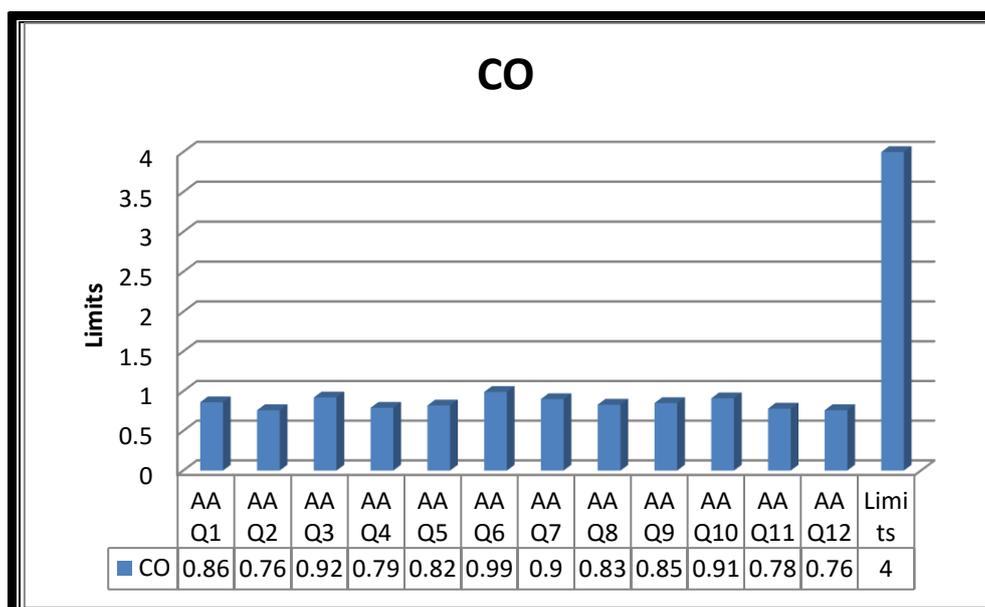


Figure 3.2 Location-wise Variation of CO in Ambient Air Quality

3.1.4 Discussion on Ambient Air Quality in the Study Area

PM₁₀ and PM_{2.5} levels at the project site are within the permissible limit of 100µg/m³ and 60 µg/m³ respectively (for residential, rural and other areas as stipulated in the National Ambient Air Quality Standards). SO₂, NO_x and CO was observed within the corresponding stipulated limits (Limit for SO₂ and NO_x: 80 µg/m³ and limit for CO: 4.0 mg/m³) at all monitoring locations. Station wise variation of ambient air quality parameters has been pictorially shown in **Figure 3.1 & 3.2**

3.2 AMBIENT NOISE MONITORING

3.2.1 Ambient Noise Monitoring Locations

The main objective of noise monitoring in the study area is to assess the present ambient noise levels in near front gate due to various construction allied activities and increased vehicular movement. A preliminary reconnaissance survey has been undertaken to identify the major noise generating sources in the area. Ambient noise monitoring was conducted at 3 locations at the boundary of the project site as given in **Table 3.6**.

Table 3.6 Details of Ambient Noise Monitoring Stations

S. No.	Location Code	Location Name/ Description	Present Land use
1.	N1	Near Project site	Industrial
2.	N2	Jiwan Singh Wala	Residential
3.	N3	Maawala	Residential
4.	N4	Mahi Nangal	Residential
5.	N5	Leleana	Residential
6.	N6	Baghi Bandar	Residential
7.	N7	Nasibpura	Residential
8.	N8	Kothbhara	Residential
9.	N9	Kot Kashmir	Residential
10.	N10	GehriBoghi	Residential
11.	N11	Chathewala	Residential
12.	N12	KotFatta	Residential

3.2.2 Methodology of Noise Monitoring

Noise levels were measured using sound level meter. Noise level monitoring was carried out continuously for 24-hours with one hour interval starting at 06:00hrs to 06:00hrs next day. The noise levels were monitored on working days only. During each hour Leq were directly computed by the instrument based on the sound pressure levels. Monitoring was carried out at 'A' response and fast mode.

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3.2.3 Ambient Noise Monitoring Results

The location wise ambient noise monitoring results is summarized in **Table 3.7**. The location-wise variation of noise levels are graphically presented in **Figure**

Table 3.7 Ambient Noise Monitoring Results (1-4 Location)

Parameter	N1		N2		N3		N4	
	Day Time	Night Time						
Lmax	68.1	60.5	58.4	49.4	60.8	53.5	59.5	53.1
Lmin	49.2	43.2	38.7	38.7	37.1	31.4	35.9	31.6
Leq	56.20	46.50	47.10	47.10	48.70	38.12	46.80	39.60
CPCB Limit (Leq in dB(A) Industrial Limit & Residential Limit)	75.00	70.00	55.00	45.00	55.00	45.00	55.0	45.5

Note: *A “decibel” is a unit in which noise is measured.

Table 3.8 Ambient Noise Monitoring Results (5-8 Location)

Parameter	N5		N6		N7		N8	
	Day Time	Night Time						
Lmax	62.5	47.9	55.6	48.6	59.7	46.3	59.4	48.2
Lmin	38.7	30.6	34.9	31.9	37.1	39.4	40.6	31.5
Leq	49.36	38.51	47.15	39.25	46.50	36.40	48.40	39.50
CPCB Limit (Leq in dB(A) Residential Limit)	55.00	45.00	55.00	45.00	55.00	45.00	55.00	45.00

Note: *A “decibel” is a unit in which noise is measured.

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Table 3.9 Ambient Noise Monitoring Results (5-8 Location)

Parameter	N9		N10		N11		N12	
	Day Time	Night Time						
Lmax	62.5	56.1	58.3	51.8	61.4	46.2	56.7	61.5
Lmin	39.4	32.6	39.9	32.6	40.8	31.6	37.6	45.5
Leq	51.20	42.30	46.40	38.20	47.10	39.40	49.21	38.57
CPCB Limit (Leq in dB(A) Residential Limit)	55.00	45.00	55.00	45.00	55.00	45.00	55.00	45.00

Note: *A “decibel” is a unit in which noise is measured

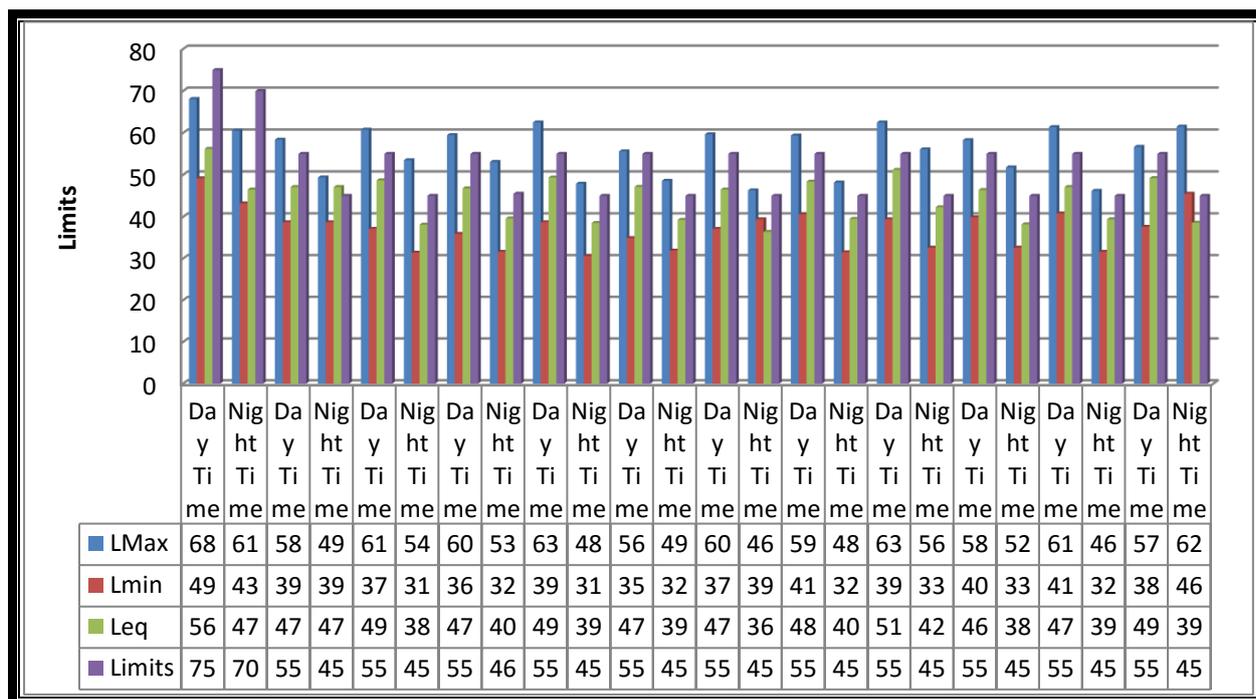


Figure 3.3 Location-wise Variation of Ambient Noise Levels

3.2.4 Discussion on Ambient Noise Levels in the Study Area

Day Time Noise Levels (L_{day}):

The day time noise level at all the locations were found to within limits prescribed for Industrial area i.e. 75 dB (A).

Night Time Noise Levels (L_{night}):

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The night time noise level at all the locations were found to within limit prescribed for Industrial area i.e. 70 dB (A). **3.3 WATER QUALITY MONITORING**

3.3.1 Ground Water Quality Monitoring Locations

Keeping in view the importance of Ground water as an important source of ground water to the local population, sample of ground water was collected from the project site for the assessment of impacts of the project on the ground water quality.

Water sample was collected from the project site. The sample was analyzed for various parameters to compare with the standards for ground water as per IS: 10500 for ground water sources. The details of water sampling locations are given in **Table 3.10**

Table 3.10 Details of Water Quality Monitoring Station

S. No.	Location Code	Location Name/ Description
1.	W 1	Ground Water (Near Project Site)
2.	W 2	Ground Water (Jiwan Singh Wala)
3.	W 3	Ground Water (Maanwala)
4.	W 4	Ground Water (Mahi Nangal)
5.	W 5	Ground Water (Kot Kashmir)
6.	W 6	Ground Water (NasibPura)
7.	W 7	Ground Water (Baghi Bandar)
8.	W 8	Surface Water (KotFatta)
9.	W 9	Surface Water (Chathewala)

3.3.2 Methodology of Groundwater Quality Monitoring

Sampling of ground water was carried out on **September 2019**. Samples were collected as grab sample and sampling forms are filled in as per the sampling plan. The preservative sample were properly added to preserve as per standard operating procedures (SOP) and stored immediately in ice boxes, which were ensured for appropriate temperatures. Sample for chemical analysis was collected in polyethylene carboys. Sample collected for metal content were acidified to <2 pH with 1 ml HNO₃. A sample for bacteriological analysis was collected in sterilized glass bottles.

Soon after the completion of sampling, chain of custody sheets for the samples are filled in and then they were transported to laboratory for further analysis. Proper care was taken during packing and transportation of samples. All the samples reached the central laboratory within the holding times for different parameters. After ensuring the same the samples were forwarded immediately for analysis.

The samples were analyzed as per the standard procedures specified in 'Standard Methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA)

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and CPCB. The analytical techniques and the test methods adopted for testing of Drinking water are given in **Table 3.11**.

3.3.3 Ground Water Quality Monitoring Results

The detailed ground water quality monitoring results are presented in **Table**

Table 3.11 Ground water Quality Monitoring Result(Near Project Site)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 - 2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.64	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
6.	Total Hardness as	APHA , 2340 C, EDTA Titrimetric Method	345.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	86.37	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	221.65	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	107.38	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	31.47	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	988.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	63.21	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	1.02	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,ChromotropicMethod	14.26	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.23	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.37	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation

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28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL (**DL 0.001 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100 ml	Shall not be detectable in any 100 ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Table 3.12 Ground water Quality Monitoring Result (Jiwan Singh Wala)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 - 2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.87	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
6.	Total Hardness as	APHA , 2340 C, EDTA Titrimetric Method	324.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric	52.88	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	197.30	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	98.76	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	47.24	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	957.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	58.35	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.96	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,ChromotropicMethod	11.42	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.25	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.62	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3

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26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100 ml	Shall not be detectable in any 100 ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Table 3.13 Ground water Quality Monitoring Result (Maanwala)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 - 2010	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.86	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA , 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA , 2150 B , Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
6.	Total Hardness as	APHA , 2340 C, EDTA Titrimetric Method	521.00	mg/l	200	600
7.	Calcium as Ca	APHA , 3500 Ca B, EDTA Titrimetric Method	85.03	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	423.16	mg/l	200	600
9.	Chloride as Cl	APHA , 4500-Cl ⁻ B, Argentometric Method	298.34	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	73.15	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	1168.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	154.32	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	1.57	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,ChromotropicMethod	19.61	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.42	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA , 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation
20.	Phenolic Compounds	APHA , 5530 C Chloroform Extraction	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as	APHA , 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.54	mg/l	5	15

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24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100 ml	Shall not be detectable in any 100 ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Table 3.14 Ground water Quality Monitoring Result (Mahi Nangal)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 - 2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.82	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
6.	Total Hardness as	APHA , 2340 C, EDTA Titrimetric Method	424.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	69.20	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	315.47	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	116.64	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	61.82	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	1025.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	121.08	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.83	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,ChromotropicMethod	15.88	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.37	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002

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21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.79	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100 ml	Shall not be detectable in any 100 ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Table 3.15 Ground water Quality Monitoring Result (Kot Kashmir)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 - 2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.88	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
6.	Total Hardness as	APHA , 2340 C, EDTA Titrimetric Method	463.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	75.56	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	310.63	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	164.08	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	67.51	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	1284.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	114.89	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.80	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,ChromotropicMethod	12.54	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.34	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2

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18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.85	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100 ml	Shall not be detectable in any 100 ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

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Table 3.16 Ground water Quality Monitoring Result (Nasibpura)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 - 2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.93	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
6.	Total Hardness as	APHA , 2340 C, EDTA Titrimetric Method	411.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric	67.08	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	289.44	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	113.65	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	59.92	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	1078.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	119.70	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F D, SPADNS Method	0.81	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,ChromotropicMethod	11.87	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.32	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.77	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100 ml	Shall not be detectable in any 100 ml sample	

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32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample
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Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Table 3.17 Ground water Quality Monitoring Result (Baghi Bandar)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 - 2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.86	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA , 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA , 2150 B , Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeabl	Agreeable
6.	Total Hardness as	APHA , 2340 C, EDTA Titrimetric Method	462.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric	73.40	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	280.33	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	96.47	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	67.36	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	1150.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	118.02	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.79	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,ChromotropicMethod	14.05	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.30	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.76	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05

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30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100 ml	Shall not be detectable in any 100 ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Table 3.18 Surface water Quality Monitoring Result (KotFatta)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.83	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen
3.	Turbidity	APHA, 2130 B, Nephelometric Method	18	NTU
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	124.92	mg/l
6.	Conductivity	APHA, 2510 B, Conductivity Meter Method	1320	µS/cm
7.	Nitrate as NO ₃	IS 3025 (P-34) ,ChromotropicMethod	17.13	mg/l
8.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.38	mg/l
9.	Total DissolvedSolids	APHA , 2540 C, Gravimetric Method	792.00	mg/l
10.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
11.	Boron	APHA, 4500B C, Carmine Method	0.23	mg/l
12.	Sulphate as SO ⁴	APHA , 4500 E, Turbidimetric Method	17.14	mg/l
13.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.62	mg/l
14.	BOD (3 Daysat 27°C)	APHA, 5210 C / IS 3025,P-44	3.60	mg/l
15.	COD	APHA, 5220 B, Open Reflux Method	32.54	mg/l
16.	Free Ammonia as NH ₃	IS 3025 (P-34) , Titrimetric Method	16.42	mg/l
17.	Total Coliform	IS 1622	17	MPN/100ml
18.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

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Table 3.19 Surface water Quality Monitoring Result (Chathewala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.54	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen
3.	Turbidity	APHA, 2130 B, Nephelometric Method	13	NTU
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	120.96	mg/l
6.	Conductivity	APHA, 2510 B, Conductivity Meter Method	1280	μS/cm
7.	Nitrate as NO ₃	IS 3025 (P-34) ,ChromotropicMethod	10.56	mg/l
8.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.42	mg/l
9.	Total DissolvedSolids	APHA , 2540 C, Gravimetric Method	768.00	mg/l
10.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
11.	Boron	APHA, 4500B C, Carmine Method	0.16	mg/l
12.	Sulphate as SO ⁴	APHA , 4500 E, Turbidimetric Method	32.52	mg/l
13.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.52	mg/l
14.	BOD (3 Daysat 27°C)	APHA, 5210 C / IS 3025,P-44	7.00	mg/l
15.	COD	APHA, 5220 B, Open Reflux Method	22.42	mg/l
16.	Free Ammonia as NH ₃	IS 3025 (P-34) , Titrimetric Method	12.26	mg/l
17.	Total Coliform	IS 1622	23	MPN/100ml
18.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

3.4 SOIL MONITORING

3.4.1 Soil Monitoring Locations

The objective of the soil monitoring is to identify the impacts of ongoing project activities on soil quality and also predict impacts, which have arisen due to execution of various constructions allied activities. Accordingly, a study of assessment of the soil quality has been carried out.

