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**ENVIRONMENTAL MONITORING REPORT
BALLARPUR OC**

(BALLARPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

AN ISO 9001:2015 COMPANY

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INTRODUCTION

Location :

Ballarpur OC is located in Chandrapur district of Maharashtra State. The project is administered by Ballarpur Area of Western Coalfields Limited.

Communication :

Ballarpur OC project is situated at a distance of approximately 2 KM from Ballarpur City.

Drainage :

The Wardha River is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Industries :

Besides other coalmines, Ballarpur Paper Mill is the major industry in the vicinity of the project area.

Pollution due to other sources :

The above-mentioned sources and the Township are also expected to contribute a lot in increasing the load of pollution in the area.

Sampling Location :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Manager Office – Ballarpur UG	- BBOA-1
2.	Premises of SAM Office	- BBOA-2
3.	Substation – Ballarpur OC	- BBOA-3
4.	Filter plant / Colony	- BBOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Weigh Bridge	- BBOAF-1
2.	CHP	BBOAF-2
3.	Railway Siding	BBOAF-3

Water Quality Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- BBOW-1

Noise Level Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- BBON-1
2.	Colony	- BBON-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.


Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of

Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-35 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : BALLARPUR OC

Manager office - Ballarpur UG					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
12/05/2019	204	66	18	13	7
29/05/2019	254	129	10	15	7
TLV	600	300	60	120	120
Premises of Sub area office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
12/05/2019	307	160	48	13	7
29/05/2019	387	161	37	17	16
TLV	600	300	60	120	120
Substation- Ballarpur OC					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	No_x	SO_x
12/05/2019	176	44	21	20	7
29/05/2019	256	81	31	26	18
TLV	600	300	60	120	120

Filter plant/ colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	Nox	SO _x
12/05/2019	153	89	52	15	12
29/05/2019	283 [#]	126 [#]	23	23	11
TLV	200	100	60	80	80

Above Std. Value.

FUGITIVE DUST MONITORING DATA

WEIGHT BRIDGE.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-


CHP/ Coal Moni. Point			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

Rly Sidding.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

*Deepanshu Sahu
(Authorized Signatory)*

Note: 1) This Report refers to the values related to the items tested as received.
2) This Report cannot be reproduced in part or full without written permission of the management.
3) * - Test parameter not under NABL scope.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-35 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : BALLARPUR OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
11/05/201	7.50	36	38	<2
28/05/2019	7.10	36	34	<2
TLV	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
11/05/201	7.40	28	34	<2
28/05/2019	7.30	32	34	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH : MAY
NAME OF THE PROJECT : BALLARPUR OCP

Name of the Location : CHP - BBON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	63.7
MAY.2019	28/05/2019	62.5
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Colony - BBON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	43.5
MAY.2019	28/05/2019	43.4
Permissible Limit		55

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ENVIRONMENTAL MONITORING REPORT

BALLARPUR. UG

(BALLARPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

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INTRODUCTION

Location :

Ballarpur - III & IV UG is located in Chandrapur district of Maharashtra state. The project is administered by Ballarpur Area of Western Coalfields Limited.

Communication :

Ballarpur - III & IV UG is at a distance of approximately 1.5 KM from Ballarpur City

Drainage : The Wardha river is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Industries :

Besides other coalmines, Ballarpur Paper Mill is the major industry in the vicinity of the project area.

Pollution due to other sources :

The above-mentioned sources and the Township are also expected to contribute a lot in increasing the load of pollution in the area.

Sampling Location :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Manager Office – Ballarpur UG	-	BBUA-1
2.	Substation - Ballarpur OC	-	BBUA-2
3.	Filter plant/ Colony/ Guest House	-	BBUA-3
4.	Premises of SAM Office	-	BBUA-4

Water Quality Monitoring Station :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	BBUW-1

Noise Level Monitoring Station :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Near Fan house	-	BBUN-1
2.	Colony	-	BBUN-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.


Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

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 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : BALLARPUR UG

Manager office - Ballarpur UG					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
12/05/2019	204	66	18	13	7
29/05/2019	254	129	10	15	7
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Substation- Ballarpur OC					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
12/05/2019	176	44	21	20	7
29/05/2019	256	81	31	26	18
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Filter plant/ colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
12/05/2019	153	89	52	15	12
29/05/2019	283 [#]	126 [#]	23	23	11
Permissible Limits	200	100	60	80	80
# Above Std. Value					


Premises of Sub area office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SO_x
12/05/2019	307	160	48	13	7
29/05/2019	387	161	37	17	16
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120

Above Std. Value

(Scientific Assistant)

*Deepanshu Sahu
(Authorized Signatory)*

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TEST REPORT NO. : RIN/TR/MAY-19/W-36 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : BALLARPUR UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
11/05/2019	7.30	36	38	<2
28/05/2019	7.40	28	30	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH : MAY
NAME OF THE PROJECT : BALLARPUR-III & IV UG

Name of the Location : Near Fan House - BBUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	72.6
MAY.2019	28/05/2019	68.6
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Colony - BBUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	43.5
MAY.2019	28/05/2019	43.4
Permissible Limit		55

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INTRODUCTION

Location:

Gouri I & II (A) OC is located in Chandrapur district of Maharashtra state. The project is administered by Ballarpur Area of Western Coalfields Limited.

Communication: The project is at a distance of approximately 24 km from Ballarpur City.

Drainage: The Wardha river is the main drainage channel for the surrounding area.

Climate : The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Industries :

Besides other coal mines , there is no other major industries nearby the project area. Vehicular traffic and local coal burning for domestic purposes are other source of pollution.

Sampling Location :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Manager Office - Gouri-I OC	-	BGOA-1
2.	Gouri village	-	BGOA-2
3.	SAM Office – Gouri Sub Area	-	BGOA-3
4.	Gouri Colony/ Filter Plant	-	BGOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	CHP	-	BGOAF-1
2.	Weigh Bridge		BGOAF-2

Water Quality Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge- Gouri I OC	-	BGOW-1
2.	ETP Workshop discharge- Gouri I OC	-	BGOW-2

Noise Level Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	CHP	-	BGON-1
2.	Gouri Colony	-	BGON-2

Frequency of Monitoring :


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- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
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- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly

for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-34 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : GOURI-I & II (A) OCP

Manager Office - Gouri -I O/C					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
09/05/2019	86	40	17	25	17
25/05/2019	106	82	11	18	12
TLV	600	300	60	120	120
Gouri Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
08/05/2019	300 [#]	109 [#]	31	14	14
25/05/2019	182	96	26	11	12
TLV	200	100	60	80	80
SAM office – Gouri sub area					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
10/05/2019	219	184	53	21	11
25/05/2019	285	193	42	15	14
TLV	600	300	60	120	120
#Above Std. Value					

Gouri colony/ Filter plant					
	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/2019	180	83	33	25	17
27/05/2019	255 [#]	94	32	28	14
TLV	200	100	60	80	80

#Above Std. Value

FUGITIVE DUST MONITORING DATA


CHP/coal unloading point			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

WEIGHT BRIDGE.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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 3) * - Test parameter not under NABL scope.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-34 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : GOURI-I & II (A) OCP

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
08/05/2019	7.70	32	38	<2
27/05/2019	7.20	36	34	<2
TLV	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
08/05/2019	7.40	36	40	<2
27/05/2019	7.20	32	30	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH : MAY
NAME OF THE PROJECT : GOURI - I & II (A) OCP

Name of the Location : CHP - BGON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	08/05/2019	63.7
MAY.2019	23/05/2019	63.2
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Gouri Colony - BGON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	43.3
MAY.2019	26/05/2019	42.7
Permissible Limit		55

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ENVIRONMENTAL MONITORING REPORT

GOURI DEEP. OC

(BALLARPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

AN ISO 9001:2015 COMPANY

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2.	AIR QUALITY MONITORING DATA	3-4
3.	EFFLUENT WATER QUALITY MONITORING DATA	5
4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Gouri Deep OC is located in Chandrapur district of Maharashtra state. The project is administered by Ballarpur Area of Western Coalfields Limited.

Communication : The project is at a distance of approximately 25 km from Ballarpur City.

Drainage : The Wardha river is the main drainage channel for the surrounding area.

Climate : The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Industries :

Besides other coal mines , there is no other major industries nearby the project area.

Sampling Location :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Manager Office	- BG _D OA-1
2.	Mutra village	- BG _D OA-2
3.	Goyegaon Village	- BG _D OA-3
4.	Antragaon Village	- BG _D OA-4

Water Quality Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- BG _D OW-1

Noise Level Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Manager Office	- BG _D ON-1

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.


Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ : Ambient air laden with suspended particulates enters the Respirable Dust Sampler

- PM-10** : through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

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TEST REPORT NO. : RIN/TR/MAY-19/A-33 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : GOURI-DEEP OCP

Manager office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
05/05/2019	182	95	38	19	17
24/05/2019	251	132	41	24	18
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Mutra village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
05/05/2019	395 [#]	112 [#]	15	34	24
24/05/2019	197	89	17	21	16
Permissible Limits	200	100	60	80	80
Goyegaon village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
05/05/2019	251 [#]	119 [#]	30	17	9
24/05/2019	184	91	26	15	11
Permissible Limits	200	100	60	80	80
# Above Std. Value					

Antargaon village


DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/2019	288#	131#	53	17	17
24/05/2019	173	84	51	18	15
Permissible Limits	200	100	60	80	80

Above Std. Value

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-33 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : GOURI DEEP OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
04/05/2019	7.60	36	44	<2
28/05/2019	7.40	40	42	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10

E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
04/05/2019	7.70	32	34	<2
28/05/2019	7.50	36	40	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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3) * - Test parameter not under NABL scope.

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH : MAY
NAME OF THE PROJECT : GOURI - DEEP OCP

Name of the Location : Manager Office - BG_DON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	04/05/2019	55.7
MAY.2019	23/05/2019	52.7
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

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ENVIRONMENTAL MONITORING REPORT

PAUNI OC

(BALLARPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

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3.	EFFLUENT WATER QUALITY MONITORING DATA	5
4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Pauni OC is located in Chandrapur district of Maharashtra state. The project is administered by Ballarpur Area of Western Coalfields Limited.

Communication : The project is at a distance of approximately 24 km from Ballarpur City .

Drainage : The Wardha river is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Industries :

Besides other coal mines , there is no major industries nearby the project area.