To assess impacts of ongoing project activities on the soil in the area, the physico-chemical characteristics of soils were examined by obtaining soil samples from selected points and analysis of the same. Single sample of soil was collected from the project site for studying soil characteristics, the location of which is listed in **Table 3.20**.

Table 3.20 Details of Soil Quality Monitoring Location

S. No.	Location Code	Location Name/ Description
1.	S1	Near Project Site
2.	S2	Jiwan Singh wala
3.	S3	MaanWala
4.	S4	Mahi Nangal
5.	S5	Leleana
6.	S6	Baghi Bandar
7.	S7	NasibPura
8.	S8	Kotbhara
9.	S9	Kot Kashmir
10.	S10	GehriBoghi
11.	S11	Chathewala
12.	S12	KotFatta

3.4.2 Methodology of Soil Monitoring

The sampling has been done in line with IS: 2720 & Methods of Soil Analysis, Part-1, 2nd edition, 1986 of American Society for Agronomy and Soil Science Society of America. The homogenized samples were analyzed for physical and chemical characteristics (physical, chemical and heavy metal concentrations). The soil samples were collected in the month of **September 2019**.

The samples have been analyzed as per the established scientific methods for physic-chemical parameters. The heavy metals have been analyzed by using Atomic Absorption Spectrophotometer.

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3.4.3 Soil Monitoring Results

Single sample of soil is collected from the site to check the quality of soil of the study area .The physio-chemical characteristics of the soil, as obtained from the analysis of the soil sample, are presented in **Table**.

Table 3.21 Physico-Chemical Characteristics of Soil in the Study Area (Near Project Site)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.85	--
2.	Conductivity	IS:14767 by Conductivity meter	0.330	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/201	31.05	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.75	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	59.44	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	44.02	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	56.87	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	149.62	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.77	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.71	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	22.39	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	225.90	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	22.16	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	11.46	mg/kg
17.	Organic Carbon	USEPA 3050B	0.47	%
18.	Lead (as Pb)	USEPA 3050B	0.86	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.78	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.96	mg/kg
21.	Copper (as Cu)	USEPA 3050B	6.97	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.41	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

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Table 3.22 Physico-Chemical Characteristics of Soil in the Study Area (Jiwan Singh Wala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.42	--
2.	Conductivity	IS:14767 by Conductivity meter	0.342	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	36.57	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.76	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	57.16	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	45.80	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	55.99	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	165.10	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.58	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.66	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	36.22	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	257.62	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	23.54	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	11.05	mg/kg
17.	Organic Carbon	USEPA 3050B	0.32	%
18.	Lead (as Pb)	USEPA 3050B	0.76	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.86	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.57	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.92	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.42	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

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Table 3.23 Physico-Chemical Characteristics of Soil in the Study Area (Maanwala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.88	--
2.	Conductivity	IS:14767 by Conductivity meter	0.367	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	34.01	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.82	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	46.31	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	67.86	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	60.72	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	135.04	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.35	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.76	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	24.68	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	235.11	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	34.86	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	15.26	mg/kg
17.	Organic Carbon	USEPA 3050B	0.28	%
18.	Lead (as Pb)	USEPA 3050B	0.62	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.79	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	1.67	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.14	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.48	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

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Table 3.24 Physico-Chemical Characteristics of Soil in the Study Area (Mahi Nangal)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.55	--
2.	Conductivity	IS:14767 by Conductivity meter	0.329	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	27.40	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.21	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	51.09	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	46.00	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	62.88	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	147.41	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.67	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.76	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	33.58	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	237.89	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	19.10	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	8.72	mg/kg
17.	Organic Carbon	USEPA 3050B	0.25	%
18.	Lead (as Pb)	USEPA 3050B	0.58	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.67	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	1.35	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.76	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.87	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

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Table 3.26 Physico-Chemical Characteristics of Soil in the Study Area (Leleana)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.81	--
2.	Conductivity	IS:14767 by Conductivity meter	0.341	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	34.20	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.83	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	64.56	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	52.44	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	58.63	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	161.47	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.81	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.77	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	29.00	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	242.06	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	28.42	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	8.98	mg/kg
17.	Organic Carbon	USEPA 3050B	0.26	%
18.	Lead (as Pb)	USEPA 3050B	0.91	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.80	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.90	mg/kg
21.	Copper (as Cu)	USEPA 3050B	7.15	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.46	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

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Table 3.27 Physico-Chemical Characteristics of Soil in the Study Area (Baghi Bandar)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.48	--
2.	Conductivity	IS:14767 by Conductivity meter	0.347	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	38.10	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.66	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	54.36	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	43.58	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	55.74	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	163.41	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.65	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.74	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	33.62	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	251.74	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	20.46	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	9.83	mg/kg
17.	Organic Carbon	USEPA 3050B	0.31	%
18.	Lead (as Pb)	USEPA 3050B	0.70	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.82	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.53	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.87	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.36	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

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Table 3.28 Physico-Chemical Characteristics of Soil in the Study Area (Nasibpura)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.89	--
2.	Conductivity	IS:14767 by Conductivity meter	0.353	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silty Loam	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	40.27	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.79	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	52.64	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	70.58	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	58.05	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	131.02	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.52	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.71	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	25.06	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	245.28	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	37.12	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	18.70	mg/kg
17.	Organic Carbon	USEPA 3050B	0.39	%
18.	Lead (as Pb)	USEPA 3050B	0.60	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.76	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	1.71	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.19	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.57	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

#Chromium- This parameter is not covered our NABL scope.

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Table 3.29 Physico-Chemical Characteristics of Soil in the Study Area (Kotbhara)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.37	--
2.	Conductivity	IS:14767 by Conductivity meter	0.321	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	23.52	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.10	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	37.59	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	44.00	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	48.02	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	139.54	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.50	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.60	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	30.44	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	201.00	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	13.82	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	7.89	mg/kg
17.	Organic Carbon	USEPA 3050B	0.43	%
18.	Lead (as Pb)	USEPA 3050B	0.51	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.62	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	1.30	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.13	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.83	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

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#Chromium- This parameter is not covered our NABL scope.

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Table 3.30 Physico-Chemical Characteristics of Soil in the Study Area (Kot Kashmir)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.68	--
2.	Conductivity	IS:14767 by Conductivity meter	0.348	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	27.62	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.61	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	57.18	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	42.64	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	49.82	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	151.00	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.71	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.65	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	22.00	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	219.00	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	21.40	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	8.13	mg/kg
17.	Organic Carbon	USEPA 3050B	0.42	%
18.	Lead (as Pb)	USEPA 3050B	0.82	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.69	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.83	mg/kg
21.	Copper (as Cu)	USEPA 3050B	6.23	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.32	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

#Chromium- This parameter is not covered our NABL scope.

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Table 3.31 Physico-Chemical Characteristics of Soil in the Study Area (GehriBoghi)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.46	--
2.	Conductivity	IS:14767 by Conductivity meter	0.338	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silty Loam	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	32.55	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.51	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	53.46	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	45.80	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	56.12	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	162.43	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.72	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.78	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	33.25	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	256.20	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	20.10	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	10.58	mg/kg
17.	Organic Carbon	USEPA 3050B	0.33	%
18.	Lead (as Pb)	USEPA 3050B	0.71	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.82	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.58	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.86	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.33	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

#Chromium- This parameter is not covered our NABL scope.

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Table 3.32 Physico-Chemical Characteristics of Soil in the Study Area (Chathewala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.81	--
2.	Conductivity	IS:14767 by Conductivity meter	0.316	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silty Loam	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	29.46	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.72	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	61.40	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	46.28	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	47.86	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	140.78	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.73	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.61	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	20.83	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	210.68	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	23.38	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	8.15	mg/kg
17.	Organic Carbon	USEPA 3050B	0.46	%
18.	Lead (as Pb)	USEPA 3050B	0.96	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.80	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.90	mg/kg
21.	Copper (as Cu)	USEPA 3050B	6.28	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.43	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

**Project: Setting up 2G Ethanol Bio-Refinery plant of capacity 100 KLPD at village Nasibpura, Tehsil Talwandi Sabo, Bhatinda Punjab
(F.No. J-11011/221/2017-IA II (I) Dated-14/08/2018)**

Table 3.33 Physico-Chemical Characteristics of Soil in the Study Area (KotFatta)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.96	--
2.	Conductivity	IS:14767 by Conductivity meter	0.356	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	31.40	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.87	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	56.82	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	68.10	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	51.85	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	104.00	kg/hect.
11.	Iron as Fe	USDA Method, 1968	0.30	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.84	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	29.76	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	210.68	kg./hect.
15.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	49.50	kg./hect.
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	12.80	mg/kg
17.	Organic Carbon	USEPA 3050B	0.44	%
18.	Lead (as Pb)	USEPA 3050B	0.61	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.77	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	1.69	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.48	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.44	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

*SOP-Laboratory Standard Operating Procedure.

3.4.4 Discussion on Soil Characteristics in the Study Area

The soil in study area is characterized by moderate organic content. The soil quality in the project area has not been affected by the project activities.

3.5 SITE PHOTOGRAPH



Ambient Air Quality Monitoring



Ambient Air Quality Monitoring



Ambient Noise Level Monitoring

**Project: Setting up 2G Ethanol Bio-Refinery plant of capacity 100 KLPD at village Nasibpura, Tehsil Talwandi Sabo, Bhatinda Punjab
(F.No. J-11011/221/2017-IA II (I) Dated-14/08/2018)**



Ambient Noise Level Monitoring



Water Sampling



Water Sampling





Soil Sampling

Soil Sampling

Test Report

Sample Number:	VEL/HPCL/AA/01	Report No.:	VEL/AA/1908/02/001
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°3'13.34"N	Party Reference No.:	NIL
Longitude:	75°0'41.57"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

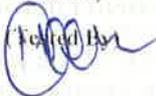
General Information:-

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Near Project Site
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/01 & VEL/FPS/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per client requirement.

S. No.	Parameter	Protocol	Result	Unit	NAAQS ⁶⁶ Limit
1.	Particulate Matter (PM _{2.5})	[#] SOP No. VEL/SOP/01, Section No. SP 63	40.21	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	72.65	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	24.82	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	8.02	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.86	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS:11255(P-6) Indo Phenol Blue Method	8.74	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene(C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	27.62	µg/m ³	180
11.	^Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :-⁶⁶ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

[#] SOP- Laboratory Standard Operating Procedure. ^ This parameter is not Covered in our NABL scope. **BDL- Below Detection Limit. *DL- Detection Limit

Checked By


ASHWIN KAWAT
Checked By




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 Corp. Off : Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
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Test Report

Sample Number: VEL/HPCL/AA/02 **Report No.:** VEL/AA/1908/02/002
Name & Address of the Project: M/s Hindustan Petroleum Co-oration Ltd. **Format No.:** 5.10 F-01
 Village Nasibpura, Bhatinda Punjab **Reporting Date:** 07/09/2019
Latitude: 30°3'37.63"N **Period of Analysis:** 02/09/2019-07/09/2019
Longitude: 75°2'75.30"E **Receipt Date:** 02/09/2019
Reporting Date: 07/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by : Vardan Enviro Lab Representative
Sampling Location : Jiwan Singh Wala
Instrument Used : RDS & FPS sampler with all Accessories
Instrument Code : VEL/RDS/01 & VEL/FPS/01
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/08/2019 to 31/08/2019
Time of Monitoring : 10:15 AM – 10:15 AM
Ambient Temperature (°C) : Min. 26°C Max. 35°C
Surrounding Activity : Human & Vehicular Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182
Parameter Required : As per client requirement.

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^{at} Limit
1.	Particulate Matter (PM _{2.5})	[#] SOP No. VEL/SOP/01, Section No. SP 63	44.31	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	78.60	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	17.31	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	10.49	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.76	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS:11255(P-6) Indo Phenol Blue Method	11.08	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene(C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	18.65	µg/m ³	180
11.	^Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :-^a NAAQS - National Ambient Air Quality Standards, Schedule-VII, [Rule 3 (3B)], [Part-II-sec-3(r)]18.11.2009

[#] SOP: Laboratory Standard Operating Procedure, [^] This parameter is not Covered in our NABL scope, **BDL- Below Detection Limit. *DL- Detection limit

(Tested By)

(Checked By) ADAT



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Tel: 0124-4343750, 4343752, 4343753 | lab@vardanenviromet.com | bd@vardanenviromet.com

Test Report

Sample Number:	VEL/HPCL/AA/03	Report No.:	VEL/AA/1908/02/003
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°2'33.23"N	Party Reference No.:	NIL
Longitude:	75°58'6.88"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

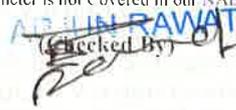
Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Maanwala
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/02 & VEL/FPS/02
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^{at} Limit
1.	Particulate Matter (PM _{2.5})	#SOP No. VEL/SOP/01, Section No. SP 63	41.80	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	76.67	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	19.86	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	13.50	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.92	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS:11255(P-6) Indo Phenol Blue Method	9.78	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene (C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	16.88	µg/m ³	180
11.	Arsenic As, ng/m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII. [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

SOP- Laboratory Standard Operating Procedure. ~ This parameter is not Covered in our NABL scope. **BDL- Below Detection Limit *DL- Detection Limit

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Test Report

Sample Number:	VEL/HPCL/AA/04	Report No.:	VEL/AA/1908/02/004
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°1'13.05"N	Party Reference No.:	NIL
Longitude:	75°1'3.89"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Mahi Nangal
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/02& VEL/FPS/02
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^(a) Limit
1.	Particulate Matter (PM _{2.5})	[#] SOP No. VEL/SOP/01, Section No. SP 63	43.88	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	76.60	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	20.91	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	9.70	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.79	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS: 11255(P-6) Indo Phenol Blue Method	8.83	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene (C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	15.89	µg/m ³	180
11.	Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :- (a) NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec -3(i)]18.11.2009.