Sampling Location :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Manager Office - Pauni OC	-	BPOA-1
2.	Pauni village	-	BPOA-2
3.	Gouri village	-	BPOA-3
4.	Workshop – Pauni OC	-	BPOA-4

Water Quality Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	BPOW-1
2.	ETP Effluent discharge	-	BPOW-2

Noise Level Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Near Manager Office	-	BPON-1
2.	Gouri colony	-	BPON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.


Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust

(size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration ($\mu\text{g}/\text{m}^3$) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations ($\mu\text{g}/\text{m}^3$) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-31 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : PAUNI OCP

Manager Office - Pauni O/C					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
08/05/2019	479	214	54	18	14
27/05/2019	298	131	57	37	24
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Pauni Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
08/05/2019	153	37	21	32	16
25/05/2019	172	76	31	25	18
TLV as per Env.(Protection) Amendment Rule 2000	200	100	60	80	80
Gouri Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
08/05/2019	300	109	31	14	14
25/05/2019	182	96	26	11	12
Permissible Limits	200	100	60	80	80
#-Above Std. Value					

Workshop- Pauni OC					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
08/05/2019	308	113	21	14	10
26/05/2019	457	252	20	27	14
Permissible Limits	600	300	60	120	120


FUGITIVE DUST MONITORING DATA

WEIGHT BRIDGE.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-31 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : PAUNI OCP

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	7.60	40	42	<2
25/05/2019	7.30	36	38	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	7.80	32	36	<2
25/05/2019	7.20	28	24	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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 4) This Report cannot be reproduced in part or full without written permission of the management.
 5) * - Test parameter not under NABL scope

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH : MAY
NAME OF THE PROJECT : PAUNI OCP

Name of the Location : Near Manager Office - BPON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	07/05/2019	53.4
MAY.2019	23/05/2019	53.5
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Gouri Colony - BPON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	43.3
MAY.2019	26/05/2019	42.7
Noise Level Standard as per Env. (Protection) Amendment rule 2000		55

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ENVIRONMENTAL MONITORING REPORT

PAUNI II OC

(BALLARPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014**

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4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Pauni-II OC is located in Chandrapur district of Maharashtra state. The project is administered by Ballarpur Area of Western Coalfields Limited.

Communication : The project is at a distance of approximately 24 km from Ballarpur City .

Drainage : The Wardha river is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Industries :

Besides other coal mines , there is no major industries nearby the project area.

Sampling Location :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine office - Pauni- II OC	-	BP ₂ OA-1
2.	Substation - Pauni- II OC	-	BP ₂ OA-2
3.	Workshp	-	BP ₂ OA-3
4.	Sakhari village	-	BP ₂ OA-4

Water Quality Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	BP ₂ OW-1

Noise Level Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Near Manager Office	-	BP ₂ ON-1

Frequency of Monitoring :


- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size>10 μ) is separated from the air stream by centrifugal forces acting on the

solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size $<10\ \mu$) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration ($\mu\text{g}/\text{m}^3$) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations ($\mu\text{g}/\text{m}^3$) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-32 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)
 SPM*

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : PAUNI II OCP

Mine Office – Pauni II OC					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
09/05/2019	246	174	31	24	18
26/05/2019	281	238	19	20	19
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Substation Pauni II OC					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
09/05/2019	204	58	32	29	13
26/05/2019	553	296	59	24	18
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Workshop					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
08/05/2019	308	113	21	14	10
26/05/2019	457	252	20	27	14
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120

Sakhari Village


DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
09/05/2019	174	62	28	15	12
26/05/2019	164	42	28	31	14
Permissible Limits	200	100	60	80	80

#-Above Std. Value

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-32 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : PAUNI II OCP

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
08/05/2019	7.70	28	32	<2
25/05/2019	7.30	32	30	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH : MAY
NAME OF THE PROJECT : PAUNI II OCP

Name of the Location : Near Manager Office - BP₂ON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	08/05/2019	52.7
MAY.2019	25/05/2019	51.3
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

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ENVIRONMENTAL MONITORING REPORT SASTI EXPN. OC

(BALLARPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

**Environment Laboratory
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INTRODUCTION

Location :

Sasti Opencast Project is located in Chandrapur district of Maharashtra State and is administered by Ballarpur Area of Western Coalfields Limited.

Communication :

The Sasti opencast project can be approached by road from south from Rajura town, which is 172 km from Nagpur. The distance between Sasti OC and Rajura town is about 13 km. Ballarshah railway junction on the Nagpur - Khazipet line of Central Railway is about 12 km by road from Rajura.

Drainage : The Wardha river is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Industries :

Besides other coal mines viz. Gouri OC, Pauni OC, Dhuptala OC, Ballarpur OC & Ballarpur UG, the major industry i.e. Ballarpur Paper Mill is falling within the 10 kms radius of the Sasti OCP.

Pollution due to other sources :

The above mentioned sources are expected to contribute in increasing the load of pollution in the area. Domestic coal burning in the village area also contributes to a lot in increasing the air pollution.

Sampling Locations :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>	<u>Code No.</u>
1.	Gouri Colony / Filter Plant	: BSOA-1
2.	Sasti village	: BSOA-2
3.	SAM Office - Sasti OC	: BSOA-3
4.	Area Store Premises	: BSOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Weigh Bridge	- BSOAF-1
2.	Mine CHP	BSOAF-2
3.	Railway Siding	BSOAF-3

Water Quality Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>	<u>Code No.</u>
1.	Mine water discharge	BSOW-1
2.	ETP (Workshop) treated water	BS(ETP)W-2
3.	STP (Domestic Effluent) treated water	BS(STP)W-3

Noise Level Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>	<u>Code No.</u>
1.	CHP	- BSON-1
2.	Gouri Colony	- BSON-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :


- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of

Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-30 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED:IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : SASTI OCP

Gouri colony/ Filter plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SO _x
10/05/2019	180	83	33	25	17
27/05/2019	255 [#]	94	32	28	14
Permissible Limits	200	100	60	80	80
Sasti village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SO _x
11/05/2019	424 [#]	194 [#]	81	25	16
28/05/2019	310 [#]	232 [#]	21	26	12
TLV as per Env.(Protection) Amendment Rule 2000	200	100	60	80	80
SAM Office- Sasti OC					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SO _x
10/05/2019	444	275	59	13	11
27/05/2019	305	155	17	24	13
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
#-Above Std Value.					

Area store					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SO _x
10/05/2019	456	175	16	15	7
27/05/2019	287	128	19	17	17
Permissible Limits	600	300	60	120	120

FUGITIVE DUST MONITORING DATA

Weigh Bridge			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-


Main CHP			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

Rly Siding			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-30 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : SASTI OCP

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
10/05/2019	7.80	28	30	<2
28/05/2019	7.20	32	30	<2
TLV	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
10/05/2019	7.70	44	56	<2
28/05/2019	7.60	28	32	<2
TLV	5.5 - 9.0	250	100	10

S.T.P. (Domestic Effluent) - Treated Water		
Date of Sample Collection	Analysis Results	
	TSS (mg/l) IS-3025/17:1984	BOD (3 days 27°C) mg/l
Below Detection Limit	10	2
10/05/2019	64	11.8
28/05/2019	58	12
TLV	100	30

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH : MAY
NAME OF THE PROJECT : SASTI OCP

Name of the Location : **CHP - BSON-1**

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	64.5
MAY.2019	26/05/2019	63.4
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : **Gouri Colony - BSON-2**

Month	Date of Data Collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	43.3
MAY.2019	26/05/2019	42.7
Noise Level Standard as per Env. (Protection) Amendment rule 2000		55

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ENVIRONMENTAL MONITORING REPORT

SASTI UG

(BALLARPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
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4.	NOISE LEVEL DATA TER	6

INTRODUCTION

Location :

Sasti UG is located in Chandrapur district of Maharashtra state. The project is administered by Ballarpur Area of Western Coalfields Limited.

Communication : The project is at a distance of approximately 20 KM from Ballarpur City.

Drainage : The Wardha river is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Industries :

Besides other coal mines, there is no other major industries nearby the project area.

Sampling Location :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	SAM office – Dhoptala Sub Area	- BSUA-1
2.	Sasti Colony	- BSUA-2
3.	Sasti Village	- BSUA-3
4.	Manager Office – Dhoptala OC	- BSUA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Main CHP	- BSUF-1

Water Quality Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- BSUW-1

Noise Level Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Fan house	- BSUN-1
2.	Colony	- BSUN-2

Frequency of Monitoring :


- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of

nitrogen (NO_x) etc.

- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-29 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : SASTI UG

SAM office - Dhoptala sub area					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
11/05/2019	124	63	39	18	14
28/05/2019	128	55	26	42	20
TLV	600	300	60	120	120
#Above Std .Value					
Sasti colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
11/05/2019	282 [#]	139 [#]	47	15	11
28/05/2019	277 [#]	91	22	17	8
TLV	200	100	60	80	80
#Above Std .Value					
Sasti village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
11/05/2019	424 [#]	194 [#]	81	25	16
28/05/2019	310 [#]	232 [#]	21	26	12
TLV	200	100	60	80	80
#Above Std .Value					


Manager office – Dhoptala OC

DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SO _x
11/05/2019	314	123	47	24	11
28/05/2019	224	118	37	28	9
TLV	600	300	60	120	120

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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- Note: 1) This Report refers to the values related to the items tested as received.
2) This Report cannot be reproduced in part or full without written permission of the management.
3) * - Test parameter not under NABL scope.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	
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TEST REPORT NO. : RIN/TR/MAY-19/W-29 DATE OF ISSUE : 10.07.2019
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH. : MAY
NAME OF THE PROJECT : SASTI UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
10/05/2019	7.60	32	34	<2
27/05/2019	7.30	28	26	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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3) * - Test parameter not under NABL scope.

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH : MAY
NAME OF THE PROJECT : SASTI UG

Name of the Location : Near Fan House - BSUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	72.4
MAY.2019	27/05/2019	70.1
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : SASTI Colony - BSUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	42.7
MAY.2019	27/05/2019	42.5
Noise Level Standard as per Env. (Protection) Amendment rule 2000		55

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ENVIRONMENTAL MONITORING REPORT

DHOPTALA OC

(BALLARPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY- 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014**

AN ISO 9001:2015 COMPANY

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1.	INTRODUCTION	1-2
2.	AIR QUALITY MONITORING DATA	3-4
3.	NOISE LEVEL DATA	5

INTRODUCTION

Location :

New Dhoptala OC is located in Chandrapur district of Maharashtra state. The project is administered by Ballarpur Area of Western Coalfields Limited.