SOP- Laboratory Standard Operating Procedure, ~ This parameter is not Covered in our NABL scope, **BDL- Below Detection Limit. *DL- Detection Limit

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Test Report

Sample Number: VEL/NMDCL/AA/05
 Name & Address of the Project: M/s Hindustan Petroleum Co-oration Ltd.
 Village Nasibpura, Bhatinda Punjab
 Report No.: VEL/AA/1908/02/005
 Format No.: 5.10 F-01
 Party Reference No.: NIL
 Reporting Date: 07/09/2019
 Period of Analysis: 02/09/2019-07/09/2019
 Receipt Date: 02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by : Vardan Enviro Lab Representative
 Sampling Location : Leleana
 Instrument Used : RDS & FPS sampler with all Accessories
 Instrument Code : VEL/RDS/01 & VEL/FPS/01
 Instrument Calibration Status : Calibrated
 Meteorological condition during monitoring : Clear Sky
 Date of Monitoring : 30/08/2019 to 31/08/2019
 Time of Monitoring : 10:15 AM – 10:15 AM
 Ambient Temperature (°C) : Min. 26°C Max. 35°C
 Surrounding Activity : Human & Vehicular Activities
 Scope of Monitoring : Regulatory Requirement
 Control measure if Any : No
 Sampling & Analysis Protocol : IS-5182
 Parameter Required : As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ¹⁰⁰ Limit
1.	Particulate Matter (PM _{2.5})	*SOP No. VEL/SOP/01, Section No. SP 63	39.42	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	57.28	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	21.45	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	17.98	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.82	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS:11255(P-6) Indo Phenol Blue Method	8.98	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene(C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	20.54	µg/m ³	180
11.	^Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :- 100 NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec -3(i)]18.11.2009.

SOP- Laboratory Standard Operating Procedure. ^ This parameter is not in the scope of NABL. **BDL- Below Detection Limit. *DL- Detection Limit

(Signature)

IN SAWATI
 (Checked By)
 20/09/19



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Test Report

Sample Number:	VEL/HPCL/AA/06	Report No.:	VEL/AA/1908/02/006
Name & Address of the Project:	M/s Hindustan Petroleum Co-poration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°1'27.46"N	Party Reference No.:	NIL
Longitude:	75°4'8.62"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Baghi Bandar
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/01 & VEL/FPS/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^{at} Limit
1.	Particulate Matter (PM _{2.5})	#SOP No. VEL/SOP/01, Section No. SP 63	32.14	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	52.62	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	26.51	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	10.35	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.99	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS: 11255(P-6) Indo Phenol Blue Method	14.56	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene (C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	16.83	µg/m ³	180
11.	Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :- @ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec -3(i)]18.11.2009.

SOP- Laboratory Standard Operating Procedure, ^- This parameter is not Covered in our NABL scope, **BDL- Below Detection Limit, *DL- Detection Limit

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Test Report

Sample Number:	VEL/HPCL/AA/07	Report No.:	VEL/AA/1908/02/007
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°4'34.79"N	Party Reference No.:	NIL
Longitude:	74°59'57.45"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Nasibpura
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/03& VEL/FPS/03
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ⁴⁰ Limit
1.	Particulate Matter (PM _{2.5})	#SOP No. VEL/SOP/01, Section No. SP 63	42.96	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	62.45	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	29.62	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	22.57	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.90	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS:11255(P-6) Indo Phenol Blue Method	10.78	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene (C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	26.98	µg/m ³	180
11.	Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :- # NAAQS – National Ambient Air Quality Standards: Schedule-VII, [Rule 3 (3B)], [Part-II-sec -3(i)]18.11.2009.

SOP- Laboratory Standard Operating Procedure. ^- This parameter is not Covered in our NABL scope. **BDL- Below Detection Limit. *DL- Data Not Available

Checked By

APRIL RAJWAT
(Checked By)

Approved By

VARDAN ENVIROLAB
Authorised Signatory

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Test Report

Sample Number:	VEL/HPCL/AA/08	Report No.:	VEL/AA/1908/02/008
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°5'40.22"N	Party Reference No.:	NIL
Longitude:	75°4'5.30"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Kotbhara
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/02& VEL/FPS/02
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^{ar} Limit
1.	Particulate Matter (PM _{2.5})	[#] SOP No. VEL/SOP/01, Section No. SP 63	46.88	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	84.91	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	17.10	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	9.55	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.83	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS: 11255(P-6) Indo Phenol Blue Method	9.26	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene(C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	21.47	µg/m ³	180
11.	Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :- ^a NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

[#] SOP- Laboratory Standard Operating Procedure, [^] This parameter is not covered under NABL scope, **BDL- Below Detection Limit, *DL- Detection Limit

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Test Report

Sample Number:	VEL/HPCL/AA/09	Report No.:	VEL/AA/1908/02/009
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°6'34.53"N	Party Reference No.:	NIL
Longitude:	75°0'23.67"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Kot Kashmir
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/01 & VEL/FPS/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^(a) Limit
1.	Particulate Matter (PM _{2.5})	^r SOP No. VEL/SOP/01, Section No. SP 63	42.16	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	59.42	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	25.62	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	8.47	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.85	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS:11255(P-6) Indo Phenol Blue Method	13.59	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene(C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	16.21	µg/m ³	180
11.	Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :- (a) NAAQS - National Ambient Air Quality Standards: Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

SOP- Laboratory Standard Operating Procedure, ~ This parameter is not Covered in our NABL scope. **BDL- Below Detection Limit, *DL- Detection Limit

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Test Report

Sample Number:	VEL/HPCL/AA/10	Report No.:	VEL/AA/1908/02/010
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°6'44.02"N	Party Reference No.:	NIL
Longitude:	74°57'21.06"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Gehri Boghi
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/01 & VEL/FPS/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^a Limit
1.	Particulate Matter (PM _{2.5})	#SOP No. VEL/SOP/01, Section No. SP 63	47.14	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	84.90	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	24.50	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	9.78	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.91	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS: 11255(P-6) Indo Phenol Blue Method	9.43	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene (C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	13.86	µg/m ³	180
11.	^Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :- @ NAAQS – National Ambient Air Quality Standards: Schedule-VII, [Rule 3 (3B)], [Part-11-sec-3(i)]18.11.2009.

SOP- Laboratory Standard Operating Procedure. ~ This parameter is not Covered in our NABL scope. **BDL- Below Detection Limit, *DL- Detection Limit

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Test Report

Sample Number:	VEL/HPCL/AA/11	Report No.:	VEL/AA/1908/02/011
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°3'45.41"N	Party Reference No.:	NIL
Longitude:	75°4'6.08"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Chathewala
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/03& VEL/FPS/03
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^{an} Limit
1.	Particulate Matter (PM _{2.5})	[#] SOP No. VEL/SOP/01, Section No. SP 63	40.39	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	64.56	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	24.21	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	7.75	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.78	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS:11255(P-6) Indo Phenol Blue Method	9.10	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene(C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	10.55	µg/m ³	180
11.	^Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :- a) NAAQS - National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec -3(i)]18.11.2009.

b) Laboratory Standard Operating Procedure., *- This parameter is not Covered in our NABL scope, **BDL- Below Detection Limit, *DL- Detection Limit

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Test Report

Sample Number:	VEL/HPDCL/AA/12	Report No.:	VEL/AA/1908/02/012
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°6'48.99"N	Party Reference No.:	NIL
Longitude:	75°4'54.51"E	Reporting Date:	07/09/2019
		Period of Analysis:	02/09/2019-07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	: Kot Fatta
Instrument Used	: RDS & FPS sampler with all Accessories
Instrument Code	: VEL/RDS/04& VEL/FPS/04
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 10:15 AM – 10:15 AM
Ambient Temperature (°C)	: Min. 26°C Max. 35°C
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: As per Work Order

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^{at} Limit
1.	Particulate Matter (PM _{2.5})	[#] SOP No. VEL/SOP/01, Section No. SP 63	36.69	µg/m ³	60
2.	Particulate Matter (PM ₁₀)	IS: 5182 (P-23) Gravimetric Method	68.44	µg/m ³	100
3.	Nitrogen Dioxide (NO ₂)	IS: 5182 (P-6) Jacob & Hochheiser	18.32	µg/m ³	80
4.	Sulphur Dioxide (SO ₂)	IS: 5182 (P-2) Modified West and Gaeke	8.95	µg/m ³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10) Gas Chromatography	0.76	mg/m ³	4
6.	Ammonia (NH ₃), µg/m ³	IS:11255(P-6) Indo Phenol Blue Method	12.14	µg/m ³	400
7.	Lead (Pb), µg/m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 0.05 µg/m ³)	µg/m ³	1
8.	Benzene(C ₆ H ₆), µg/m ³	IS: 5182 (P-11)	**BDL (*DL 0.1 µg/m ³)	µg/m ³	05
9.	Benzo(a)pyrene, ng/m ³	IS: 5182 (P-12)	**BDL (*DL 1.0 ng/m ³)	ng/m ³	01
10.	Ozone (O ₃), µg/m ³	IS: 5182 (P-9) Colorimetric Method	15.11	µg/m ³	180
11.	Arsenic As, ng/ m ³	IS: 5182 (P-22)	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	6
12.	Nickel Ni, ng/ m ³	IS: 5182 (P-22) Air Acetylene Method	**BDL (*DL 5.0ng/ m ³)	ng/ m ³	20
13.	#Volatile Organic Carbon (VOCs)	IS: 5182 (P-11)	**BDL (*DL 5.0 µg/m ³)	µg/m ³	--
14.	#Hydrocarbon (as Methane)	IS: 5182 (P-17), 1979	*BDL(*DL 0.2 ppm(v/v))	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards: Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

SOP - Laboratory Standard Operating Procedure., ~. This parameter is not Covered in our NABL scope, **BDL- Below Detection Limit. *DL- Detection Limit

Checked By:

Checked By:



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www.vardan.co.in

Tel: 0124-4343750, 4343752, 4343753 | lab@vardanenvironet.com | bd@vardanenvironet.com

Test Report

Sample Number:	VEL/HPCL/AN/01	Report No.:	VEL/AN/1908/02/001
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd, Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Near Project Site
Latitude	: 30°3'13.34"N
Longitude	: 75°0'41.57"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	68.1	60.5	dB(A)
2.	Lmin	IS 9989 R-2003	49.2	43.2	dB(A)
3.	Leq	IS 9989 R-2003	56.20	46.50	dB(A)
4.	CPCB Limits in dB(A*) Leq (Industrial Area)	-	75.00	70.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.

(Tested By)


ASHWIN RAWAT
 (Checked By)


(Approved By)

 Authorised Signatory

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Test Report

Sample Number:	VEL/HPCL/AN/02	Report No.:	VEL/AN/1908/02/002
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Jiwan Singh Wala
Latitude	: 30°3'37.63"N
Longitude	: 75°2'75.30"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	58.4	49.3	dB(A)
2.	Lmin	IS 9989 R-2003	38.7	32.5	dB(A)
3.	Leq	IS 9989 R-2003	47.10	40.30	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.

(Tested By)

ARJUN RAWAT
(Checked By)



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Test Report

Sample Number:	VEL/HPCL/AN/03	Report No.:	VEL/AN/1908/02/003
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Maanwala
Latitude	: 30°2'33.23"N
Longitude	: 75°58'6.88"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/03
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	60.8	53.5	dB(A)
2.	Lmin	IS 9989 R-2003	37.1	31.4	dB(A)
3.	Leq	IS 9989 R-2003	48.70	38.12	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.

(Tested By)


(Checked By)


(Approved By)

Authorised Signatory

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Test Report

Sample Number:	VEL/HPCL/AN/04	Report No.:	VEL/AN/1908/02/004
Name & Address of the Project:	M/s Hindustan Petroleum Co-poration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Mahi Nangal
Latitude	: 30°1'13.05"N
Longitude	: 75°1'3.89"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/03
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	59.5	53.1	dB(A)
2.	Lmin	IS 9989 R-2003	35.9	31.6	dB(A)
3.	Leq	IS 9989 R-2003	46.80	39.60	dB(A)
4.	CPCB Limits in dB(A)* Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.

(Tested By)


(Checked By)


(Approved By)

 Authorised Signatory

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Test Report

Sample Number:	VEL/HPCL/AN/05	Report No.:	VEL/AN/1908/02/005
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Leleana
Latitude	: 29°59'40.64"N
Longitude	: 75°1'17.61"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/02
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Rail Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	62.5	47.9	dB(A)
2.	Lmin	IS 9989 R-2003	38.7	30.6	dB(A)
3.	Leq	IS 9989 R-2003	49.36	38.51	dB(A)
4.	CPCB Limits in dB(A [†]) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.

(Tested By)


ANILIN RAWAT

(Checked By)


(Approved By)



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Test Report

Sample Number:	VEL/HPCL/AN/06	Report No.:	VEL/AN/1908/02/006
Name & Address of the Project:	M/s Hindustan Petroleum Co-poration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Baghi Bandar
Latitude	: 30°1'27.46"N
Longitude	: 75°4'8.62"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/02
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Rail Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	55.6	48.6	dB(A)
2.	Lmin	IS 9989 R-2003	34.9	31.9	dB(A)
3.	Leq	IS 9989 R-2003	47.15	39.25	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)		55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.

(Tested By)


APRILIN RAWAT
 (Checked By)


(Approved By)

 Vardan EnviroLab
 Authorised Signatory

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Test Report

Sample Number:	VEL/HPCL/AN/07	Report No.:	VEL/AN/1908/02/007
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Nasibpura
Latitude	: 30°4'34.79"N
Longitude	: 74°59'57.45"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/04
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	59.7	46.3	dB(A)
2.	Lmin	IS 9989 R-2003	37.1	29.4	dB(A)
3.	Leq	IS 9989 R-2003	46.50	36.40	dB(A)
4.	CPCB Limits in dB(A) [*] Leq (Residential Area)		55.00	45.00	dB(A)

Note: * A "decibel" is a unit in which noise is measured.

(Tested By)


(Checked By)


(Approved By)

 Authorised Signatory

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Test Report

Sample Number:	VEL/HPCL/AN/08	Report No.:	VEL/AN/1908/02/008
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Kotbhara
Latitude	: 30°5'40.22"N
Longitude	: 75°4'5.30"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/04
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	59.4	48.2	dB(A)
2.	Lmin	IS 9989 R-2003	40.6	31.5	dB(A)
3.	Leq	IS 9989 R-2003	48.40	39.50	dB(A)
4.	CPCB Limits in dB(A)* Leq (Residential Area)	-	55.00	45.00	dB(A)

Note: * A "decibel" is a unit in which noise is measured.

(Tested By)


ASIM PAWAT
(Checked By)


(Approved By)

Authorised Signatory

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Test Report

Sample Number:	VEL/HPCL/AN/09	Report No.:	VEL/AN/1907/02/009
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Kot Kashmir
Latitude	: 30°6'34.53"N
Longitude	: 75°0'23.67"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	62.5	56.1	dB(A)
2.	Lmin	IS 9989 R-2003	39.4	32.6	dB(A)
3.	Leq	IS 9989 R-2003	51.20	42.30	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.

(Tested By)


(Checked By)


(Approved By)

 Authorised Signatory

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Test Report

Sample Number:	VEL/HPCL/AN/10	Report No.:	VEL/AN/1908/02/010
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: **AMBIENT NOISE LEVEL MONITORING**

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Gehri Boghi
Latitude	: 30°6'44.02"N
Longitude	: 74°57'21.06"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	58.3	51.8	dB(A)
2.	Lmin	IS 9989 R-2003	39.9	32.6	dB(A)
3.	Leq	IS 9989 R-2003	46.40	38.20	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note: * A "decibel" is a unit in which noise is measured.

(Tested By)


ANIL KUMAR RAWAT
(Checked By)




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Test Report

Sample Number:	VEL/HPCL/AN/11	Report No.:	VEL/AN/1908/02/011
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Chathewala
Latitude	: 30°3'45.41"N
Longitude	: 75°4'6.08"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/03
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	61.4	46.2	dB(A)
2.	Lmin	IS 9989 R-2003	40.8	31.6	dB(A)
3.	Leq	IS 9989 R-2003	47.10	39.40	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.

(Tested By)

(Checked By)



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Test Report

Sample Number:	VEL/HPCL/AN/12	Report No.:	VEL/AN/1908/02/012
Name & Address of the Project:	M/s Hindustan Petroleum Co-poration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
		Receipt Date:	02/09/2019

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan EnviroLab Representative
Sampling Location	: Kot Fatta
Latitude	: 30°6'48.99"N
Longitude	: 75°4'54.51"E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/03
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/08/2019 to 31/08/2019
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human, Vehicular and Cement plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2003
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	Lmax	IS 9989 R-2003	56.7	47.5	dB(A)
2.	Lmin	IS 9989 R-2003	37.6	32.4	dB(A)
3.	Leq	IS 9989 R-2003	49.21	38.57	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)		55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.

(Tested By)


APRIL RAWAT
 (Checked By)


(Approved By)

 Authorised Signatory

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Test Report

Sample Number:	VEL/HPCL/S/01	Report No.:	VEL/S/1908/02/001
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°3'13.34"N	Party Reference No.:	NIL
Longitude:	75°0'41.57"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Near Project Site	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 OC)	IS : 2720 (P-26) by pH Meter	7.85	--
2	Conductivity	IS:14767 by Conductivity meter	0.330	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4	Color	SOP , SP-78, Issue No. -01 & Issue Date-14/02/2013	Yellowish Red	--
5	Water holding capacity	SOP , SP-81, Issue No. -01 & Issue Date-14/02/2013	31.05	%
6	Bulk density	SOP , SP-80, Issue No. -01 & Issue Date-14/02/2013	1.75	gm/cc
7	Chloride as Cl	SOP , SP-85, Issue No. -01 & Issue Date-14/02/2013	59.44	mg/100g
8	Calcium as Ca	SOP , SP-82, Issue No. -01 & Issue Date-14/02/2013	44.02	mg/100g
9	Sodium as Na	SOP , SP-84, Issue No. -01 & Issue Date-14/02/2013	56.87	mg/kg
10	Potassium as K	SOP , SP-84, Issue No. -01 & Issue Date-14/02/2013	149.62	kg/hect
11	Iron as Fe	USDA Method, 1968	0.77	mg/100g
12	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.71	%
13	Magnesium as Mg	SOP , SP-83, Issue No. -01 & Issue Date-14/02/2013	22.39	mg/100g
14	Available Nitrogen as N	IS:14684 Distillation Method	225.90	kg /hect
15	Available Phosphorus	SOP , SP-86, Issue No. -01 & Issue Date-14/02/2013	22.16	kg /hect
16	Zinc (as Zn)	SOP , SP-86, Issue No. -01	11.46	mg/kg
17	Organic Carbon	USEPA 3050B	0.47	%
18	Lead (as Pb)	USEPA 3050B	0.86	mg/kg
19	Cadmium (as Cd)	USEPA 3050B	0.78	mg/kg
20	Chromium (as Cr)	USEPA 3050B	0.96	mg/kg
21	Copper (as Cu)	USEPA 3050B	6.97	mg/kg
22	Molybdenum as MO	USEPA 3050B	0.41	mg/100g
23	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
 #This Parameter is not covered in our NABL scope



APRIL RAWAT
 (Checked By)



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Vardan EnviroLab

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 Corp. Off : Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
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Test Report

Sample Number:	VEL/IOCL/S/02	Report No.:	VEL/S/1908/02/002
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°3'37.63"N	Party Reference No.:	NIL
Longitude:	75°2'75.30"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Jiwan Singh Wala	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 OC)	IS : 2720 (P-26) by pH Meter	7.42	--
2	Conductivity	IS:14767 by Conductivity meter	0.342	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4	Color	SOP , SP-78, Issue No -01 & Issue Date-14/02/2013	Yellowish	--
5	Water holding capacity	SOP , SP-81, Issue No -01 & Issue Date-14/02/2013	36.57	%
6	Bulk density	SOP , SP-80, Issue No -01 & Issue Date-14/02/2013	1.76	gm/cc
7	Chloride as Cl	SOP , SP-85, Issue No -01 & Issue Date-14/02/2013	57.16	mg/100g
8	Calcium as Ca	SOP , SP-82, Issue No -01 & Issue Date-14/02/2013	45.80	mg/100g
9	Sodium as Na	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	55.99	mg/kg
10	Potassium as K	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	165.10	kg/hect
11	Iron as Fe	USDA Method, 1968	0.58	mg/100g
12	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.66	%
13	Magnesium as Mg	SOP , SP-83, Issue No -01 & Issue Date-14/02/2013	36.22	mg/100g
14	Available Nitrogen as N	IS:14684 Distillation Method	257.62	kg /hect
15	Available Phosphorus	SOP , SP-86, Issue No -01 & Issue Date-14/02/2013	23.54	kg /hect
16	Zinc (as Zn)	SOP , SP-86, Issue No -01	11.05	mg/kg
17	Organic Carbon	USEPA 3050B	0.32	%
18	Lead (as Pb)	USEPA 3050B	0.76	mg/kg
19	Cadmium (as Cd)	USEPA 3050B	0.86	mg/kg
20	Chromium (as Cr)	USEPA 3050B	0.57	mg/kg
21	Copper (as Cu)	USEPA 3050B	2.92	mg/kg
22	Molybdenum as MO	USEPA 3050B	0.42	mg/100g
23	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
 #This Parameter is not covered in our NABL scope

(Signature)

ASHWIN RAWAT
 (Checked By)



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Test Report

Sample Number:	VEL/HPCL/S/03	Report No.:	VEL/S/1908/02/003
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°2'33.23"N	Party Reference No.:	NIL
Longitude:	75°58'6.88"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Maanwala	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.88	--
2.	Conductivity	IS:14767 by Conductivity meter	0.367	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78, Issue No -01 & Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81, Issue No -01 & Issue Date-14/02/2013	34.01	%
6.	Bulk density	SOP , SP-80, Issue No -01 & Issue Date-14/02/2013	1.82	gm/cc
7.	Chloride as Cl	SOP , SP-85, Issue No -01 & Issue Date-14/02/2013	46.31	mg/100g
8.	Calcium as Ca	SOP , SP-82, Issue No -01 & Issue Date-14/02/2013	67.86	mg/100g
9.	Sodium as Na	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	60.72	mg/kg
10.	Potassium as K	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	135.04	kg/hect
11.	Iron as Fe	USDA Method, 1968	0.35	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.76	%
13.	Magnesium as Mg	SOP , SP-83, Issue No -01 & Issue Date-14/02/2013	24.68	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	235.11	kg /hect
15.	Available Phosphorus	SOP , SP-86, Issue No -01 & Issue Date-14/02/2013	34.86	kg /hect
16.	Zinc (as Zn)	SOP , SP-86, Issue No -01	15.26	mg/kg
17.	Organic Carbon	USEPA 3050B	0.28	%
18.	Lead (as Pb)	USEPA 3050B	0.62	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.79	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	1.67	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.14	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.48	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
#This Parameter is not covered in our NABL scope

(Checked By)

ANJUN RAWAT
(Checked By)



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Test Report

Sample Number: VEL/HPCL/S/04
Name & Address of the Project: M/s Hindustan Petroleum Co-oration Ltd.
Village Nasibpura, Bhatinda Punjab

Latitude: 30°1'13.05"N
Longitude: 75°0'13.89"E

Sample Description: Soil Sample
Sampling Location: Mahi Nangal
Sample Collected by: Vardan Enviro Lab Team
Sampling & Analysis Protocol: IS 2720 , USEPA & USDA

Report No.: VEL/S/1908/02/004
Format No.: 5.10 F-01
Party Reference No.: NIL
Reporting Date: 07/09/2019
Period of Analysis : 02/09/2019-07/09/2019
Receipt Date: 02/09/2019
Sampling Date: 31/08/2019
Type of Sampling: Composite
Sampling Quantity: 2.0 Kg
Depth of Sampling: 30 cm
Packing Status: Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 OC)	IS : 2720 (P-26) by pH Meter	7.55	--
2	Conductivity	IS:14767 by Conductivity meter	0.329	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4	Color	SOP , SP-78,Issue No -01& Issue Date-14/02/2013	Yellowish Red	--
5	Water holding capacity	SOP , SP-81,Issue No -01& Issue Date-14/02/2013	27.40	%
6	Bulk density	SOP , SP-80,Issue No -01& Issue Date-14/02/2013	1.21	gm/cc
7	Chloride as Cl	SOP , SP-85,Issue No -01& Issue Date-14/02/2013	51.09	mg/100g
8	Calcium as Ca	SOP , SP-82,Issue No -01& Issue Date-14/02/2013	46.00	mg/100g
9	Sodium as Na	SOP , SP-84,Issue No -01& Issue Date-14/02/2013	62.88	mg/kg
10	Potassium as K	SOP , SP-84,Issue No -01& Issue Date-14/02/2013	147.41	kg/hect
11	Iron as Fe	USDA Method, 1968	0.67	mg/100g
12	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.76	%
13	Magnesium as Mg	SOP , SP-83,Issue No -01& Issue Date-14/02/2013	33.58	mg/100g
14	Available Nitrogen as N	IS:14684 Distillation Method	237.89	kg /hect
15	Available Phosphorus	SOP , SP-86,Issue No -01& Issue Date-14/02/2013	19.10	kg /hect
16	Zinc (as Zn)	SOP , SP-86,Issue No -01	8.72	mg/kg
17	Organic Carbon	USEPA 3050B	0.25	%
18	Lead (as Pb)	USEPA 3050B	0.58	mg/kg
19	Cadmium (as Cd)	USEPA 3050B	0.67	mg/kg
20	Chromium (as Cr)	USEPA 3050B	1.35	mg/kg
21	Copper (as Cu)	USEPA 3050B	2.76	mg/kg
22	Molybdenum as MO	USEPA 3050B	0.87	mg/100g
23	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
#This Parameter is not covered in our NABL scope

(Inspected By)

ARJUN RAWAT
(Checked By)



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Test Report

Sample Number:	VEL/HPCL/S/05	Report No.:	VEL/S/1908/02/005
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	29°59'40.64"N	Party Reference No.:	NIL
Longitude:	75°01'17.61"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Leleana	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.81	--
2	Conductivity	IS:14767 by Conductivity meter	0.341	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4	Color	SOP , SP-78, Issue No -01 & Issue Date-14/02/2013	Yellowish	--
5	Water holding capacity	SOP , SP-81, Issue No -01 & Issue Date-14/02/2013	34.20	%
6	Bulk density	SOP , SP-80, Issue No -01 & Issue Date-14/02/2013	1.83	gm/cc
7	Chloride as Cl	SOP , SP-85, Issue No -01 & Issue Date-14/02/2013	64.56	mg/100g
8	Calcium as Ca	SOP , SP-82, Issue No -01 & Issue Date-14/02/2013	52.44	mg/100g
9	Sodium as Na	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	58.63	mg/kg
10	Potassium as K	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	161.47	kg/hect
11	Iron as Fe	USDA Method. 1968	0.81	mg/100g
12	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.77	%
13	Magnesium as Mg	SOP , SP-83, Issue No -01 & Issue Date-14/02/2013	29.00	mg/100g
14	Available Nitrogen as N	IS:14684 Distillation Method	242.06	kg /hect
15	Available Phosphorus	SOP , SP-86, Issue No -01 & Issue Date-14/02/2013	28.42	kg /hect
16	Zinc (as Zn)	SOP , SP-86, Issue No -01	8.98	mg/kg
17	Organic Carbon	USEPA 3050B	0.26	%
18	Lead (as Pb)	USEPA 3050B	0.91	mg/kg
19	Cadmium (as Cd)	USEPA 3050B	0.80	mg/kg
20	Chromium (as Cr)	USEPA 3050B	0.90	mg/kg
21	Copper (as Cu)	USEPA 3050B	7.15	mg/kg
22	Molybdenum as MO	USEPA 3050B	0.46	mg/100g
23	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
#This Parameter is not covered in our NABL scope

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Test Report

Sample Number:	VEL/HPCL/S/06	Report No.:	VEL/S/1908/02/006
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°1'27.46"N	Party Reference No.:	NIL
Longitude:	75°4'8.62"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Baghi Bandar	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.48	--
2.	Conductivity	IS:14767 by Conductivity meter	0.347	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP . SP-78.Issue No -01 & Issue Date-14/02/2013	Yellowish	--
5.	Water holding capacity	SOP , SP-81,Issue No -01 & Issue Date-14/02/2013	38.10	%
6.	Bulk density	SOP , SP-80,Issue No -01 & Issue Date-14/02/2013	1.66	gm/cc
7.	Chloride as Cl	SOP , SP-85.Issue No -01 & Issue Date-14/02/2013	54.36	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No -01 & Issue Date-14/02/2013	43.58	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No -01 & Issue Date-14/02/2013	55.74	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No -01 & Issue Date-14/02/2013	163.41	kg/hect
11.	Iron as Fe	USDA Method, 1968	0.65	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.74	%
13.	Magnesium as Mg	SOP , SP-83,Issue No -01 & Issue Date-14/02/2013	33.62	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	251.74	kg /hect
15.	Available Phosphorus	SOP , SP-86,Issue No -01 & Issue Date-14/02/2013	20.46	kg /hect
16.	Zinc (as Zn)	SOP , SP-86,Issue No -01	9.83	mg/kg
17.	Organic Carbon	USEPA 3050B	0.31	%
18.	Lead (as Pb)	USEPA 3050B	0.70	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.82	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.53	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.87	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.36	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
 #This Parameter is not covered in our NABL scope



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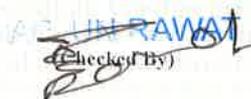
Test Report

Sample Number:	VEL/HPCL/S/07	Report No.:	VEL/S/1908/02/007
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	07/09/2019
Latitude:	30°4'34.79"N	Period of Analysis :	02/09/2019-07/09/2019
Longitude:	74°59'57.45"E	Receipt Date:	02/09/2019
Sample Description:	Soil Sample	Sampling Date:	31/08/2019
Sampling Location:	Nasibpura	Type of Sampling:	Composite
Sample Collected by:	Vardan Enviro Lab Team	Sampling Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 OC)	IS : 2720 (P-26) by pH Meter	7.89	--
2.	Conductivity	IS:14767 by Conductivity meter	0.353	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silty Loam	--
4.	Color	SOP , SP-78,Issue No -01& Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	40.27	%
6.	Bulk density	SOP , SP-80,Issue No -01& Issue Date-14/02/2013	1.79	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No -01& Issue Date-14/02/2013	52.64	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No -01& Issue Date-14/02/2013	70.58	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No -01& Issue Date-14/02/2013	58.05	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No -01& Issue Date-14/02/2013	131.02	kg/hect
11.	Iron as Fe	USDA Method, 1968	0.52	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.71	%
13.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	25.06	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	245.28	kg /hect
15.	Available Phosphorus	SOP , SP-86,Issue No -01& Issue Date-14/02/2013	37.12	kg /hect
16.	Zinc (as Zn)	SOP , SP-86,Issue No.-01	18.70	mg/kg
17.	Organic Carbon	USEPA 3050B	0.39	%
18.	Lead (as Pb)	USEPA 3050B	0.60	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.76	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	1.71	mg/kg
21.	Copper (as Cu)	USEPA 3050B	2.19	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.57	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
 #This Parameter is not covered in our NABL scope