Communication : The project is at a distance of approximately 20 KM from Ballarpur City.

Drainage : The Wardha river is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Industries :

Besides other coal mines, there is no other major industries nearby the project area.

Sampling Location :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Manager Office – Dhoptala OC	- BDOA-1
2.	SAM office – Dhoptala Sub Area	- BDOA-2
3.	Sasti Colony	- BDOA-3
4.	Sasti Village	- BDOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- BDOAF-1
2.	Weight Bridge	- BDOAF-2

Water Quality Monitoring Location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- BDOW-1

Noise Level Monitoring Location :


<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near CHP	- BDON-1
2.	Colony	- BDON-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-28 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : BALLARPUR MONTH : MAY
 NAME OF THE PROJECT : NEW DHOPTALA OC

Manager office - Dhoptala OC					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
11/05/2019	314	123	47	24	11
28/05/2019	224	118	37	28	9
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
SAM office – Dhoptala sub area					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	No _x	SO _x
11/05/2019	124	63	39	18	14
28/05/2019	128	55	26	42	20
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Sasti colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
11/05/2019	282 [#]	139 [#]	47	15	11
28/05/2019	277 [#]	91	22	17	8
Permissible Limits	200	100	60	80	80
# Above Std. Value.					

Sasti village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SO _x
11/05/2019	424 [#]	194 [#]	81	25	16
28/05/2019	310 [#]	232 [#]	21	26	12
Permissible Limits	200	100	60	80	80

Above Std. Value.

FUGITIVE DUST MONITORING DATA

CHP/coal unloading point			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

WEIGHT BRIDGE.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : BALLARPUR MONTH : MAY
NAME OF THE PROJECT : NEW DHOPTALA OCP

Name of the Location : CHP - BDON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	52.7
MAY.2019	27/05/2019	60.4
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Sastii Colony - BDON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	42.7
MAY.2019	27/05/2019	42.5
Noise Level Standard as per Env. (Protection) Amendment rule 2000		55

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ENVIRONMENTAL MONITORING REPORT

BHATADI OC EXPN.

(CHANDRAPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

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2.	AIR QUALITY MONITORING DATA	3-4
3.	EFFLUENT WATER QUALITY MONITORING DATA	5
4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Bhatadi Opencast Project is located in Chandrapur district of Maharashtra State and is administered by Chandrapur Area of Western Coalfields Limited.

Climate :

The climate of the area is dry to moist tropical. In summer, the temperature generally goes to a maximum of 48°C whereas in winter, it generally falls to a minimum of 10°C. The average annual rainfall is about 1200 mm.

Industry :

Besides other coalmines, Maharashtra Electros melt and twin Super Thermal Power Stations operated by MSEB falls in the vicinity of project area.

Pollution due to other sources :

The above-mentioned industries are also likely to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Bhatadi village	-	CBOA-1
2.	Bhatadi Manager office	-	CBOA-2
3.	Security check post	-	CBOA-3
4.	Kitadi village	-	CBOA-4

Fugitive Dust Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	CHP /MRG loading point	-	CBOAF-1
2.	Weigh Bridge	-	CBOAF-2

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	CBOW-1
2.	Workshop (ETP) water discharge	-	CBOW-2
3.	STP (Domestic Effluent) treated water-		CBOW-3

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Near CHP	-	CBON-1
2.	Colony	-	CBON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

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Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
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- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly

for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-18

DATE OF ISSUE: 10.07.19

NAME OF CUSTOMER: WCL, NAGPUR

SAMPLE DESCRIPTION: AIR SAMPLE

CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19

NO. OF PAGES: 2

TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : BHATADI OCP

Bhatadi village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
05/05/2019	225	153	58	25	18
06/05/2019	77	57	27	15	18
15/05/2019	194	89	53	20	19
16/05/2019	198	98	38	30	12
21/05/2019	337	168	40	7	10
22/05/2019	318	190	47	13	7
30/05/2019	239	144	52	37	9
31/05/2019	246	90	45	40	17
TLV	200	100	60	80	80
Bhatadi Manager office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
05/05/2019	186	149	56	20	12
21/05/2019	503	288	45	12	14
TLV	600	300	60	120	120

Bhatadi Security post					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/2019	469	176	49	19	15
21/05/2019	558	247	51	40	10
Permissible Limits	600	300	60	120	120
# Above Std .value					
Kitadi village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/2019	89	51	21	16	20
06/05/2019	164	97	33	13	24
15/05/2019	117	41	16	13	21
16/05/2019	188	94	49	31	13
21/05/2019	185	96	50	23	13
22/05/2019	176	81	49	16	14
30/05/2019	199	72	36	14	18
31/05/2019	185	83	31	30	21
TLV	200	100	60	80	80
# Above Std .value					

FUGITIVE DUST MOITORING DATA

1. CHP/MRG loading point

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

2. Weigh Beidge


(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

- Note: 1) This Report refers to the values related to the items tested as received.
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3) * - Test parameter not under NABL scope.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/-18 DATE OF ISSUE: 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : BHATADI OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.60	36	30	<2
20/05/2019	7.90	36	32	<2
TLV	5.5 - 9.0	250	100	10
ETP (Workshop) - Treated water sample				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	8.30	40	38	<2
20/05/2019	7.70	48	34	<2
TLV	5.5 - 9.0	250	100	10
S.T.P. (Domestic Effluent) - Treated Water				
Date of Sample Collection	Analysis Results			
	TSS (mg/l) IS-3025/17:1984		BOD (3 days 27°C) mg/l	
Below Detection Limit	10		2	
05/05/2019	36		10	
20/05/2019	24		11.4	
TLV	100		30	

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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 3) * - Test parameter not under NABL s

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : BHATADI OC

Name of the Location CHP - CBON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	04/05/2019	59.7
MAY.2019	30/05/2019	64.9
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Colony - CBON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	04/05/2019	43.4
MAY.2019	30/05/2019	42.7
Permissible Limit		55

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ENVIRONMENTAL MONITORING REPORT

CHANDA RAYATWARI UG

(CHANDRAPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

AN ISO 9001:2015 COMPANY

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3.	EFFLUENT WATER QUALITY MONITORING DATA	5
4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Chanda-Rayatwari Colliery is located in the Chandrapur district of Maharashtra State and is administered by Chandrapur Area of Western Coalfields Limited.

Communication : Chanda-Rayatwari Colliery is very close to the Chandrapur city.

Climate :

The climate of the area is dry to moist tropical with well-defined summer from MAY to June, rainy season from July to September and winter from December to MARuary. In summer, the temperature generally goes to a maximum of 48°C whereas in winter, it generally falls to a minimum of 10°C. The average annual rainfall is about 1200 mm.

Industry :

Besides other coalmines, Maharashtra Electroselt and twin Super Thermal Power Stations operated by MSEB falls in the vicinity of project area.

Pollution due to other sources :

The above-mentioned industries are also likely to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Manager Office (Mahakali UG)	-	CC _R UA-1
2.	Substation - CRC	-	CC _R UA-2
3.	Colony	-	CC _R UA-3
4.	Jatwara milk scheme	-	CC _R UA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	CC _R UW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	CHP	-	CC _R UN-1
2.	Colony	-	CC _R UN-2


Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
- SPM/** Ambient air laden with suspended particulates enters the Respirable Dust Sampler

- PM-10** : through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet : designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

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TEST REPORT NO. : RIN/TR/MAY-19/A-19 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : CHANDA RAYATWARI UG

Manager's office- Mahakali UG					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
16/05/19	288	120	58	19	20
30/05/19	397	188	29	37	31
TLV	600	300	60	120	120
CRC Substation / Filter plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
07/05/2019	174	77	38	18	16
31/05/2019	138	73	27	23	17
TLV	600	300	60	120	120
Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
06/05/19	195	71	33	10	21
-	-	-	-	-	-
TLV	200	100	60	80	80
#-Above std.value					


Jatwara milk scheme					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
07/05/2019	244	116	35	19	20
31/05/2019	149	96	38	35	29
TLV	600	300	60	120	120

#-Above std.value

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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<p>Environment Laboratory CMPDI, RI IV, Nagpur</p>	<p>Test Report</p>	 <p>TC - 7102</p>
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TEST REPORT NO. : RIN/TR/MAY-19/W-19 DATE OF ISSUE: 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : CRC UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
06/052019	7.90	32	28	<2
31/05/2019	7.80	32	28	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH : MAY
NAME OF THE PROJECT : CHANDA-RAYATWARI UG

Name of the Location :CHP –: CC_RUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	62.7
MAY.2019	30/05/2019	61.7
TLV		75

Name of the Location :Colony - CC_RUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	43.4
MAY.2019	30/05/2019	42.6
TLV		55

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ENVIRONMENTAL MONITORING REPORT

DURGAPUR RAYATWARI UG

(CHANDRAPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory

NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
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4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Durgapur-Rayatwari Underground Project is located in Chandrapur District of Maharashtra State and is administered by Chandrapur Area of Western Coalfields Limited.

Communication :

Durgapur-Rayatwari Underground Project is situated on bye-pass link road at a distance of 4 Kms (approx) from Chandrapur city.

Drainage :

The drainage of the area is controlled by Erai River, which flows from North to South.

Climate : The climate of the area is dry to moist tropical. In summer, the temperature generally goes to a maximum of 48°C whereas in winter, it generally falls to a minimum of 10°C. The average annual rainfall is about 1200 mm.

Industry : Other than the coal mines, Chandrapur Super Thermal Power Station and Maharashtra Electrosmelt Limited are the major industries, which fall in the vicinity of Durgapur Rayatwari Underground Project.