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Corp. Off : Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
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Test Report

Sample Number:	VEL/IOCL/S/08	Report No.:	VEL/S/1908/02/008
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°5'40.22"N	Party Reference No.:	NIL
Longitude:	75°4'5.30"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Kotbhara	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 OC)	IS : 2720 (P-26) by pH Meter	7.37	--
2	Conductivity	IS:14767 by Conductivity meter	0.321	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4	Color	SOP , SP-78,Issue No -01& Issue Date-14/02/2013	Yellowish	--
5	Water holding capacity	SOP , SP-81,Issue No -01& Issue Date-14/02/2013	23.52	%
6	Bulk density	SOP , SP-80,Issue No -01& Issue Date-14/02/2013	1.10	gm/cc
7	Chloride as Cl	SOP , SP-85,Issue No -01& Issue Date-14/02/2013	37.59	mg/100g
8	Calcium as Ca	SOP , SP-82,Issue No -01& Issue Date-14/02/2013	44.00	mg/100g
9	Sodium as Na	SOP , SP-84,Issue No -01& Issue Date-14/02/2013	48.02	mg/kg
10	Potassium as K	SOP , SP-84,Issue No -01& Issue Date-14/02/2013	139.54	kg/hect
11	Iron as Fe	USDA Method, 1968	0.50	mg/100g
12	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.60	%
13	Magnesium as Mg	SOP , SP-83,Issue No -01& Issue Date-14/02/2013	30.44	mg/100g
14	Available Nitrogen as N	IS:14684 Distillation Method	201.00	kg /hect
15	Available Phosphorus	SOP , SP-86,Issue No -01& Issue Date-14/02/2013	13.82	kg /hect
16	Zinc (as Zn)	SOP . SP-86,Issue No -01	7.89	mg/kg
17	Organic Carbon	USEPA 3050B	0.43	%
18	Lead (as Pb)	USEPA 3050B	0.51	mg/kg
19	Cadmium (as Cd)	USEPA 3050B	0.62	mg/kg
20	Chromium (as Cr)	USEPA 3050B	1.30	mg/kg
21	Copper (as Cu)	USEPA 3050B	2.13	mg/kg
22	Molybdenum as MO	USEPA 3050B	0.83	mg/100g
23	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
#This Parameter is not covered in our NABL scope

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Tested By

(Signature)
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Test Report

Sample Number:	VEL/HPCL/S/09	Report No.:	VEL/S/1908/02/009
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°6'34.53"N	Party Reference No.:	NIL
Longitude:	75°0'23.67"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Kot Kashmir	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 OC)	IS : 2720 (P-26) by pH Meter	7.68	--
2.	Conductivity	IS:14767 by Conductivity meter	0.348	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4.	Color	SOP , SP-78, Issue No -01 & Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81, Issue No -01 & Issue Date-14/02/2013	27.62	%
6.	Bulk density	SOP , SP-80, Issue No -01 & Issue Date-14/02/2013	1.61	gm/cc
7.	Chloride as Cl	SOP , SP-85, Issue No -01 & Issue Date-14/02/2013	57.18	mg/100g
8.	Calcium as Ca	SOP , SP-82, Issue No -01 & Issue Date-14/02/2013	42.64	mg/100g
9.	Sodium as Na	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	49.82	mg/kg
10.	Potassium as K	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	151.00	kg/hect
11.	Iron as Fe	USDA Method, 1968	0.71	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.65	%
13.	Magnesium as Mg	SOP , SP-83, Issue No -01 & Issue Date-14/02/2013	22.00	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	219.00	kg /hect
15.	Available Phosphorus	SOP , SP-86, Issue No -01 & Issue Date-14/02/2013	21.40	kg /hect
16.	Zinc (as Zn)	SOP , SP-86, Issue No -01	8.13	mg/kg
17.	Organic Carbon	USEPA 3050B	0.42	%
18.	Lead (as Pb)	USEPA 3050B	0.82	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.69	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.83	mg/kg
21.	Copper (as Cu)	USEPA 3050B	6.23	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.32	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
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Test Report

Sample Number:	VEL/HPCL/S/10	Report No.:	VEL/S/1908/02/010
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°6'44.02"N	Party Reference No.:	NIL
Longitude:	74°57'21.06"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Gehri Boghi	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 0C)	IS : 2720 (P-26) by pH Meter	7.46	--
2	Conductivity	IS:14767 by Conductivity meter	0.338	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA2003)	Silty Loam	--
4	Color	SOP , SP-78, Issue No -01 & Issue Date-14/02/2013	Yellowish Red	--
5	Water holding capacity	SOP , SP-81, Issue No -01 & Issue Date-14/02/2013	32.55	%
6	Bulk density	SOP , SP-80, Issue No -01 & Issue Date-14/02/2013	1.51	gm/cc
7	Chloride as Cl	SOP , SP-85, Issue No -01 & Issue Date-14/02/2013	53.46	mg/100g
8	Calcium as Ca	SOP , SP-82, Issue No -01 & Issue Date-14/02/2013	45.80	mg/100g
9	Sodium as Na	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	56.12	mg/kg
10	Potassium as K	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	162.43	kg/hect
11	Iron as Fe	USDA Method, 1968	0.72	mg/100g
12	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.78	%
13	Magnesium as Mg	SOP , SP-83, Issue No -01 & Issue Date-14/02/2013	33.25	mg/100g
14	Available Nitrogen as N	IS:14684 Distillation Method	256.20	kg /hect
15	Available Phosphorus	SOP , SP-86, Issue No -01 & Issue Date-14/02/2013	20.10	kg /hect
16	Zinc (as Zn)	SOP , SP-86, Issue No -01	10.58	mg/kg
17	Organic Carbon	USEPA 3050B	0.33	%
18	Lead (as Pb)	USEPA 3050B	0.71	mg/kg
19	Cadmium (as Cd)	USEPA 3050B	0.82	mg/kg
20	Chromium (as Cr)	USEPA 3050B	0.58	mg/kg
21	Copper (as Cu)	USEPA 3050B	2.86	mg/kg
22	Molybdenum as MO	USEPA 3050B	0.33	mg/100g
23	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
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Test Report

Sample Number:	VEL/HPCL/S/11	Report No.:	VEL/S/1908/02/011
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°3'45.41"N	Party Reference No.:	NIL
Longitude:	75°4'6.08"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Chathewala	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 OC)	IS : 2720 (P-26) by pH Meter	7.81	--
2.	Conductivity	IS:14767 by Conductivity meter	0.316	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Silty Loam	--
4.	Color	SOP , SP-78, Issue No -01 & Issue Date-14/02/2013	Yellowish Red	--
5.	Water holding capacity	SOP , SP-81, Issue No -01 & Issue Date-14/02/2013	29.46	%
6.	Bulk density	SOP , SP-80, Issue No -01 & Issue Date-14/02/2013	1.72	gm/cc
7.	Chloride as Cl	SOP , SP-85, Issue No -01 & Issue Date-14/02/2013	61.40	mg/100g
8.	Calcium as Ca	SOP , SP-82, Issue No -01 & Issue Date-14/02/2013	46.28	mg/100g
9.	Sodium as Na	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	47.86	mg/kg
10.	Potassium as K	SOP , SP-84, Issue No -01 & Issue Date-14/02/2013	140.78	kg/hect
11.	Iron as Fe	USDA Method, 1968	0.73	mg/100g
12.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.61	%
13.	Magnesium as Mg	SOP , SP-83, Issue No -01 & Issue Date-14/02/2013	20.83	mg/100g
14.	Available Nitrogen as N	IS:14684 Distillation Method	210.68	kg /hect
15.	Available Phosphorus	SOP , SP-86, Issue No -01 & Issue Date-14/02/2013	23.38	kg /hect
16.	Zinc (as Zn)	SOP , SP-86, Issue No -01	8.15	mg/kg
17.	Organic Carbon	USEPA 3050B	0.46	%
18.	Lead (as Pb)	USEPA 3050B	0.96	mg/kg
19.	Cadmium (as Cd)	USEPA 3050B	0.80	mg/kg
20.	Chromium (as Cr)	USEPA 3050B	0.90	mg/kg
21.	Copper (as Cu)	USEPA 3050B	6.28	mg/kg
22.	Molybdenum as MO	USEPA 3050B	0.43	mg/100g
23.	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
 #This Parameter is not covered in our NABL scope

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Test Report

Sample Number:	VEL/HPCL/S/12	Report No.:	VEL/S/1908/02/012
Name & Address of the Project:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°6'48.99"N	Party Reference No.:	NIL
Longitude:	75°4'54.51"E	Reporting Date:	07/09/2019
Sample Description:	Soil Sample	Period of Analysis :	02/09/2019-07/09/2019
Sampling Location:	Kot Fatta	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	31/08/2019
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 OC)	IS : 2720 (P-26) by pH Meter	7.96	--
2	Conductivity	IS:14767 by Conductivity meter	0.356	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA2003)	Silt	--
4	Color	SOP , SP-78,Issue No -01& Issue Date-14/02/2013	Yellowish Red	--
5	Water holding capacity	SOP , SP-81,Issue No -01& Issue Date-14/02/2013	31.40	%
6	Bulk density	SOP , SP-80,Issue No -01& Issue Date-14/02/2013	1.87	gn/cc
7	Chloride as Cl	SOP , SP-85,Issue No -01& Issue Date-14/02/2013	56.82	mg/100g
8	Calcium as Ca	SOP , SP-82,Issue No -01& Issue Date-14/02/2013	68.10	mg/100g
9	Sodium as Na	SOP , SP-84,Issue No -01& Issue Date-14/02/2013	51.85	mg/kg
10	Potassium as K	SOP , SP-84,Issue No -01& Issue Date-14/02/2013	104.00	kg/hect
11	Iron as Fe	USDA Method, 1968	0.30	mg/100g
12	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.84	%
13	Magnesium as Mg	SOP , SP-83,Issue No -01& Issue Date-14/02/2013	29.76	mg/100g
14	Available Nitrogen as N	IS:14684 Distillation Method	210.68	kg /hect
15	Available Phosphorus	SOP , SP-86,Issue No -01& Issue Date-14/02/2013	49.50	kg /hect
16	Zinc (as Zn)	SOP , SP-86,Issue No -01	12.80	mg/kg
17	Organic Carbon	USEPA 3050B	0.44	%
18	Lead (as Pb)	USEPA 3050B	0.61	mg/kg
19	Cadmium (as Cd)	USEPA 3050B	0.77	mg/kg
20	Chromium (as Cr)	USEPA 3050B	1.69	mg/kg
21	Copper (as Cu)	USEPA 3050B	2.48	mg/kg
22	Molybdenum as MO	USEPA 3050B	0.44	mg/100g
23	Nickel	USEPA 3050B	*BDL	mg/100g

Note: SOP-Standard Operating Procedure
#This Parameter is not covered in our NABL scope

Tested By

APRIL RAO
(Checked By)



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Test Report

Sample Number:	VEL/HPCL/W/01	Report No.:	VEL/W/1908/02/001
Name & Address of Party:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°3'13.34"N	Party Reference No.:	NIL
Longitude:	75°0'41.57"E	Reporting Date:	07/09/2019
Sample Description:	Ground Water Sample	Period of Analysis:	02/09/2019 – 07/09/2019
Sample Location:	Near Project Site	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	31/08/2019
Parameter Required	As per work order	Sampling Quantity:	2.0 Ltr
Sampling & Analysis Protocol:	IS-10500-2012, APHA	Sampling Type:	Garb
		Preservation:	Refrigerated

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.64	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	APHA , 2340 C, EDTA Titrimetric Method	345.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	86.37	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	221.65	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	107.38	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	31.47	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	988.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	63.21	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	1.02	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,Chromotropic Method	14.26	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.23	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation

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Test Report

Sample No.: VEL/HPCL/W/01				Report No.: VEL/W/1908/02/001		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01 mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA, 3111 B, Direct Air, Acetylene Flame Method	0.37	mg/l	5	15
24.	Copper as Cu	APHA, 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA, 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA, 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA, 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA, 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA, 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA, 3112 B, Cold Vapour AAS Method	*BDL (**DL 0.001 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note:- *BDL- Below Detection Limit, **DL- Detection Limit
These parameters are not covered under the NABL scope.

M. K. Nayak
(Tested By)

A. J. Rawat
(Checked By)



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Corp. Off : Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
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Test Report

Sample Number:	VEL/HPCL/W/02	Report No.:	VEL/W/1908/02/002
Name & Address of Party:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°3'37.63"N	Party Reference No.:	NIL
Longitude:	75°2'75.30"E	Reporting Date:	07/09/2019
Sample Description:	Ground Water Sample	Period of Analysis:	02/09/2019 – 07/09/2019
Sample Location:	Jiwan Singh Wala	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	31/08/2019
Parameter Required	As per work order	Sampling Quantity:	2.0 Ltr
Sampling & Analysis Protocol:	IS-10500-2012, APHA	Sampling Type:	Garb
		Preservation:	Refrigerated

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.87	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B. Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B. Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B. Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	APHA , 2340 C. EDTA Titrimetric Method	324.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	52.88	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	197.30	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	98.76	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	47.24	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	957.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	58.35	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.96	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,Chromotropic Method	11.42	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.25	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation

M. Wajid
(Tested By)

ADIL RAHAT
(Checked By)



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Test Report

Sample No.: VEL/HPCL/W/02				Report No.: VEL/W/1908/02/002		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.62	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note:- *BDL- Below Detection Limit, **DL- Detection Limit
These parameters are not covered under the NABL scope.

[Signature]
(Tested By)

ARJUN RAWAT
(Checked By)



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Test Report

Sample Number:	VEL/HPCL/W/03	Report No.:	VEL/W/1908/02/003
Name & Address of Party:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°2'33.23"N	Party Reference No.:	NIL
Longitude:	75°58'6.88"E	Reporting Date:	07/09/2019
Sample Description:	Ground Water Sample	Period of Analysis:	02/09/2019 – 07/09/2019
Sample Location:	Maanwala	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	31/08/2019
Parameter Required	As per Client Requirement	Sampling Quantity:	2.0 Ltr
Sampling & Analysis Protocol:	IS-10500-2012, APHA	Sampling Type:	Garb
		Preservation:	Refrigerated

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.86	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	APHA , 2340 C, EDTA Titrimetric Method	521.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	85.03	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	423.16	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	298.34	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	73.15	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	1168.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	154.32	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	1.57	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,Chromotropic Method	19.61	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.42	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation

(Tested By)

(Checked By)



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Test Report

Sample No.: VEL/HPCL/W/03				Report No.: VEL/W/1908/02/003		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.54	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note:- *BDL- Below Detection Limit, **DL- Detection Limit
 # These parameters are not covered under the NABL scope.

Arjun Rawat
 (Tested By)

ARJUN RAWAT
 (Checked By)
Arjun Rawat



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Test Report

Sample Number:	VEL/HPCL/W/04	Report No.:	VEL/W/1908/02/004
Name & Address of Party:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°1'13.05"N	Party Reference No.:	NIL
Longitude:	75°1'3.89"E	Reporting Date:	07/09/2019
Sample Description:	Ground Water Sample	Period of Analysis:	02/09/2019 – 07/09/2019
Sample Location:	Mahi Nangal	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	31/08/2019
Parameter Required	As per Client Requirement	Sampling Quantity:	2.0 Ltr
Sampling & Analysis Protocol:	IS-10500-2012, APHA	Sampling Type:	Garb
		Preservation:	Refrigerated

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.82	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	APHA , 2340 C, EDTA Titrimetric Method	424.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	69.20	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	315.47	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	116.64	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	61.82	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	1025.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	121.08	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.83	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,Chromotropic Method	15.88	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1.10 Phenanthroline Method	0.37	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation

[Signature]
 (Tested By)

[Signature]
 (Checked By)



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Test Report

Sample No.: VEL/HPCL/W/04			Report No.: VEL/W/1908/02/004			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.79	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note:- *BDL- Below Detection Limit, **DL- Detection Limit

These parameters are not covered under the NABL scope.

Alkhayak
(Tested By)

ADIL KUMAR RAWAT
(Checked By)
20/08/20



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Test Report

Sample Number:	VEL/HPCL/W/05	Report No.:	VEL/W/1908/02/005
Name & Address of Party:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°6'34.53"N	Party Reference No.:	NIL
Longitude:	75°0'23.67"E	Reporting Date:	07/09/2019
Sample Description:	Ground Water Sample	Period of Analysis:	02/09/2019 – 07/09/2019
Sample Location:	Kot Kashmir	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	31/08/2019
Parameter Required	As per Client Requirement	Sampling Quantity:	2.0 Ltr
Sampling & Analysis Protocol:	IS-10500-2012, APHA	Sampling Type:	Garb
		Preservation:	Refrigerated

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.88	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA. 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	APHA , 2340 C. EDTA Titrimetric Method	463.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	75.56	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA . 2320 B, Titrimetric Method	310.63	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	164.08	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN` D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	67.51	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C. Gravimetric Method	1284.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	114.89	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F` D, SPADNS Method	0.80	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,Chromotropic Method	12.54	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.34	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B. Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation

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ARUN RAWAT
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Test Report

Sample No.: VEL/HPCL/W/05				Report No.: VEL/W/1908/02/005		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.85	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note:- *BDL- Below Detection Limit, **DL- Detection Limit

These parameters are not covered under the NABL scope.

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Test Report

Sample Number:	VEL/HPCL/W/06	Report No.:	VEL/W/1908/02/006
Name & Address of Party:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°4'34.79"N	Party Reference No.:	NIL
Longitude:	74°59'57.45"E	Reporting Date:	07/09/2019
Sample Description:	Ground Water Sample	Period of Analysis:	02/09/2019 – 07/09/2019
Sample Location:	Nasibpura	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	31/08/2019
Parameter Required	As per Client Requirement	Sampling Quantity:	2.0 Ltr
Sampling & Analysis Protocol:	IS-10500-2012, APHA	Sampling Type:	Garb
		Preservation:	Refrigerated

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.93	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B . Threshold Test Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	APHA , 2340 C, EDTA Titrimetric Method	411.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B. EDTA Titrimetric Method	67.08	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	289.44	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	113.65	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	59.92	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	1078.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	119.70	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F D, SPADNS Method	0.81	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) .Chromotropic Method	11.87	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.32	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation

Al Nayak
(Tested By)

A. J. UNRAWAT
(Checked By)



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Test Report

Sample No.: VEL/HPCL/W/06				Report No.: VEL/W/1908/02/006		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.77	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note:- *BDL- Below Detection Limit, **DL- Detection Limit

These parameters are not covered under the NABL scope.

Alwayak
(Tested By)

ADITHYAN RAWAT
(Checked By)



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Test Report

Sample Number:	VEL/HPCL/W/07	Report No.:	VEL/W/1908/02/007
Name & Address of Party:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°1'27.46"N	Party Reference No.:	NIL
Longitude:	75°4'8.62"E	Reporting Date:	07/09/2019
Sample Description:	Ground Water Sample	Period of Analysis:	02/09/2019 – 07/09/2019
Sample Location:	Baghi Bandar	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	31/08/2019
Parameter Required	As per Client Requirement	Sampling Quantity:	2.0 Ltr
Sampling & Analysis Protocol:	IS-10500-2012, APHA	Sampling Type:	Garb
		Preservation:	Refrigerated

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.86	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA .2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA. 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA . 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	APHA , 2340 C. EDTA Titrimetric Method	462.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	73.40	mg/l	75	200
8.	Alkalinity as CaCO ₃	APHA , 2320 B, Titrimetric Method	280.33	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	96.47	mg/l	250	1000
10.	#Cyanide as CN	APHA , 4500 CN ⁻ D	*BDL (**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	67.36	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C. Gravimetric Method	1150.00	mg/l	500	2000
13.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	118.02	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.79	mg/l	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (P-34) ,Chromotropic Method	14.05	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B I,10 Phenanthroline Method	0.30	mg/l	0.3	No relaxation
17.	#Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.1 mg/l)	mg/l	0.5	1
19.	Total Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	No Relaxation

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Test Report

Sample No.: VEL/HPCL/W/07				Report No.: VEL/W/1908/02/007		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	0.002
21.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.01 mg/l)	mg/l	0.5	No Relaxation
22.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.02 mg/l)	mg/l	0.2	1.0
23.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.76	mg/l	5	15
24.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.05	1.5
25.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
28.	#Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.13 mg/l)	mg/l	0.01	No Relaxation
29.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l	0.01	0.05
30.	#Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.01 mg/l)	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100ml sample	
32.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note:- *BDL- Below Detection Limit, **DL- Detection Limit
 # These parameters are not covered under the NABL scope.

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AIR LINA RAWAT
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Test Report

Sample Number:	VEL/HPCL/W/08	Report No.:	VEL/W/1908/02/008
Name & Address of Party:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°6'48.99"N	Party Reference No.:	NIL
Longitude:	75°4'54.51"E	Reporting Date:	07/09/2019
Sample Description:	Surface Water Sample	Period of Analysis:	02/09/2019 – 07/09/2019
Sample Location:	Kot Fatta	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	31/08/2019
Parameter Required	As per Client Requirement	Sampling Quantity:	2.0 Ltr
Sampling & Analysis Protocol:	IS 2296 & CPCB, 1979, APHA	Sampling Type:	--
		Preservation:	Refrigerated

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.83	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen
3.	Turbidity	APHA, 2130 B, Nephelometric Method	18	NTU
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	124.92	mg/l
6.	Conductivity	APHA, 2510 B, Conductivity Meter Method	1320	μS/cm
7.	Nitrate as NO ₃	IS 3025 (P-34) ,Chromotropic Method	17.13	mg/l
8.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.38	mg/l
9.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	792.00	mg/l
10.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
11.	Boron	APHA, 4500B C, Carmine Method	0.23	mg/l
12.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	17.14	mg/l
13.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.62	mg/l
14.	BOD (3 Days at 27°C)	APHA, 5210 C / IS 3025,P-44	3.60	mg/l
15.	COD	APHA, 5220 B, Open Reflux Method	32.54	mg/l
16.	Free Ammonia as NH ₃	IS 3025 (P-34) , Titrimetric Method	16.42	mg/l
17.	Total Coliform	IS 1622	17	MPN/100ml
18.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l

Note:- *BDL- Below Detection Limit, **DL- Detection Limit

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Test Report

Sample Number:	VEL/HPCL/W/09	Report No.:	VEL/W/1908/02/009
Name & Address of Party:	M/s Hindustan Petroleum Co-oration Ltd. Village Nasibpura, Bhatinda Punjab	Format No.:	5.10 F-01
Latitude:	30°3'45.41"N	Party Reference No.:	NIL
Longitude:	75°4'6.08"E	Reporting Date:	07/09/2019
Sample Description:	Surface Water Sample	Period of Analysis:	02/09/2019 – 07/09/2019
Sample Location:	Chathewala	Receipt Date:	02/09/2019
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	31/08/2019
Parameter Required	As per Client Requirement	Sampling Quantity:	2.0 Ltr
Sampling & Analysis Protocol:	IS 2296 & CPCB, 1979, APHA	Sampling Type:	--
		Preservation:	Refrigerated

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H ⁺ B Electrometric Method	7.54	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 5Hazen)	Hazen
3.	Turbidity	APHA, 2130 B, Nephelometric Method	13	NTU
4.	Odour	APHA, 2150 B, Threshold Test Method	Agreeable	--
5.	Chloride as Cl	APHA, 4500-Cl ⁻ B, Argentometric Method	120.96	mg/l
6.	Conductivity	APHA, 2510 B, Conductivity Meter Method	1280	μS/cm
7.	Nitrate as NO ₃	IS 3025 (P-34) ,Chromotropic Method	10.56	mg/l
8.	Iron as Fe	APHA , 3500-Fe B 1.10 Phenanthroline Method	0.42	mg/l
9.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	768.00	mg/l
10.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
11.	Boron	APHA, 4500B C, Carmine Method	0.16	mg/l
12.	Sulphate as SO ₄	APHA , 4500 E, Turbidimetric Method	32.52	mg/l
13.	Fluoride as F	APHA , 4500-F ⁻ D, SPADNS Method	0.52	mg/l
14.	BOD (3 Days at 27°C)	APHA, 5210 C / IS 3025,P-44	7.00	mg/l
15.	COD	APHA, 5220 B, Open Reflux Method	22.42	mg/l
16.	Free Ammonia as NH ₃	IS 3025 (P-34) , Titrimetric Method	12.26	mg/l
17.	Total Coliform	IS 1622	23	MPN/100ml
18.	#Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.01 mg/l)	mg/l

Note:- *BDL- Below Detection Limit, **DL- Detection Limit

These parameters are not covered under the NABL scope.

Checked By
[Signature]

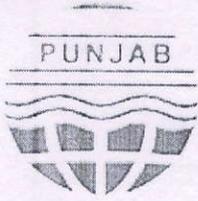
APRILIN RAWAT
Checked By
[Signature]



NOTE: a) The results listed refer only to the tested samples & applicable parameters
b) Total liabilities of our lab will be restricted to the invoice amount only
c) The sample will be destroyed after retention time unless otherwise specified
d) This report is not to be reproduced wholly or in part and cannot be used as evidence in the court of law

www.vardan.co.in

Tel: 0124-4343750, 4343752, 4343753 | lab@vardanenvirolab.com | bd@vardanenvirolab.com



PUNJAB POLLUTION CONTROL BOARD

Zonal Office, Power House Road, Street No. 12, Bathinda.

Website:- www.ppcb.gov.in

Office Dispatch No : 5569

Registered/Speed Post

Date: 27.11.19

Industry Registration ID: R19BTI356560

Application No : 11164379

To,

Shri Sanjay Kumar
Hindustan Petroleum Corporation Limited, 6th Floor, Core-ii North Tower, Scope Minar, Laxmi Nagar
Delhi, Delhi-110092

Subject: Grant of "Consent to Establish"(NOC) for an industrial unit u/s 25 of Water (Prevention & Control of Pollution) Act, 1974 and u/s 21 of Air (Prevention & Control of Pollution) Act, 1981.

With reference to your application for obtaining fresh 'Consent to Establish'(NOC) an industrial plant u/s 25 of Water (Prevention & Control of Pollution) Act, 1974 and u/s 21 of Air (Prevention & Control of Pollution) Act, 1981, you are, hereby, permitted to establish the industrial unit to discharge the effluent(s) & emission(s) arising out of your premises subject to the Terms and Conditions as specified in this Certificate.

1. Particulars of Consent to Establish (NOC) granted to the Industry

Certificate No.	CTE/Fresh/BTI/2019/11164379
Date of issue :	27/11/2019
Date of expiry :	26/11/2020
Certificate Type :	Fresh

2. Particulars of the Industry

Name & Designation of the Applicant	Sanjay Kumar, (Cheif Manager Bio Fuels)
Address of Industrial premises	Hpcl Bathinda, 2g Ethanol Bio-refinery Plant: 1136(39-3), 1137/1(12-10), 1138(29-10), 1139/1(13-10), 1139/2(11-10), 1140(25-0), 1141/1/1(8-5), 1141/1/2(3-2), 1143(25-0), 1144/1(13-0), 1144/2(11-0), 1144/3(9-6), 1144/ Talwandi Sabo, Bathinda-151001
Capital Investment of the Industry	85000.0 lakhs
Category of Industry	Red
Type of Industry	1060-Distillery (molasses / grain / yeast based)
Scale of the Industry	Large
Office District	Bathinda
Consent Fee Details	Rs. 4,70,000/- bearing no. DD no 281286 dt. 26.09.2018 & Rs. 94,000/- bearing no. DD no 288246 dt. 17.12.2018.

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Hpcl Bathinda, 2g Ethanol Bio-refinery Plant: 1136(39-3), 1137/1(12-10), 1138(29-10), 1139/1(13-10), 1139/2(11-10), 1140(25-0), 1141/1/1(8-5), 1141/1/2(3-2), 1143(25-0), 1144/1(13-0), 1144/2(11-0), 1144/3(9-6), 1144/, Talwandi Sabo, Bathinda, 151001

Raw Materials (Name with quantity per day)	Biomass (Rice Straw / Cotton Stalk)
Products (Name with quantity per day)	Ethanol @ 100 KLD
By-Products, if any,(Name with quantity per day)	CO2 @ 80 TPD Fuel Oil @ 0.3 KLD Ash (Including Silica) @ 60 TPD
Details of the machinery and processes	As mentioned in the project report.
Details of the Effluent Treatment Plant	Stream 1: - Effluent to be generated from the bio-mass section i.e. after pretreatment, enzymatic hydrolysis, fermentation and distillation @ 1746 KLD is proposed to be routed to the reverse osmosis followed by MEE. Stream 2: -The effluent to be generated from the cooling tower blow down, boiler blow down, DM reject etc. @ 1595 KLD is proposed to be treated in clarifier - multi grade filters – ultra filtration system – routed to reverse osmosis followed by MEE. Domestic effluent @ 60 KLD
Mode of Disposal of Effluent	Trade Effluent - It has been proposed to achieve Zero Liquid discharge Domestic effluent @ 60 KLD – discharged onto land for plantation after treatment in the STP.
Standards to be achieved under Water (Prevention & Control of Pollution) Act, 1974	As prescribed by the PPCB/CPCB/MOEF.
Sources of emissions and type of pollutants	2 no. boiler furnace of capacity 35 TPH each 2 no. DG sets of capacity 500 KVA each
Mode of disposal of emissions with stack height	Stacks of height 90 meters above ground level with boiler furnaces. Stacks of height 15 meters above roof level with 2 no. DG sets of capacity 500 KVA
Quantity of fuel required in TPD	Fuel to be used in the boilers of capacity 35 TPH each Primary fuel – concentrated lignin stream from MEE and Secondary fuel - Rice Straw / Cotton Stalks HSD for DG sets
Type of Air Pollution Control Devices to be installed	Electrostatic Precipitators (ESP) as APCD with the boilers of capacity 35 TPH each. Canopies with 2 no DG sets of capacity 500 KVA.
Standars to be achieved under Air (Prevention & Control of Pollution) Act, 1981	As prescribed by the PPCB/CPCB/MOEF.

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Hpel Bathinda, 2g Ethanol Bio-refinery Plant: 1136(39-3), 1137/1(12-10), 1138(29-10), 1139/1(13-10), 1139/2(11-10), 1140(25-0), 1141/1/1(8-5), 1141/1/2(3-2), 1143(25-0), 1144/1(13-0), 1144/2(11-0), 1144/3(9-6), 1144/Talwandi Sabo, Bathinda, 151001

27/11/2019

(Ruby Sidhu)
Asstt Environmental Engineer

For & on behalf

of

(Punjab Pollution Control Board)

Endst. No.:

Dated:

A copy of the above is forwarded to the following for information and necessary action please:

Environmental Engineer, Punjab Pollution Control Board, Regional Office, Bathinda.