Pollution due to other sources :

The above-mentioned industries are also likely to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Pit office, DRC-III UG	-	CD _R UA-1
2.	DRC-V colony	-	CD _R UA-2
3.	Nehru Nagar-Substation	-	CD _R UA-3
4.	Filter plant DOC/POC Colony		

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	CD _R UW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Pit office of DRC-III UG	-	CD _R UN-1
2.	Colony (Durgapur)		CD _R UN-2


Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of

- nitrogen (NO_x) etc
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

<p>Environment Laboratory CMPDI, RI IV, Nagpur</p>	<p>Test Report</p>	 <p>TC - 7102</p>
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TEST REPORT NO. : RIN/TR/MAY-19/A-21 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : DRC UG

Pit office - DRC - III UG					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
16/05/2019	370	156	52	13	15
31/05/2019	231	94	15	29	24
Permissible Limits	600	300	60	120	120
DRC - V colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
07/05/2019	268	133	47	17	17
31/05/2019	247	85	22	21	20
TLV	200	100	60	80	80

Nehru nagar / Substation					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOX
07/05/2019	269	126	15	17	18
31/05/2019	115	28	11	16	17
TLV	600	300	60	120	120

Above Std. value


Filter plant DOC/POC Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOX
16/05/2019	181	85	52	17	19
21/05/2019	232	118	55	17	12
TLV	200	100	60	80	80

Above Std. value

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/w-21 DATE OF ISSUE: 10.07.2019
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1
TEST REQUIRED:IS-

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH : MAY
NAME OF THE PROJECT : DRC UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
14/05/2019	7.80	24	18	<2
31/05/2019	7.20	36	22	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH : MAY
NAME OF THE PROJECT : DURGAPUR-RAYATWARI UG

Name of the Location : Pit office of DRC-III UG : CD_RUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	69.4
MAY.2019	31/05/2019	71.6
TLV		75

Name of the Location :Durgapur Colony - CD_RUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	43.2
MAY.2019	20/05/2019	42.6
TLV		55

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ENVIRONMENTAL MONITORING REPORT

DURGAPUR OC EXPN.

(CHANDRAPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

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DURGAPUR OCP

Location :

The Durgapur opencast project is located in Chandrapur district of Maharashtra State and is administered by Chandrapur area of Western Coalfields Limited.

Communication :

Chandrapur town, the district headquarter of Chandrapur district, is only 6 km south of the project. The project is approachable via Chandrapur - Tadoba road and also Chandrapur - Mul road. The Chandrapur railway station is about 5 km from this project, which lies on Nagpur-Chennai broad gauge line of Central Railway.

Drainage :

The drainage of the area is controlled by two seasonal tributaries (Motaghat nalla and Upasa nalla) of Erai river, which flows west of the area.

Climate :

Climate of the area is dry to moist tropical with well-defined summer from MAY to June, rainy season from July to September and winter from December to MARuary. In summer temperature goes up to a maximum of 48°C whereas in winter temperature generally falls to a minimum of 10°C. Average annual rainfall is about 1200mm.

Industry :

Padmapur OCP, Chandrapur STPS and Maharashtra Electro Smelter are the major industries, which fall in the vicinity of the Durgapur OCP.

Pollution due to other sources :

The above-mentioned industries specially the Super Thermal Power Station are likely to contribute in increasing the air pollution of nearby villages. Durgapur village has been affected maximum due to proximity of the thermal powerhouse.

Sampling Locations :

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>		<u>Code No.</u>
1.	Durgapur village	-	CDOA-1
2.	Filter plant DOC/ POC	-	CDOA-2
3.	Sinhala village	-	CDOA-3
4.	Manager Office, Sec- V	-	CDOA-4

Fugitive Dust Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>		<u>Code No.</u>
1.	Checkpoint/ Ayyappa mandir	-	CDOA-1
2.	CHP	-	CDOA-2

Water Quality Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>	<u>Code No.</u>
1.	Mine water discharge- Q-IV	- CDOW-1
2.	Mine water discharge – Q-II	- CDOW-2
3.	ETP (Workshop) treated water	- CD(ETP)W-3
4.	STP (Domestic Effluent) treated water	- CD(STP)W-4

Noise Level Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>	<u>Code No.</u>
1.	CHP	- CDON-1
2.	Durgapur Colony	- CDON-2

Frequency of Monitoring :


- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the

field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

EnvironmentLaboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-22 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : DURGAPUROCP

Durgapur village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
15/05/2019	193	95	44	17	24
21/05/2019	311	194	55	21	15
TLV	200	100	60	80	80
Filter plant DOC/POC Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
16/05/2019	181	85	52	17	19
21/05/2019	232	118	55	17	12
TLV	200	100	60	80	80
Sinhala village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
-	-	-	-	-	-
TLV	200	100	60	80	80
#-Above Std.Value					

Manager's office-Sector V					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
15/05/2019	310	158	39	11	14
21/05/2019	199	109	21	34	13
TLV	600	300	60	120	120

FUGITIVE DUST MOITORING DATA

1. Check post / Ayyappa Mandir

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-
-	-	-	-

2. CHP


(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 <p>TC - 7102</p>
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TEST REPORT NO. : RIN/TR/MAY-19/W-22 DATE OF ISSUE: 10.07.2019
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH : MAY
NAME OF THE PROJECT : DURGAPUR OCP

Mine water discharge Q IV				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.60	44	22	<2
21/05/2019	6.80	36	22	<2
TLV	5.5 - 9.0	250	100	10
Mine water discharge Q V/VI				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.20	40	32	<2
21/05/2019	7.20	32	30	<2
TLV	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.60	32	28	<2
21/05/2019	6.90	28	26	<2
TLV	5.5 - 9.0	250	100	10

S.T.P. (Domestic Effluent) - Treated Water		
Date of Sample Collection	Analysis Results	
	TSS (mg/l) IS-3025/17:1984	BOD (3 days 27°C) mg/l
Below Detection Limit	10	2
05/05/2019	26	10.8
21/05/2019	28	11.4
TLV	100	30

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH. : MAY
 NAME OF THE PROJECT : DURGAPUR OCP

Name of the Location		CHP	CDON 1
Month	Date of Data collection	Noise Level in dB(A)	
		Day Time	
MAY.2019	06/05/2019	63.5	
MAY.2019	20/05/2019	63.5	
TLV			75

Name of the Location :Durgapur Colony - CDON-2		
Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	43.2
MAY.2019	20/05/2019	42.6
TLV		55

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ENVIRONMENTAL MONITORING REPORT
HINDUSTAN LALPETH I & III UG
(CHANDRAPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014

AN ISO 9001:2015 COMPANY

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1.	INTRODUCTION	1-2
2.	AIR QUALITY MONITORING DATA	3-4
3.	EFFLUENT WATER QUALITY MONITORING DATA	5
4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Hindustan Lalpeth -I & III Underground Projects are located in Chandrapur district of Maharashtra State and are administered by Chandrapur Area of Western Coalfields Limited.

Communication : The projects are situated near bye-pass link road in Chandrapur city.

Drainage :

Erai river acts as the main drainage of the area which flows from North to South and meets Wardha river.

Climate :

The climate of the area is dry to moist tropical. In summer, the temperature generally goes to a maximum of 48°C whereas in winter, it generally falls to a minimum of 10°C. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, Maharashtra Electroselt and twin Super Thermal Power Stations operated by MSEB falls in the vicinity of Hindustan Lalpeth UG Project.

Pollution due to other sources :

The above-mentioned industries are also likely to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Sub-station - Hindustan Lalpeth Colliery-I UG	- CHUA-1
2.	Pit office HLC – I Incline	- CHUA-2
3.	HLC III Colony	- CHUA-3
4.	Babupeth Area / Rajiv Gandhi Engg. College	- CHUA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge – HLP I UG	- CHUW-1
2.	Mine water discharge – HLP III UG	- CHUW-2

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Fan House– HLP I UG	- CHUN-1
2.	Colony	- CHUN-2


Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
Water : Water quality is monitored on fortnightly basis.
Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM),

- Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

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TEST REPORT NO. : RIN/TR/MAY-19/A-23 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : HINDUSTAN LALPETH-I & III UG

Substation- HLC I UG					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
13/05/2019	342	119	54	17	21
21/05/2019	306	113	38	8	7
TLV	600	300	60	120	120
Pit office - HLC-I incline					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
13/05/2019	220	50	14	17	19
22/05/2019	292	137	16	23	14
TLV	600	300	60	120	120
HLC - III colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
14/05/2019	175	47	15	23	20
23/05/2019	151	85	36	21	12
TLV	200	100	60	80	80


Rajiv Gandhi Engg. College					
DATE OF SAMPLING	Parameters (24 hourly values in $\mu\text{g}/\text{m}^3$)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
15/05/2019	179	59	16	22	12
31/05/2019	281	129	44	20	9
TLV	200	100	60	80	80

Above Std. value.

(Scientific Assistant)

Deepanshu Sahu
(Authorizd Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-23 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : HLP-I & III UG

Mine water discharge HLP I UG				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
12/05/2019	7.10	32	16	<2
21/05/2019	6.90	40	28	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10
Mine water discharge HLP III UG				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
13/05/2019	7.70	40	28	<2
22/05/2019	7.30	44	36	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH : MAY
NAME OF THE PROJECT : HLP I & III UG

Name of the Location :Near Fan House – HLP I UG : CHUN 1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	61.6
MAY.2019	22/05/2019	68.6
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location :Colony - CHUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	42.4
MAY.2019	22/05/2019	42.3
Permissible Limit		55

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**ENVIRONMENTAL MONITORING REPORT
EXPN OF HINDUSTAN LALPETH OC
(CHANDRAPUR AREA)**

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

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3.	EFFLUENT WATER QUALITY MONITORING DATA	5
4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Hindustan Lalpeth Opencast Project is located in Chandrapur district of Maharashtra State and is administered by Chandrapur Area of Western Coalfields Limited.

Communication : This project is situated in the Municipal Area of Chandrapur city.

Drainage :

Erai river acts as the main drainage of the area which flows from North to South and meets Wardha river.

Climate :

The climate of the area is dry to moist tropical. In summer, the temperature generally goes to a maximum of 48°C whereas in winter, it generally falls to a minimum of 10°C. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, Maharashtra Electros melt and twin Super Thermal Power Stations operated by MSEB falls in the vicinity of Hindustan Lalpeth Opencast Project.

Pollution due to other sources :

Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.The above-mentioned industries are also likely to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	VTC	- CHOA-1
2.	Between phase I & II seasonal mine	- CHOA-2
3.	Colony (Nandgaon)	- CHOA-3
4.	Mana Village	- CHOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Weigh Beidge	- CHOAF-1
2.	Main CHP	- CHOAF-2
3.	RLY Siding	- CHOAF-3

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- CHOW-1
2.	Workshop (ETP) water discharge	- CHO(ETP)W-2

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- CHON-1
2.	Colony	- CHON-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.


Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of

absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-24 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : HINDUSTAN LALPETH OCP

HLOC- VTC					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOX
-	-	-	-	-	-
TLV	600	300	60	120	120
# Above Std .value					
Between ph I & II seasonal mine					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOX
14/05/2019	143	66	26	23	6
23/05/2019	430	140	43	29	26
TLV	600	300	60	120	120

Colony(Nandgaon)					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOX
13/05/2019	141	47	27	15	20
22/05/2019	313	147	20	18	15
TLV	200	100	60	80	80

Mana village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOX
14/05/2019	80	24	14	8	15
23/05/2019	125	26	42	22	8
TLV	200	100	60	80	80

Above Std .val

FUGITIVE DUST MONITORING DATA

1. Weigh Bridge

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

2. Main CHP

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

3. Rly Siding


(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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3) * - Test parameter not under NABL scope

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/w-24 DATE OF ISSUE: 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1
 TEST REQUIRED:IS-

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH ; MAY
 NAME OF THE PROJECT : HLP OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
13/05/2019	7.80	36	26	<2
22/05/2019	7.70	32	30	<2
TLV	5.5 - 9.0	250	100	10
# Below Std. value				
ETP (Workshop) - Treated water sample				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
13/05/2019	7.20	24	20	<2
22/05/2019	7.60	28	18	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH : MAY
NAME OF THE PROJECT : HLP OCP

Name of the Location : CHP : CHON 1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	64.4
MAY.2019	20/05/2019	64.7
TLV		75

Name of the Location :Colony - CHON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	43.5
MAY.2019	22/05/2019	42.7
TLV		55

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ENVIRONMENTAL MONITORING REPORT

MAHAKALI UG

(CHANDRAPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory

NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014**

AN ISO 9001:2015 COMPANY

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3.	EFFLUENT WATER QUALITY MONITORING DATA	5
4.	NOISE LEVEL DATA	6

MAHAKALI UNDERGROUND PROJECT

Location :

Mahakali Underground Project is located in Chandrapur District of Maharashtra State and is administered by Chandrapur Area of Western Coalfields Limited.

Climate :

The climate of the area is dry to moist tropical with well-defined summer from MAY to June, rainy season from July to September and winter from December to MARuary. In summer, the temperature generally goes to a maximum of 48°C whereas in winter, it generally falls to a minimum of 10°C. The average annual rainfall is about 1200 mm.

Industry :

Besides other coalmines, Maharashtra Electros melt and twin Super Thermal Power Stations operated by MSEB falls in the vicinity of project area.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Manager Office (Mahakali UG)	- CMUA- 1
2.	Substation - CRC	- CMUA- 2
3.	Colony	- CMUA- 3
4.	Jatwara milk scheme	- CMUA- 4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- CMUW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- CMUN-1
2.	Colony	- CMUN-2


Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5

- m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-20 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : MAHAKALI UG

Manager's office- Mahakali UG					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
16/05/2019	288	120	58	19	20
30/05/2019	397	188	29	37	31
TLV	600	300	60	120	120
CRC Substation / Filter plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
07/05/2019	174	77	38	18	16
31/05/2019	138	73	27	23	17
TLV	600	300	60	120	120
Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
06/05/2019	195	71	33	10	21
-	-	-	-	-	-
TLV	200	100	60	80	80
#-Above std.value					

Jatwara milk scheme


DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
07/05/2019	244	116	35	19	20
31/05/2019	149	96	38	35	29
TLV	600	300	60	120	120

#-Above std.value

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-20 DATE OF ISSUE: 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : MAHAKALI UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
06/05/2019	8.00	48	38	<2
29/05/2019	7.60	44	36	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH : MAY
NAME OF THE PROJECT : MAHAKALI UG

Name of the Location :Near Fan House -: CMUN 1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	68.4
MAY.2019	24/05/2019	66.6
TLV		75

Name of the Location :Colony - CMUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	43.3
MAY.2019	24/05/2019	42.4
TLV		55

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ENVIRONMENTAL MONITORING REPORT

MANA UG
(CHANDRAPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

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REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

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4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Mana Underground Project is located in Chandrapur district of Maharashtra State and is administered by Chandrapur Area of Western Coalfields Limited.

Climate :

The climate of the area is dry to moist tropical with well-defined summer from MAY to June, rainy season from July to September and winter from December to MARuary. In summer, the temperature generally goes to a maximum of 48°C whereas in winter, it generally falls to a minimum of 10°C. The average annual rainfall is about 1200 mm.

Industry :

Besides other coalmines, Maharashtra Electroselt and twin Super Thermal Power Stations operated by MSEB falls in the vicinity of project area.

Pollution due to other sources :

The above-mentioned industries are also likely to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Manager's office	- CM _N UA-1
2.	Sub-station of Manna Incline	- CM _N UA-2
3.	Colony (Nandgaon)	- CM _N UA-3
4.	Manna village	- CM _N UA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- CM _N UW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Fan house	- CM _N UN-1
2.	Colony (HLOC)	- CM _N UN-2


Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust

- (size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration ($\mu\text{g}/\text{m}^3$) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations ($\mu\text{g}/\text{m}^3$) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

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TEST REPORT NO. : RIN/TR/MAY-19/A-25 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : MANA UG


Manager's office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
14/05/2019	128	35	23	21	12
22/05/2019	51	45	23	23	10
TLV	600	300	60	120	120
Substation - Mana incline					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
14/05/2019	140	44	52	17	20
23/05/2019	41	31	12	8	6
TLV	600	300	60	120	120
Colony(Nandgaon)					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
13/05/2019	141	47	27	15	20
22/05/2019	313	147	20	18	15
TLV	200	100	60	80	80
# Above Std .value					

Mana village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	Nox	SOX
14/05/2019	80	24	14	8	15
23/05/2019	125	26	42	22	8
TLV	200	100	60	80	80

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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TEST REPORT NO. : RIN/TR/MAY-19/W-25 DATE OF ISSUE: 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1
 TEST REQUIRED:IS-

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : MANNA UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
13/05/2019	8.20	24	26	<2
22/05/2019	7.40	44	38	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

Note: 1) This Report refers to the values related to the items tested as received.
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 3) * - Test parameter not under NABL scope.

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH : MAY
NAME OF THE PROJECT : MANNA UG

Name of the Location :Near Fan House -: CM_NUN 1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	68.7
MAY.2019	21/05/2019	65.6
TLV		75

Name of the Location :Colony - CM_NUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	43.3
MAY.2019	24/05/2019	42.4
TLV		55

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ENVIRONMENTAL MONITORING REPORT

NANDGAON UG

(CHANDRAPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014

AN ISO 9001:2015 COMPANY

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2.	AIR QUALITY MONITORING DATA	3-4
3.	EFFLUENT WATER QUALITY MONITORING DATA	5
4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Nandgaon Underground Project is located in Chandrapur district of Maharashtra State and is administered by Chandrapur Area of Western Coalfields Limited.

Climate :

The climate of the area is dry to moist tropical with well-defined summer from MAY to June, rainy season from July to September and winter from December to MARuary. In summer, the temperature generally goes to a maximum of 48°C whereas in winter, it generally falls to a minimum of 10°C. The average annual rainfall is about 1200 mm.

Industry :

Besides other coalmines, Maharashtra Electros melt and twin Super Thermal Power Stations operated by MSEB falls in the vicinity of project area.

Pollution due to other sources :

The above-mentioned industries are also likely to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Manager office – Nandgaon UG	-	CNUA-1
2.	Colony	-	CNUA-2
3.	Sub-station - Manna Incline	-	CNUA-3
4.	Mana Village	-	CNUA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	CNUW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Fan house	-	CNUN-1
2.	Colony (HLOC)	-	CNUN-2


Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust

- (size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration ($\mu\text{g}/\text{m}^3$) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations ($\mu\text{g}/\text{m}^3$) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-26 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : NANDGAON UG

Manager's office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
13/05/2019	361	159	52	18	21
22/05/2019	218	98	24	17	12
TLV	600	300	60	120	120
Colony(Nandgaon)					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
13/05/2019	141	47	27	15	20
22/05/2019	313	147	20	18	15
TLV	200	100	60	80	80
Substation - Mana incline					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
14/05/2019	140	44	52	17	20
23/05/2019	41	31	12	8	6
TLV	600	300	60	120	120
# Above Std .value					


Mana village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SO _x
14/05/19	80	24	14	8	15
23/05/2019	125	26	12	22	8
TLV	200	100	60	80	80

Above Std .value

(Scientific Assistant)

Deepanshu Sahu
(Authorised signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-26 DATE OF ISSUE: 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 NAME OF THE PROJECT : NANDGAON UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
13/05/2019	8.10	36	22	<2
22/05/2019	7.80	36	22	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

***Deepanshu Sahu
(Authorized signatory)***

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH : MAY
NAME OF THE PROJECT : NANDGAON UG

Name of the Location :Near Fan House --: CNUN 1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	72.6
MAY.2019	21/05/2019	70.5
TLV		75

Name of the Location :Colony - CNUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	43.3
MAY.2019	24/05/2019	42.4
TLV		55

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ENVIRONMENTAL MONITORING REPORT

PADMAPUR OC EXPN.

(CHANDRAPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory

NABL Accredited vide Cert. No. TC-7102

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4.	NOISE LEVEL DATA	7

INTRODUCTION

Location

Padmapur opencast project is located in Chandrapur district of Maharashtra state and is administered by Chandrapur area of Western Coalfields Limited.

Communication :

The project is situated 8 km away from Chandrapur city. The nearest railway station is Chandrapur (on Chennai-Delhi line about 7 km from the project).

Drainage :

The drainage of the area is controlled by Erai river, (which flows to the west of the project) and Motaghatnalla, a seasonal tributary of Erai river, (which flows across the central part of the leasehold area of the project).

Climate :

Climate of the area is dry to moist tropical, temperature rising to a maximum of 48°C. during summer and falling to a minimum of 10°C during winter. Average annual rainfall is about 1200mm.