PUNJAB

27/11/2019

(Ruby Sidhu)
Asstt Environmental Engineer

For & on behalf

of

(Punjab Pollution Control Board)

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Hpcl Bathinda,2g Ethanol Bio-refinery Plant:1136(39-3), 1137/1(12-10), 1138(29-10), 1139/1(13-10), 1139/2(11-10), 1140(25-0), 1141/1/1(8-5), 1141/1/2(3-2), 1143(25-0), 1144/1(13-0), 1144/2(11-0), 1144/3(9-6), 1144/Talvandi Sabo,Bathinda,151001

A. GENERAL CONDITIONS

1. The industry shall apply for consent of the Board as required under the provision of Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Pollution) Act, 1981 & Authorization under Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016, two months before the commissioning of the industry.
2. The industry shall provide adequate arrangements for fighting the accidental leakages/ discharge of any air pollutant/gas/liquids from the vessels, mechanical equipments etc. which are likely to cause environmental pollution.
3. The Industry shall apply for further extension in the validity of the CTE atleast two months before the expiry of this CTE, if applicable.
4. The industry shall comply with any other conditions laid down or directions issued by the Board under the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 from time to time.
5. The project has been approved by the Board from pollution angle and the industry shall obtain the approval of site from other concerned departments, if need be.
6. The industry shall get its building plans approved under the provisions of section 3-A of Punjab Factory Rules, 1952.
7. The industry shall put up display board indicating the Environment data in the prescribed format at the main entrance gate.
8. The industry shall provide port-holes, platforms and/or other necessary facilities as may be required for collecting samples of emissions from any chimney, flue or duct or any other outlets.

Specifications of the port-holes shall be as under:-

- i) The sampling ports shall be provided atleast 8 times chimney diameter downstream and 2 times upstream from the flow disturbance. For a rectangular cross section the equivalent diameter (De) shall be calculated from the following equation to determine upstream, downstream distance:-
$$De = 2 LW / (L+W)$$

Where L= length in mts. W= Width in mts.
 - ii) The sampling port shall be 7 to 10 cm in diameter
9. The industry shall discharge all gases through a stack of minimum height as specified in the following standards laid down by the Board.

(i) Stack height for boiler plants

S.NO.	Boiler with Steam Generating Capacity	Stack heights
1.	Less than 2 ton/hr.	9 meters or 2.5 times the height of neighboring building whichever is more
2.	More than 2 ton/hr. to 5 ton/hr.	12 meters
3.	More than 5 ton/hr. to 10 ton/hr	15 meters
4.	More than 10 ton/hr. to 15 ton/hr	18 meters
5.	More than 15 ton/hr. to 20 ton/hr	21 meters
6.	More than 20 ton/hr. to 25 ton/hr.	24 meters
7.	More than 25 ton/hr. to 30 ton/hr.	27 meters
8.	More than 30 ton/hr.	30 meters or using the formula $H = 14 Qg^{0.3}$ or $H = 74 (Qp)^{0.24}$ Where Qg = Quantity of SO2 in Kg/hr. Qp = Quantity of particulate matter in Ton/day.

Note : Minimum Stack height in all cases shall be 9.0 mtr. or as calculated from relevant formula whichever is more.

(ii) For industrial furnaces and kilns, the criteria for selection of stack height would be based on fuel used for the corresponding steam generation.

(iii) Stack height for diesel generating sets:

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Hpl Bathinda, 2g Ethanol Bio-refinery Plant: 1136(39-3), 1137/1(12-10), 1138(29-10), 1139/1(13-10), 1139/2(11-10), 1140(25-0), 1141/1/1(8-5), 1141/1/2(3-2), 1143(25-0), 1144/1(13-0), 1144/2(11-0), 1144/3(9-6), 1144/Talwandi Sabo, Bathinda, 151001

Capacity of diesel generating set	Height of the Stack	
0-50 KVA	Height of the building	+ 1.5 mt
50-100 KVA	-do-	+ 2.0 mt.
100-150 KVA	-do-	+ 2.5 mt.
150-200 KVA	-do-	+ 3.0 mt.
200-250 KVA	-do-	+ 3.5 mt.
250-300 KVA	-do-	+ 3.5 mt.

For higher KVA rating stack height H (in meter) shall be worked out according to the formula:

$$H = h + 0.2 (KVA) 0.5$$

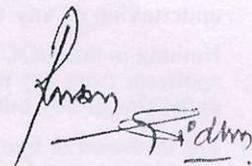
where h = height of the building in meters where the generator set is installed.

10. The industry shall put up canopy on its DG sets and also provide stack of adequate height as per norms prescribed by the Board and shall ensure the compliance of instructions issued by the Board vide office order no. Admin./SA-2/F.No.783/2011/448 dated 8/6/2010.
11. The industry shall put up canopy on its DG sets and also provide stack of adequate height as per norms prescribed by the Board and shall ensure the compliance of instructions issued by the Board vide office order no. Admin./SA-2/F.No.783/2011/448 dated 8/6/2010.
 - (i) Once in Year for Small Scale Industries.
 - (ii) Four in a Year for Large/Medium Scale Industries.
 - (iii) The industry will submit monthly reading/ data of the separate energy meter installed for running of effluent treatment plant/re-circulation system to the concerned Regional Office of the Board by the 5th of the following month.
12. The industry shall provide flow meters at the source of water supply, at the outlet of effluent treatment plant and shall maintain the record of the daily reading and submit the same to the concerned Regional Office by the 5th day of the following month.
13. The industry shall make necessary arrangements for the monitoring of stack emissions and shall get its emissions analyzed from lab approved / authorized by the Board:-
 - (i) Once in Year for Small Scale Industries.
 - (ii) Twice/thrice/four time in a Year for Large/Medium Scale Industries.
14. The pollution control devices shall be interlocked with the manufacturing process of the industry.
15. The Board reserves the right to revoke this "consent to establish" (NOC) at any time, in case the industry is found violating any of the conditions of this "consent to establish" and/or the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 as amended from time to time.
16. The industry shall plant minimum of three suitable varieties of trees at the density of not less than 1000 trees per acre along the boundary of the industrial premises.
17. The issuance of this consent does not convey any property right in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State or Local Laws or Regulations.
18. The consent does not authorize or approve the construction of any physical structures or facilities for undertaking of any work in any natural watercourse.
19. Nothing in this NOC shall be deemed to neither preclude the institution of any legal action nor relieve the applicant from any responsibilities, liabilities or penalties to which the applicant is or may be subjected under this or any other Act.
20. The diversion or bye pass of any discharge from facilities utilized by the applicant to maintain compliance with the terms and conditions of this consent is prohibited except.
 - (i) Where unavoidable to prevent loss of life or some property damage or
 - (ii) Where excessive storm drainage or run off would damage facilities necessary for compliance with terms and conditions of this consent. The applicant shall immediately notify the consent issuing authority in writing of each such diversion or bye-pass.

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Hpcl Bathinda.2g Ethanol Bio-refinery Plant:1136(39-3), 1137/1(12-10), 1138(29-10), 1139/1(13-10), 1139/2(11-10), 1140(25-0), 1141/1/1(8-5), 1141/1/2(3-2), 1143(25-0), 1144/1(13-0), 1144/2(11-0), 1144/3(9-6), 1144/Talwandi Sabo,Bathinda,151001

21. The industry shall ensure that no water pollution problem is created in the area due to discharge of effluents from its industrial premises.
22. The industry shall comply with the conditions imposed if any by the SEIAA/MOEF in the Environmental Clearance granted to it as required under EIA notification dated 14/9/06, if applicable.
23. The industry shall earmark a land within their premises for disposal of boiler ash in an environmentally sound manner, and / or the industry shall make necessary arrangements for proper disposal of fuel ash in a scientific manner and shall maintain proper record for the same, if applicable.
24. The industry shall obtain and submit Insurance cover as required under the Public Liability Insurance Act, 1991.
25. The industry shall submit a site emergency plan approved by the Chief Inspector of Factories, Punjab as applicable.
26. The industry shall provide proper and adequate air pollution control arrangements for control emission from its coal/fuel handling area, if applicable.
27. The Industry shall comply with the code of practice as notified by the Government / Board for the type of Industries where the siting guidelines / code of practice have been notified
28. Solids, sludge, filter backwash or other pollutant removed from or resulting from treatment or control of waste waters shall be disposed off in such a manner so as to prevent any pollutants from such materials from entering into natural water.
29. The industry shall submit a detailed plan showing therein, the distribution system for conveying waste-waters for application on land for irrigation along with the crop pattern to be adopted throughout the year.
30. The industry shall not irrigate the vegetable crops with the treated effluents which are used/ consumed as raw.
31. The industry shall ensure that its production capacity & quantity of trade effluent do not exceed the quantity mentioned in the NOC and shall not carry out any expansion without the prior permission/NOC of the Board.
32. All amendments/revisions made by the Board in the emission/stack height standards shall be applicable to the industry from the date of such amendments/revisions.
33. The industry shall not cause any nuisance/traffic hazard in vicinity of the area.
34. The industry shall maintain the following record to the satisfaction of the Board :-
 - (i) Log books for running of air pollution control devices or pumps/motors used for it.
 - (ii) Register showing the result of various tests conducted by the industry for monitoring of stack emissions and ambient air.
 - (iii) Register showing the stock of absorbents and other chemicals to be used for scrubbers.
35. The industry shall ensure that there will not be significant visible dust emissions beyond the property line.
36. The industry shall establish sufficient number of piezometer wells in consultation with the concerned Regional Office, of the Board to monitor the impact on the Ground Water Quantity due to the industrial operations, if applicable.
37. The industry shall provide adequate and appropriate air pollution control devices to contain emissions from handling, transportation and processing of raw material & product of the industry



27/11/2019

(Ruby Sidhu)
Asstt Environmental Engineer

For & on behalf

of

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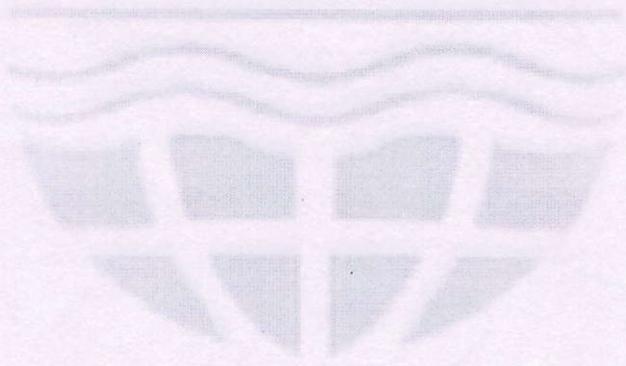
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Page 6

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PUNJAB

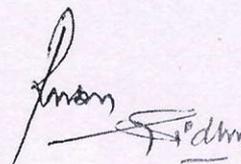


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B. SPECIAL CONDITIONS

1. The industry shall comply with the conditions of the Environmental Clearance granted to it from MoEF vide F.No. J-11011/221/2017-IA II (I) dated 14.08.2018.
2. The industry will ensure to achieve zero liquid discharge and it shall be ensured that no waste/treated water is discharged, without prior permission of the Board.
3. The industry shall provide continuous online monitoring system for the stack emissions and the data of the same shall be connected with the server of the Board.
4. The industry shall develop thick green belt all along the boundary wall covering 33 % of the total project area as per the karnal technology.
5. The industry shall manage and transport the fuel ash to be generated from its boilers in a scientific manner.



27/11/2019

(Ruby Sidhu)
Asstt Environmental Engineer

For & on behalf

of

(Punjab Pollution Control Board)

PUNJAB

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Page 8

NSUI activists cane-charged



An NSUI activist being taken away from the protest site in Faridabad on Friday. TRIBUNE PHOTO

■ The police on Friday removed students, owing allegiance to the NSUI, protesting outside Pt Nehru Government College in Faridabad for 24 days

■ The protest reached a flashpoint when students locked the main gate of the college in the morning

■ By afternoon, the police reached the protest site and resorted to lathicharge to remove the students, Kris-

han Atri, state NSUI secretary, said, adding that nine students had been rounded up

■ The NSUI has been demanding increase of seats in undergraduate and postgraduate courses by 20%, and opening of a regional centre of Rohtak's MDU in Faridabad

■ The police denied the allegation of resorting to lathicharge.

Project incomplete, builder loses licence

Govt takes over affordable housing project

PRADEEP SHARMA
TRIBUNE NEWS SERVICE

CHANDIGARH, AUGUST 31
The failure to complete an affordable housing project in Palwal in the stipulated period of four years has cost Delhi-based SRS Real Estate Private Limited dear with the Haryana Government cancelling its licence and taking over the project.

The licence for development of a housing project spread over 6.44 acres was issued to the SRS on November 23, 2012, by the Department of Town and Country Planning (DTCP) and the developer was mandated to complete the project within three years.

The deadline was extendable by a maximum of one year subject to payment of 5 per cent penalty, equivalent to external development

charges (EDC). "The licence was valid up to November 22, 2016. The licensee failed to complete the project within the validity of the licence and hence, was liable to pay penalty of Rs 1.46 crore as on October 16, 2015. This penalty was demanded through a communication dated November 27, 2015, which had not been deposited even after reminders dated March 18, 2016, October 13, 2016, and November 11, 2016," read an order of DTCP Director KM Pandurang.

Before cancelling the licence, the builder was given an opportunity of personal hearing on June 30, 2018, which was later adjourned to July 10, 2018. However, no one on behalf of the builder appeared before the DTCP Director on July 10.

Asking the Senior Town Planner to take over the administration of the licensed colony on behalf of the DTCP, the order directed the licensee to deposit dues on account of EDC and internal development charges and give information about sold and unsold properties within 15 days so that unsold properties could be disposed of to recover government dues.

A committee was formed under the Haryana Shehari Vikas Pradhikaran Administrator for further course of action. "A communication may be sent to the Palwal Collector for declaring the dues as arrears of land revenue which may be recovered under provisions of the relevant Act by sale of property or other permissible methods, including arrest of licensees," read the order.

Pranab, CM to share stage at G'gram event

SUSHIL MANAV
TRIBUNE NEWS SERVICE

CHANDIGARH, AUGUST 31
Former President Pranab Mukherjee and Chief Minister Manohar Lal Khattar will share stage during two programmes in Gurugram district on Sunday.

The development has evoked interest among political observers because some BJP and RSS workers will also be present at the programmes.

The former President will be in Haryana on Sunday to launch a series of programmes by Pranab Mukherjee Foundation.

He will visit Harchandpur and Nayagaon, both in Gurugram, and launch training and innovation warehouses and set up water ATMs as part of Smartgram project being undertaken by the foundation in adopted villages.

The former President will also launch "Selfie with

There have been reports in certain sections of the media suggesting that the Pranab Mukherjee Foundation may collaborate with the RSS in Haryana. It is clarified that there is neither any existing collaboration nor is there any such move in the offing.

Pranab Mukherjee's office

Daughter" trophy at Harchandpur and the book "Lado Rights" at Nayagaon.

Sources said the former President would meet entrepreneurs and sarpanches.

Khattar's media adviser Rajiv Jain said when Mukherjee was President, the foundation had adopted Harchandpur and Nayagaon villages under its Smartgram project.

Eyebrows were raised when Mukherjee attended an RSS function in Nagpur in June.

Family killed rape victim, say police

Kin had claimed she ended her life

DEEPENDER DESWAL
TRIBUNE NEWS SERVICE

BHIWANI, AUGUST 31
In another twist to a rape-suicide case, the police on Friday arrested the victim's father Shamsher, brother Mintu and another relative Sanjay after registering a case of murder under Section 302 of the IPC.