Other Industry :

Durgapur opencast project, Chandrapur Super Thermal Power Station (STPS) and Maharashtra Electro Smelter (MES) are the major industry, which fall in the vicinity of the project area.

Pollution due to other sources :

The above-mentioned industries viz; STPS and MES are likely to contribute in increasing the pollution load of area. Roadway dust is also causing lot of pollution in village area.

Sampling Locations:

Ambient Air Quality Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>	<u>Code No.</u>
1.	Manager's office	- CPOA-1
2.	Filter plant DOC / POC	- CPOA-2
3.	Kitadi village	- CPOA-3
4.	Manager Office, Sec- V	- CPOA-4

Fugitive Dust Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>	<u>Code No.</u>
1.	CHP/MGR loadingpoint	- CPOAF-1
2.	Weigh Bridge	- CPOAF-2

Water Quality Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>	<u>Code No.</u>
1.	Mine water discharge - Q –IV	- CPOW-1
2.	Mine water discharge- Q –III	- CPOW-2
3.	ETP (Workshop) treated water	- CP(ETP)W-3

Noise Level Monitoring Locations :

<u>S.No.</u>	<u>Details of Location</u>	<u>Code No.</u>
1.	CHP	- CPON-1
2.	Colony (Durgapur)	- CPON-2


Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sample
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.

- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

<p>Environment Laboratory CMPDI, RI IV, Nagpur</p>	<p style="text-align: center;">Test Report</p>	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-27 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : CHANDRAPUR MONTH : MAY
 MNAME OF THE PROJECT : PADMAPUR OCP

Manager office/Substation Q-IV					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
06/05/2019	348	169	56	20	17
30/05/2019	554	223	43	20	18
TLV	600	300	60	120	120
Filter plant DOC/POC Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
16/05/2019	181	85	52	17	19
21/05/2019	232 [#]	118 [#]	55	17	12
TLV	200	100	60	80	80
#-Above Std. Value					

Kitadi village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NOx	SOX
05/05/2019	89	51	21	16	20
06/05/2019	164	97	33	13	24
15/05/2019	117	41	16	13	21
16/05/2019	188	94	49	31	13
21/05/2019	185	96	50	23	13
22/05/2019	176	81	49	16	14
30/05/2019	199	72	36	14	18
31/05/2019	185	83	31	30	21
TLV	200	100	60	80	80
#-Above Std. Value					
Manager's office-Sector V					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NOx	SOX
15/05/2019	310	158	39	11	14
21/05/2019	199	109	21	34	13
TLV	600	300	60	120	120

FUGITIVE DUST MOITORING DATA

1. CHP/MRG loading point

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
22/05/2019	520	295	48

2. Weigh Bridge

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
22/05/2019	428	165	51

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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TEST REPORT NO. : RIN/TR/MAY-19/W-27 DATE OF ISSUE: 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY	: WCL	YEAR: 2019
NAME OF THE AREA	: CHANDRAPUR	MONTH : MAY
NAME OF THE PROJECT	: PADMAPUR OC	

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.40	28	26	<2
29/05/2019	7.40	24	22	<2
TLV	5.5 - 9.0	250	100	10
ETP (Workshop) - Treated water sample				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.30	36	24	<2
29/05/2019	7.20	36	26	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : CHANDRAPUR MONTH. : MAY
NAME OF THE PROJECT : PADMAPUROCP

Name of the Location : CHP CPON 1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	64.4
MAY.2019	20/05/2019	63.7
TLV		75

Name of the Location :Durgapur Colony- CPON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	43.2
MAY.2019	20/05/2019	42.6
TLV		55

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ENVIRONMENTAL MONITORING REPORT

DHORWASA OC EXPN.

(MAJRI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
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4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Dhorwasa OC is located in Chandrapur district of Maharashtra state. The project is administered by Majri Area of Western Coalfields Limited.

Communication :

The Project is well connected by rail & road communications. The nearest railway station is Bandak on Nagpur - Chandrapur sector of Central Railway main line about 6 kms away from the project.

Drainage :

The Wardha River is the main drainage channel for the surrounding area. A few seasonal nullahs drain the rainwater from the Area into Wardha River.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Sources of Pollution :

Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Telwasa security office	- MDOA-1
2.	Dhorwasa village	- MDOA-2
3.	Ekta Nagar Colony	- MDOA-3
4.	R.C. Office	- MDOA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- MDOW-1
2	DETP(Ekta Nagar) water discharge	- MDOW-2

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Project Office	- MDON-1
2.	Ekta Nagar Colony	- MDON-2


Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-51 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : MAJRI MONTH : MAY
 NAME OF THE PROJECT : DHORWASA OC


Telwasa security office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
11/05/19	207	103	29	24	19
25/05/19	84	33	13	21	8
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Dhorwasa village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
12/05/19	76	58	30	22	12
28/05/19	180	90	19	22	17
Permissible Limits	200	100	60	80	80
Ekta Nagar colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
10/05/19	101	75	40	23	12
24/05/19	171	96	44	24	18
Permissible Limits	200	100	60	80	80
#-Above Std. Value					

RC office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
12/05/19	129	80	34	21	12
28/05/19	179	82	10	23	20
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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- Note: 1) This Report refers to the values related to the items tested as received.
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3) * - Test parameter not under NABL scope.
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<p>Environment Laboratory CMPDI, RI IV, Nagpur</p>	<p>Test Report</p>	 <p>TC - 7102</p>
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TEST REPORT NO. : RIN/TR/MAY-19/W-51 DATE OF ISSUE: 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : MAJRI MONTH : MAY
 NAME OF THE PROJECT : DHORWASA OC

S.T.P. (Domestic Effluent) - Treated Water		
Date of Sample Collection	Analysis Results	
	TSS (mg/l) IS-3025/17:1984	BOD (3 days 27°C) mg/l
Below Detection Limit	10	2
11/05/2019	68	12
24/05/2019	42	10
TLV as per Env.(Protection) Amendment rule 2000	100	30

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : MAJRI MONTH : MAY
NAME OF THE PROJECT : DHORWASA OCP

Name of the Location : Near Manager Office – MDON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	44.3
MAY.2019	25/05/2019	44.4
TLV		75

Name of the Location : Ekta Nagar Colony - MDON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	42.5
May.2019	25/05/2019	43.2
TLV		55

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ENVIRONMENTAL MONITORING REPORT

JUNA KUNADA OCP

(MAJRI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

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JARIPATKA, NAGPUR, PIN – 440014

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2.	AIR QUALITY MONITORING DATA	3-4
3.	NOISE LEVEL DATA	5

INTRODUCTION

Location :

Juna Kunada OC is located in Chandrapur district of Maharashtra state. The project is administered by Majri Area of Western Coalfields Limited.

Communication :

Juna Kunada OC Project is well connected by both rail & road communications. The nearest railway station is Bandak on Nagpur - Chandrapur sector of Central Railway main line.

Drainage :

The Wardha River is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Sources of Pollution :

Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Pit Office– Juna Kunada OC	MJOA-1
2.	Ekta Nagar Colony	MJOA-2
3.	Chargaon Intake Well	MJOA-3
4.	Chargaon SAM Office	MJOA-4

Fugitive Dust Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Rly siding	MJOAF-1

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	MJOW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Project Office	MJON-1
2.	Ekta Nagar Colony	MJON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust

(size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration ($\mu\text{g}/\text{m}^3$) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations ($\mu\text{g}/\text{m}^3$) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

Heavy Metals : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.

NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

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TEST REPORT NO. : RIN/TR/MAY-19/A-54 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : MAJRI MONTH : MAY
 NAME OF THE PROJECT : JUNA KUNADA OCP

Pit Office JKOC					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
11/05/19	153	63	19	24	16
28/05/19	141	64	29	24	19
TLV	600	300	60	120	120
Ekta Nagar colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
10/05/19	101	75	40	23	12
24/05/19	171	69	44	24	18
TLV	200	100	60	80	80
SAM office Chargaon					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
11/05/19	223	100	18	22	12
27/05/19	208	54	11	23	16
TLV	600	300	60	120	120
<i># Above Std. value.</i>					

Chargaon Intake well					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
11/05/19	110	94	47	23	15
27/05/19	217	116	37	21	14
TLV	600	300	60	120	120

Above Std. value.

FUGITIVE DUST MONITORING DATA

1.Chargaon CHP			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

Scientific Assistant)

**Deepanshu Sahu
 (Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : MAJRI MONTH : MAY
NAME OF THE PROJECT : JUNA KUNADA OCP

Name of the Location : Manager office - MJON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	45.6
MAY.2019	25/05/2019	44.7
TLV		75

Name of the Location : Ekta Nagar Colony - MJON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	42.5
May.2019	25/05/2019	43.2
TLV		55

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ENVIRONMENTAL MONITORING REPORT

NAVIN KUNADA EXPN. OC
(MAJRI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

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3.	NOISE LEVEL DATA	5

INTRODUCTION

Location :

Navin Kunada OC is located in Chandrapur district of Maharashtra state. The project is administered by Majri Area of Western Coalfields Limited.

Communication :

Navin Kunada OC Project is well connected by both rail & road communications. The nearest railway station is Bandak on Nagpur - Chandrapur sector of Central Railway main line.

Drainage :

The Wardha River is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Sources of Pollution :

Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Chargaon Intake well Near	MNOA-1
2.	Ekta Nagar colony	MNOA-2
3.	Near Deulwada village	MNOA-3
4.	Chargaon SAM Office	MNOA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	MNOW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Project Office/CHP	MNON-1
2.	Ekta Nagar Colony	MNON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.


Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust

(size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration ($\mu\text{g}/\text{m}^3$) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations ($\mu\text{g}/\text{m}^3$) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-53 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : MAJRI MONTH : MAY
 NAME OF THE PROJECT : NAVIN-KUNADA OCP

Chargaon Intake well					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
11/05/19	110	94	47	23	15
27/05/19	217	116	37	21	14
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Ekta Nagar colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	101	75	40	23	12
24/05/19	171	69	44	24	18
Permissible Limits	200	100	60	80	80
Near Deulwada village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	134	51	26	22	12
24/05/19	105	43	16	20	11
Permissible Limits	200	100	60	80	80

#-Above Std Value.

SAM Office Chargaon					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
11/05/19	223	100	18	22	12
27/05/19	208	54	11	23	16
Permissible Limits	600	300	600	120	120

#-Above Std Value.