The 20-year-old Dalit victim had accused her neighbour Pradeep of raping her on August 17. She was found dead at her house in Kitlana on August 27. Her family reported that she had committed suicide as she was upset over police inaction in the rape case. The family also showed a "suicide note written by the victim".

However, the police probe nailed the lies of the family. A police spokesperson on Friday said the woman was forced by her family to lodge a complaint against

her neighbour Pradeep with whose family they had a land dispute. On Thursday, the police had arrested Sandeep of Kalanaur who is a relative of the victim and had raped her on August 17.

On August 27, the family forced the victim to write a suicide note blaming the police and mentioning Pradeep as the rape accused. They later hanged her to death in the house. The next day, they went on to enact a drama at the Civil Hospital, demanding action against the police and the arrest of Pradeep.

Police spokesperson Abhishek Singh said a murder case had been registered against five family members of the victim. Three of them had been arrested and two others — Anil alias Bania and Ghisharam — are absconding.

Illegal rehab centre in G'gram busted

GURUGRAM, AUGUST 31
The Health Department on Friday busted a fake drug addiction centre being run by a Class IX dropout here.

The centre was being run without any licence for the last one year. It had 55 patients and had fraudulently hoarded medications.

According to the police, CMO Gulshan Arora had got a tip-off about the drug addiction centre, 'Nayi Ummeed', being run by Class IX dropout Sudhir Kumar and his friend Naresh Rathi.

The CMO formed a team headed by Drug Control officer Amandeep Chauhan that raided the premises. Dr Arora said they claimed a decade-long experience, but did not have any licence or permission.

"Both of them were not qualified and did not have any medical background. They had 19 beds and had admitted 55 patients after paying hefty fee," he said.

"We have filed a police complaint," Dr Arora added. — TNS

IndianOil Sports Scholarships

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Visit www.iocd.com for more details. Applications may be submitted online on or before 30.09.2018. Applications through any other mode will not be accepted.

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Woman killed, husband booked

Panipat: A man has been booked on the charge of murdering his wife in the district's Dadola village on Friday. The deceased has been identified as Munni Devi (55). Her sister, Rajesh, alleged in her police complaint that she saw her brother-in-law Suresh Kumar beating her sister with the handle of a hand pump. "As I shouted, he managed to flee. My sister died on the spot," she said. Rajesh said Kumar suspected the character of her sister. Kumar had been booked under Section 302 of the IPC and the police were raiding his possible hideouts, Inspector Navin Sindhu said. TNS

Nawab Jassa Singh Ahluwalia Government College, Kapurthala

CORRIGENDUM

Advt. TRC-18316
Ph: 01822-233581

Reference to this office Advertisement No.: TRC-18316 published in The Tribune dated 28.08.2018, Walk-in Interview is postponed from 06.09.2018 to 25.09.2018 due to election code of conduct.

Sd/- President PTA/
HEIS-cum-Principal.
TRC-18861

GOVT. COLLEGE AJNALA (AMRITSAR)

Walk in Interview

Guest Faculty Teacher required to deliver Guest Lectures (for session 2018-19) as per PTA rules in the subject of Commerce - 01. Qualification as per Punjab Govt. / UGC norms. Candidate will have no claim for regularisation. Remuneration will be as per PTA rules. No TA/ DA will be paid.

Venue : 26/09/2018 at 11:00 a.m. in the office of the undersigned.

President PTA cum Principal
Govt. College Ajnala, Distt. Amritsar

HINDUSTAN PETROLEUM CORPORATION LIMITED
(A Govt. of India Enterprise)

6-8th floor, North Tower, Scope Minar, District Centre, Laxmi Nagar, New Delhi-110092

PUBLIC NOTICE

This is to inform General Public that M/s Hindustan Petroleum Corporation Limited is setting up 2G Ethanol Bio-Refinery Plant of Capacity 100 KLPD at village Nasibpura, Tehsil Talwandi Sabo, Bathinda (Punjab).

The Ministry of Environment, Forest and Climate Change (MOEF & CC), Government of India vide letter no F.No. J-11011/221/2017-IA II(I) dated 14th August, 2018 has accorded environmental clearance to the above project. Copies of clearance letter are available with the SPCB Punjab and may also be seen at Website of the Ministry of Environment, Forest and Climate Change at <http://moef.nic.in>.

Government of India
Ministry of Communication
Department of Telecommunications
Tel. No.0172-2653208/2640060 Fax 0172-2654208
Email -pen.ccapunjab@gmail.com

Office of Controller of Communication Accounts Punjab
Telecom Circle, Madhya Marg,
Sector 27A, Chandigarh - 160019
www.ccapunjab.gov.in

ISO: 9001: 2008 CERTIFIED
PENSION ADALAT ON 18TH SEPTEMBER 2018

Controller of Communication Accounts, Punjab Telecom Circle, Department of Telecommunication, Govt. of India, Chandigarh will hold Pension Adalat on 18.09.2018 to redress the pension grievances of Retirees of Department of Telecom & BSNL as per following schedule.

FEROZEPUR Timings 10:30 to 13:00 Venue- Conference Hall, DC Office, Ferozepur.	JALANDHAR Timings 14:00 to 17:00 Venue- Wireless Monitoring Station, Jalandhar-Hoshiarpur National Highway, P.O. Bojewal, Near Shailmar Garden, Jalandhar.	PATIALA Timings 10:30 to 13:00 Venue- Prabhat Parwana Memorial Trade Union Centre, Opposite Circuit House, Baradari, Patiala.
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Grievances may be submitted to this office latest by 10.09.2018.

Sd/- Senior Accounts Officer (Pension),
O/o Controller of Communication Accounts
Punjab Telecom Circle, Chandigarh - 160019.

TRC-18849

सीएसआईआर- केंद्रीय वैज्ञानिक उपकरण संगठन
विज्ञान और प्रौद्योगिकी मंत्रालय, भारत सरकार
CSIR-Central Scientific Instruments Organisation
Ministry of Science & Technology,
Government of India

विज्ञान एवं प्रौद्योगिकी विभाग
भारत सरकार
DEPARTMENT OF SCIENCE & TECHNOLOGY
Government of India

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Do visit our website at <http://sdirectory.csio.res.in> to fill in details of your company OR send us the filled up Registration Form available at http://sdirectory.csio.res.in/docs/Registration_Form.pdf by November 30, 2018. Contact us at the numbers listed below in case you require any additional information.

Mr. Narinder Singh Jassal
Sr. Scientist & Principal Investigator
Email: sdirectory@csio.res.in
Phone No.+91 172-2657263
Fax: +91 172-2657264, Web: www.csio.res.in

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केनरा बैंक Canara Bank
Together We Can

E-AUCTION SALE NOTICE

Recovery & Legal Section, Circle Office, 2nd Floor, Sector 34-A, Chandigarh,
Ph. No. 0172-2602431, 2663733, E-mail: rlcohd@canarabank.com

E-AUCTION SALE NOTICE

SALE NOTICE OF MOVABLE / IMMOVABLE PROPERTIES THROUGH E-AUCTION UNDER RULES 8(6) & (9) OF THE SECURITY INTEREST (ENFORCEMENT) RULES 2002

Last Date of Receipt of EMD 03.10.2018 upto 5:00 P.M. **Date of e-Auction: 04.10.2018 at 11:30 AM to 12:30 PM (with unlimited extension of 5 minutes duration each till the conclusion of the sale)**

Notice is hereby given to the effect that the immovable properties described herein, taken possession under the provisions of Securitisation and Reconstruction of financial Assets and Enforcement of Security Interest Act 2002 and Security Interest (Enforcement) Rules 2002, will be sold through E-auction on the following terms and conditions. E-auction arranged by service provider M/s Antares Systems Ltd. through the website www.bankauctionwizd.com.

Branch Name / Name & Address of the Borrower(s) / Guarantor(s)	Brief Description of Property/ies	Total Liabilities as on specified Date	Reserve Price (in Rs.)	Earnest Money Deposit (in Rs.)	Details of A/C No. & IFSC Code where EMD can be deposited
Canara Bank, Amritsar D.S. Market Branch, Sh. G.D.P. Sharma, Chief Manager, M.: 8196800166, 9876677677, Ph. No. 0183-2556128 E-mail: cb0166@canarabank.com	Industrial Building, Plot No. 167 (7734 Sq. Yards), situated at Vakiya Rabka, Industrial Focal Point, Mehta Road, Amritsar - Physical Possession.	Total liabilities: Rs. 18,98,76,878.31 as on 30.08.2018 + further interest.	Rs. 733.50 Lacs	Rs. 73.35 Lacs	Canara Bank, Amritsar D.S. Market Branch, A/c No.: 016629600001, IFSC Code: CNRB000166
(1) M/s Freedom Rubber Limited, Plot No. 167, Vakiya Rabka Industrial Focal Point, Mehta Road, Amritsar (2) Mr. S. Barinder Singh, Director, M/s Freedom Rubber Limited, Plot No. 167, Vakiya Rabka Industrial Focal Point, Mehta Road, Amritsar. (3) Mr. Gurbartap Singh, Director, M/s Freedom Rubber Limited, Plot No. 167, Vakiya Rabka Industrial Focal Point, Mehta Road, Amritsar (4) Mr. Rajbir Singh, Director, M/s Freedom Rubber Limited, Plot No. 167, Vakiya Rabka Industrial Focal Point, Mehta Road, Amritsar.					
Canara Bank, SPL ARM Chandigarh Branch, Sh. Ravi Kumar, Assistant General Manager, Ph. No. 0172-2601664 E-mail: cb5220@canarabank.com	Residential Flat No. 16/22, Block -16, Lower Ground Floor, East Patel Nagar, New Delhi (measuring 200 sq. yards). Bounded as:- North: Road; South: Service Lane; East: Property No. 16/23; West: Property No. 16/21 - Physical Possession.	Total liabilities: Rs. 265.46 Lacs as on 30.06.2018 + further interest.	Rs. 135.00 Lacs	Rs. 13.50 Lacs	Canara Bank, SARM Chandigarh Branch, A/c No.: 522029600001, IFSC Code: CNRB0005220
(1) Mr. Varun Gupta S/o Ajay Gupta, Resident of H. No. 63, Sector 27-A, Chandigarh (2) Mr. Vikram Gupta S/o Subhash Gupta, Resident of H. No. 63, Sector 27-A, Chandigarh (3) Smt. Kanta Gupta W/o Subhash Gupta, Resident of H. No. 63, Sector 27-A, Chandigarh.					

OTHER TERMS AND CONDITIONS:- The sale shall be subject to the conditions prescribed in the Security Interest (Enforcement) Rules, 2002 and to the following conditions. a. E-Auction is being held on "AS IS WHERE IS & WHATEVER IS THERE" basis. b. As per banks record, the outstanding dues of the Local Self Government against the property are not known to bank, as no notice received for the same. The Purchaser is liable to incur the dues, if any. c. Auction / bidding shall be only through "Online Electronic Bidding" through the website www.bankauctionwizd.com. Bidders are advised to go through the website for detailed terms before taking part in the e-auction sale proceedings. d. The property can be inspected, with Prior Appointment with Authorised Officer, from 10.09.2018 to 13.09.2018, between 03:00 PM to 05:00 PM. e. The property will not be sold below the Reserve Price and the participating bidders may improve their offer further during auction process. f. The intending bidders shall deposit Earnest Money Deposit (EMD), being 10% of the Reserve Price, by way of DD / RTGS / NEFT favouring, Authorised Officer, Canara Bank on or before 03.10.2018 upto 5.00 pm. g. Intending bidders shall hold a valid digital signature certificate and e-mail address. For details with regard to digital signature please contact the service provider M/s Antares Systems Ltd., 24, Sudha Complex, First Floor, 3rd Stage, 4th Block, Basaveswaranagar, Bangalore-560079, Ph: 080-49352000, and for any property related query may Contact Person: Mr. Manohar S., Mobile Number: 09686196756, E-mail: manohar.s@antaresystems.com. Immediately on the same date of payment of the EMD amount the bidders shall approach the said service provider for obtaining digital signature (if not holding a valid digital signature) h. After payment of the EMD amount, the intending bidders should submit a copy of the following documents/details on or before 03.10.2018 upto 5.00 pm., as respective branch of Canara Bank by hand or by email. 1) Demand Draft, Photocopies of PAN Card, ID Proof and Address proof. However, successful bidder would have to produce these documents in original to the Bank at the time of making payment of balance amount of 25% of bid amount. 2) Bidders Name. Contact No. Address, E Mail-id. 3) Bidder's A/c details for online refund of EMD. i. The intending bidders should register their names at portal www.bankauctionwizd.com and get their User ID and password free of cost. Prospective bidder may avail online training on E-auction from the service provider M/s Antares Systems Ltd., Contact Person: Mr. Manohar S., Mobile Number: 09686196756. j. EMD deposited by the unsuccessful bidder shall be refunded to them within 2 days of finalization of sale. The EMD shall not carry any interest. k. Auction would commence at Reserve Price, as mentioned above. Bidders shall improve their offers in multiples of Rs. 10,000/-. The bidder who submits the highest bid (not below the Reserve price) on closure of "Online" auction shall be declared as successful bidder. Sale shall be confirmed in favour of the successful bidder, subject to confirmation of the same by the secured creditor. l. The successful bidder shall deposit 25% of the sale price (inclusive of EMD already paid), immediately on declaring him/her as the successful bidder and the balance within 15 days from the date of confirmation of sale by the secured creditor. If the successful bidder fails to pay the sale price within the period stated above, the deposit made by him/her shall be forfeited by the Authorised Officer without any notice and property shall forthwith be put up for sale again. l. All charges for conveyance, stamp duty and registration charges etc., as applicable shall be borne by the successful bidder only. m. For sale proceeds above Rs 50 (Rupees Fifty) lacs, TDS shall be payable at the rate 1% of the Sale amount, which shall be payable separately by the Successful buyer. n. Authorised Officer reserves the right to postpone/cancel or vary the terms and conditions of the e-auction without assigning any reason thereof. o. In case there are bidders who do not have access to the internet but interested in participating in the e-auction, they can approach Chandigarh Circle Office, R&L Section, Plot No.1, Sector 34-A, Chandigarh or respective branch of Canara Bank, who as a facilitating centre shall make necessary arrangements. p. For further details contact respective branch or the service provider M/s Antares Systems Ltd., Contact Person: Mr. Manohar S., Mobile Number: 09686196756.

SPECIAL INSTRUCTION / CAUTION

Bidding in the last minutes/seconds should be avoided by the bidders in their own interest. Neither Canara Bank nor the Service Provider will be responsible for any lapses/failure (Internet failure, Power failure, etc.) on the part of the bidder or vendor in such cases. In order to ward off such contingent situation, bidders are requested to make all the necessary arrangements/alternatives such as back-up, power supply and whatever else required so that they are able to circumvent such situation and are able to participate in the auction successfully.

STATUTORY 30 DAYS SALE NOTICE (AS PER AMENDMENT TO SECURITY INTEREST RULES 2002 WHICH CAME TO INTO EFFECT FROM NOVEMBER 2016) UNDER THE SARFAESI ACT 2002

The borrower/ guarantors are hereby notified to pay the sum as mentioned above along with upto date interest and ancillary expenses before the date of e-Auction, failing which the property will be auctioned/ sold and balance dues, if any, will be recovered with interest and cost.

Date: 31.08.2018 Place: Chandigarh **AUTHORISED OFFICER, Canara Bank**