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : MAJRI MONTH : MAY
NAME OF THE PROJECT : NAVIN-KUNADA OCP

Name of the Location : Chargaon CHP - MNON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	09/05/2019	52.0
MAY.2019	26/05/2019	53.2
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Ekta Nagar Colony- MNON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	42.5
May.2019	25/05/2019	43.2
Noise Level Standard as per Env. (Protection) Amendment rule 2000		55

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ENVIRONMENTAL MONITORING REPORT

NEW MAJRI-II(A) OC EXPN.

(MAJRI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
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INTRODUCTION

Location :

New Majri (A) OC is located in Chandrapur district of Maharashtra state. The project is administered by Majri Area of Western Coalfields Limited.

Communication :

The Project is well connected by both rail & road communication. New Majri railway station, about 2 kms away is the nearest railway station. Project is about 175 km away from Nagpur, on Wardha - Kazipeth line of Central Railway.

Drainage :

The Wardha river is the main drainage channel for the surrounding area. The Konda and Sirna nalla flowing to the North and East of the New Majri area discharge into the Wardha River.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Sources of Pollution :

Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	NMOC Substation	-	MMOA-1
2.	Patala Magazine	-	MMOA-2
3.	Kuchna colony	-	MMOA-3
4.	Majri Basti	-	MMOA-4

Fugitive Dust Monitoring locations :

1.	Field Maint.Shed at Sec	-	MMOAF-1	
2.	NMOC CHP	-		MMOAF-2

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	MMOW-1
2.	Workshop (ETP) water discharge	-	MMOW-2

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Field main. Shed	-	MMON-1
2.	Colony	-	MMON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.


Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-56 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : MAJRI MONTH : MAY
 NAME OF THE PROJECT : NEW MAJRI (A) OCP

NMOC Substation					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
09/05/19	181	87	29	23	12
23/05/19	216	115	26	23	12
TLV	600	300	60	120	120
Patala Magazine					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
10/05/19	170	99	16	19	13
23/05/19	156	95	37	25	21
TLV	600	300	60	120	120
Kuchana Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
09/05/19	53	32	18	21	12
23/05/19	196	97	36	23	19
24/05/19	116	38	18	20	10
27/05/19	64	36	12	22	12
28/05/19	98	38	26	23	16
TLV	200	100	60	80	80

Primary Health Center, Majri Basti					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
09/05/19	105	28	12	23	16
23/05/19	144	88	47	17	10
TLV	200	100	60	80	80

Above Std. Value

FUGITIVE DUST MONITORING DATA


1.Field Maint.Shed at Sec			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

2.NMOC CHP.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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<p>Environment Laboratory CMPDI, RI IV, Nagpur</p>	<p style="text-align: center;">Test Report</p>	 <p style="text-align: center;">T - 2969</p>
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TEST REPORT NO. : RIN/TR/MAY-19/W-56A DATE OF ISSUE: 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : MAJRI MONTH : MAY
 NAME OF THE PROJECT : NEW MAJRI(A) OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
09/05/2019	7.70	12	64	<2
25/05/2019	7.90	20	72	<2
TLV	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
09/05/2019	7.00	36	30	<2
25/05/2019	7.40	28	26	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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Test Report No. : RIN/TR/MAY'19/W - 56B **Date of Issue** : 10.07.2019
Name of the Customer : Env.,CMPDI,Nagpur **Sampling method** : By the party
Customer letter Ref. No : क्षे.स.4/प.अ./पा.का./19-20
Sample Description : Water sample **No. of pages** : 2

SURFACE WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL **YEAR** : 2019
NAME OF THE AREA : MAJRI **MONTH** : MAY
NAME OF THE PROJECT : NEW MAJRI(A) OC **SamplingDate** :11/05/2019
Name of the Location : 1. Erai river upstream w.r.t Mine Water Discharge – US
 2. Erai river downstream w.r.t Mine Water Discharge – DS

Sl. No	Parameters	Test Method	Below Detection Limit	IS 2296 Inland Surface Water (1982) Class C	Analysis Result		Remarks
					US 23/04/2019	DS 23/04/2019	
1	pH Value	IS-3025/11:1983 Electrometric	0.2	6.5-8.5	8.10	8.20	
2	Colour (Hz)	APHA, 22 nd Edition Platinum Cobalt	5	300	2	3	
3	TDS -mg/l	IS-3025/16:1984 Gravimetric	25	1500	680	690	
4	Oil & Grease –mg/l	IS-3025/39:1991 Partition Gravimetric	2	0.1	<2	<2	
5	Dissolved Oxygen- mg/l	IS-3025/38:1989 Winkler Azide	0.1	4	4.0	4.2	
6	B.O.D. (3 days at 27°C-mg/l	IS 3025 (Part 44) : 1993	2	3	3	2	
7	Arsenic -mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.2	<0.005	<0.005	
8	Lead -mg/l	APHA, 22 nd Edition AAS-GTA	0.005	0.1	0.076	0.093	
9	Hexavalent Chromium -mg/l	APHA, 22 nd Edition 1,5-Diphenylcarbohydrazide	0.01	0.05	<0.01	<0.01	
10	Copper -mg/l	IS-3025/42:1992 AAS-Flame	0.03	1.5	<0.03	<0.03	
11	Zinc -mg/l	IS-3025/49:1994 AAS-Flame	0.01	15	<0.01	<0.01	
12	Selenium- mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.05	<0.005	<0.005	
13	Cadmium - mg/l	APHA, 22 nd Edition AAS-GTA	0.0005	0.01	0.007	0.007	
14	Fluoride- mg/l	APHA, 22 nd Edition SPADNS	0.02	1.5	0.90	0.78	

15	Iron -mg/l	IS-3025/53:2003 AAS-Flame	0.06	50	<0.06	<0.06	
16	Nitrate Nitrogen- mg/l	APHA, 22 nd Edition UV-Spectrophotometric	0.5	50	1.6	1.8	
17	Sulphate -mg/l	APHA, 22 nd Edition Turbidity	2	400	60	64	
18	Chlorides- mg/l	IS-3025/32:1988, Argentometric	2	600	88	94	

(Scientific Assistant)

*Deepanshu Sahu
(Authorized Signatory)*

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ENVIRONMENTAL MONITORING REPORT

NEW MAJRI UG to OC

(MAJRI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014

AN ISO 9001:2015 COMPANY

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3.	EFFLUENT WATER QUALITY MONITORING DATA	5
5.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

New Majri UG to OC Project is located in Chandrapur district of Maharashtra state. The project is administered by Majri Area of Western Coalfields Limited.

Communication :

Project is well connected by both rail & road communications. New Majri railway station is the nearest railway station.

Drainage :

The Wardha river is the main drainage channel for the surrounding area.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Sources of Pollution :

Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	NMOC Substation	-	MMUA-1
2.	Kuchana Colony	-	MMUA-2
3.	Patala Magazine	-	MMUA-3
4.	Manager Office- UG to OC	-	MMUA-4

Fugitive Dust Monitoring locations :

1.	Rly. Siding	-	MMUAF-1
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Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	MMUW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Fan house, New Majri UG	-	MMUN-1
2.	Colony	-	MMUN-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of

nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.


Heavy Metals : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.

NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-49 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : MAJRI MONTH : MAY
 NAME OF THE PROJECT : NEW MAJRI-UG to OC

NMOC Substation					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
09/05/19	181	87	29	23	12
23/05/19	216	115	26	23	12
TLV	600	300	60	120	120
Kuchana Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
09/05/19	53	32	18	21	12
23/05/19	196	97	36	23	19
24/05/19	116	38	18	20	10
27/05/19	64	36	12	22	12
28/05/19	98	38	26	23	16
Permissible Limits	200	100	60	80	80
Patala Magazine					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	170	99	16	19	13
23/05/19	156	95	37	25	21
TLV	600	300	60	120	120

# Above Std. Value.					
New Majri UG to OC- Manager Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	100	49	14	21	11
24/05/19	297	132	53	24	19
TLV	600	300	60	120	120

Above Std. Value


FUGITIVE DUST MONITORING DATA

1.Rly. Siding			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
27/05/19	451	204	55

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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TEST REPORT NO. : RIN/TR/MAY-19/W-49 DATE OF ISSUE: 10.07.2019
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : MAJRI MONTH : MAY
NAME OF THE PROJECT : NEW MAJRI UG to OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
09/05/2019	7.40	40	42	<2
25/05/2019	7.10	48	52	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : MAJRI MONTH : MAY
NAME OF THE PROJECT : NEW MAJRI UG TO OC
Name of the Location : Fan House (New Majri UG) - MMUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	09/05/2019	44.2
MAY.2019	23/05/2019	43.6
TLV		75

Name of the Location : Colony

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	09/05/2019	43.0
MAY.2019	23/05/2019	41.9
TLV		75

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ENVIRONMENTAL MONITORING REPORT

TELWASA OC EXPN.

(MAJRI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
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4.	NOISE LEVEL DATA	7

INTRODUCTION

Location :

Telwasa OC is located in Chandrapur district of Maharashtra state. The project is administered by Majri Area of Western Coalfields Limited.

Communication :

The Telwasa OC Project is well connected by rail & road communications. The nearest railway station is Bandak on Nagpur - Chandrapur sector of Central Railway main line about 6 kms away from the project.

Drainage :

The Wardha River is the main drainage channel for the surrounding area. A few seasonal nullahs drain the rainwater from the Area into Wardha River.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Sources of Pollution :

Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Telwasa security Office	-	MTOA-1
2.	SAM Office	-	MTOA-2
3.	Chargaon village	-	MTOA-3
4.	Ekta Nagar Colony	-	MTOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1	Ground StockYard	-	MTOA-1
2.	Weigh Bridge	-	MTOA-2

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	MTOW-1
2.	Workshop (ETP) water discharge	-	MTOW-2

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Near Project Office	-	MTON-1
2.	Ekta Nagar Colony	-	MTON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.


Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected

- locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-52 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : MAJRI MONTH : MAY
 NAME OF THE PROJECT : TELWASA OC

Telwasa security office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
11/05/19	207	103	29	24	19
25/05/19	84	33	13	21	8
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
SAM Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
12/05/19	229	143	21	20	11
25/05/19	197	64	15	21	14
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Chargaon village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
12/05/19	111	63	14	20	14
25/05/19	90	29	13	21	11
Permissible Limits	200	100	60	80	80

#-Above Std.Value

Ekta Nagar colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	101	75	40	23	12
24/05/19	171	96	44	24	18
Permissible Limits	200	100	60	80	80

#-Above Std.Value

FUGITIVE DUST MONITORING DATA

1. Ground stock yard

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

2. Weigh Bridge


(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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Test Report No. : RIN/TR/MAY'19/W - 52 **Date of Issue** : 10.07.2019
Name of the Customer : Env.,CMPDI,Nagpur **Sampling method** : By the party
Customer letter Ref. No : क्षे.स.4/प.अ./पा.का./19-20
Sample Description : Water sample **No. of pages** : 2

SURFACE WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL **YEAR** : 2019
NAME OF THE AREA : MAJRI **MONTH** : MAY
NAME OF THE PROJECT : TELWASA OC **SamplingDate** :24/05/2019
Name of the Location : 1. Erai river upstream w.r.t Mine Water Discharge – US
2. Erai river downstream w.r.t Mine Water Discharge – DS

Sl. No	Parameters	Test Method	Below Detection Limit	IS 2296 Inland Surface Water (1982) Class C	Analysis Result		Remarks
					US 24/04/2019	DS 24/04/2019	
1	pH Value	IS-3025/11:1983 Electrometric	0.2	6.5-8.5	8.20	8.50	
2	Colour (Hz)	APHA, 22 nd Edition Platinum Cobalt	5	300	2	3	
3	TDS -mg/l	IS-3025/16:1984 Gravimetric	25	1500	250	270	
4	Oil & Grease –mg/l	IS-3025/39:1991 Partition Gravimetric	2	0.1	<2	<2	
5	Dissolved Oxygen- mg/l	IS-3025/38:1989 Winkler Azide	0.1	4	4.2	4.3	
6	B.O.D. (3 days at 27°C-mg/l	IS 3025 (Part 44) : 1993	2	3	3	2	
7	Arsenic -mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.2	<0.005	<0.005	
8	Lead -mg/l	APHA, 22 nd Edition AAS-GTA	0.005	0.1	0.015	0.009	
9	Hexavalent Chromium -mg/l	APHA, 22 nd Edition 1,5-Dibenzylcarbohydrazide	0.01	0.05	<0.01	<0.01	
10	Copper -mg/l	IS-3025/42:1992 AAS-Flame	0.03	1.5	<0.03	<0.03	
11	Zinc -mg/l	IS-3025/49:1994 AAS-Flame	0.01	15	<0.01	<0.01	
12	Selenium- mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.05	<0.005	<0.005	
13	Cadmium - mg/l	APHA, 22 nd Edition AAS-GTA	0.0005	0.01	0.002	<0.002	
14	Fluoride- mg/l	APHA, 22 nd Edition SPADNS	0.02	1.5	0.49	0.40	

RIN/TR/MAY19/W -

15	Iron -mg/l	IS-3025/53:2003 AAS-Flame	0.06	50	<0.06	<0.06	
16	Nitrate Nitrogen- mg/l	APHA, 22 nd Edition UV-Spectrophotometric	0.5	50	1.9	2.0	
17	Sulphate -mg/l	APHA, 22 nd Edition Turbidity	2	400	38	42	
18	Chlorides- mg/l	IS-3025/32:1988, Argentometric	2	600	66	68	

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2018
NAME OF THE AREA : MAJRI MONTH : MAY
NAME OF THE PROJECT : TELWASA OCP

Name of the Location : Pit offic - MTON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	45.4
MAY.2019	25/05/2019	44.4
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Ekta Nagar Colony - MTON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	42.5
May.2019	25/05/2019	43.2
Permissible Limit		55

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ENVIRONMENTAL MONITORING REPORT

YEKONA I & II OC .

(MAJRI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014

AN ISO 9001:2015 COMPANY

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3.	EFFLUENT WATER QUALITY MONITORING DATA	5-7
4.	NOISE LEVEL DATA	8

INTRODUCTION

Location :

Yekona I & II OC is located in Chandrapur district of Maharashtra state. The project is administered by Majri Area of Western Coalfields Limited.

Communication :

The Project is well connected by rail & road communications. The nearest railway station is Bandak on Nagpur - Chandrapur sector of Central Railway main line.

Drainage :

The Wardha River is the main drainage channel for the surrounding area. A few seasonal nullahs drain the rainwater from the Area into Wardha River.

Climate :

The climate of the area is tropical. May is the hottest month with temperature rising to a maximum of 48°C. December is the coldest month when the temperature falls down to 10°C.

Other Sources of Pollution :

Transportation roads, agricultural and local activities, vehicular traffic etc also contributes to the pollution.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Panzurni Village	- MYOA-1
2.	Ashti village	- MYOA-2
3.	Sansakar Bharti School	- MYOA-3
4.	Pit Office	- MYOA-4

Water Quality Monitoring location:

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- MYOW-1

Noise Level Monitoring location:

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Pit Office	- MYON-1

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.


Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust

(size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration ($\mu\text{g}/\text{m}^3$) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations ($\mu\text{g}/\text{m}^3$) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-57 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : MAJRI MONTH : MAY
 NAME OF THE PROJECT : YEKONA I & II OC

Penzurni Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
13/05/19	97	45	23	21	14
26/05/19	100	59	21	22	7
TLV	200	100	60	80	80
#-Above Std. Value.					
Ashit Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
13/05/19	85	24	9	19	13
26/05/19	108	74	26	21	11
TLV	200	100	60	80	80
Sanskar Bharti					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
13/05/19	132	91	13	23	16
26/05/19	143	84	18	24	19
TLV	200	100	60	80	80
#-Above Std. Value.					


Pit Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
13/05/19	95	46	26	21	15
26/05/19	53	17	8	22	16
TLV	600	300	60	120	120

Above Std. Value.

(Scientific Assistant)

*Deepanshu Sahu
(Authorized Signatory)*

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 T - 2969
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TEST REPORT NO. : RIN/TR/MAY-19/W-57 DATE OF ISSUE: 10.07.2019
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : MAJRI MONTH : MAY
: YEKONA I & II OC
NAME OF THE PROJECT

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
13/05/2019	7.80	32	30	<2
25/05/2019	8.00	28	30	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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Test Report No. : RIN/TR/MAY'19/W - 57 Date of Issue : 10.07.2019
 Name of the Customer : Env.,CMPDI,Nagpur Sampling method : By the party
 Customer letter Ref. No : क्षे.स.4/प.अ./पा.का./19-20
 Sample Description : Water sample No. of pages : 2

SURFACE WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : MAJRI MONTH MAY
 NAME OF THE PROJECT : YEKONA I & II OC SamplingDate :11/05/2019
 Name of the Location : 1. Erai river upstream w.r.t Mine Water Discharge – US
 2. Erai river downstream w.r.t Mine Water Discharge – DS

Sl. No	Parameters	Test Method	Below Detection Limit	IS 2296 Inland Surface Water (1982) Class C	Analysis Result		Remarks
					US 26/04/2019	DS 26/04/2019	
1	pH Value	IS-3025/11:1983 Electrometric	0.2	6.5-8.5	8.30	8.40	
2	Colour (Hz)	APHA, 22 nd Edition Platinum Cobalt	5	300	4	3	
3	TDS -mg/l	IS-3025/16:1984 Gravimetric	25	1500	210	260	
4	Oil & Grease –mg/l	IS-3025/39:1991 Partition Gravimetric	2	0.1	<2	<2	
5	Dissolved Oxygen- mg/l	IS-3025/38:1989 Winkler Azide	0.1	4	4.4	4.6	
6	B.O.D. (3 days at 27°C-mg/l	IS 3025 (Part 44) : 1993	2	3	3	2	
7	Arsenic -mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.2	<0.005	<0.005	
8	Lead -mg/l	APHA, 22 nd Edition AAS-GTA	0.005	0.1	0.019	0.018	
9	Hexavalent Chromium -mg/l	APHA, 22 nd Edition 1,5-Diphenylcarbohydrazide	0.01	0.05	<0.01	<0.01	
10	Copper -mg/l	IS-3025/42:1992 AAS-Flame	0.03	1.5	<0.03	<0.03	
11	Zinc -mg/l	IS-3025/49:1994 AAS-Flame	0.01	15	<0.01	<0.01	
12	Selenium- mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.05	<0.005	<0.005	
13	Cadmium - mg/l	APHA, 22 nd Edition AAS-GTA	0.0005	0.01	0.002	0.001	
14	Fluoride- mg/l	APHA, 22 nd Edition SPADNS	0.02	1.5	0.58	0.62	

15	Iron -mg/l	IS-3025/53:2003 AAS-Flame	0.06	50	<0.06	<0.06	
16	Nitrate Nitrogen- mg/l	APHA, 22 nd Edition UV-Spectrophotometric	0.5	50	1.4	1.6	
17	Sulphate -mg/l	APHA, 22 nd Edition Turbidity	2	400	36	40	
18	Chlorides- mg/l	IS-3025/32:1988, Argentometric	2	600	64	68	

(Scientific Assistant)

*Deepanshu Sahu
(Authorized Signatory)*

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : MAJRI MONTH : MAY
NAME OF THE PROJECT : YEKONA I & II OC

Name of the Location : Pit Office MYON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	12/05/2019	54.7
MAY.2019	26/05/2019	53.6
TLV		75

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ENVIRONMENTAL MONITORING REPORT

ADASA UG EXPN.

(NAGPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014

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INTRODUCTION

Location :

Adasa UG mine is situated in Nagpur District of Maharashtra State and is administered by the Nagpur area of the Western Coalfields Limited.

Communication :

The project area is well connected by all weathered metalled road both to the nearest tahsil town Saoner and district headquarter Nagpur. Saoner railway station, situated on the Nagpur – Chhindawara narrow gauge railway line is at a distance of about 8 Kms. from the block.

Drainage :

The drainage of the project area is controlled by the easterly flowing Kolar and Chandrabhaga Rivers.

Climate :

The area has tropical climate with very hot summer. The temperature rises as high as 48°C in summer. The average annual rainfall is about 1050 mm. The monsoon period is between June to Sept.

Pollution due to other sources :

There are a few small industries near the town. There is no major industry, other than Saoner coal mines, near to the project. The state highway and road to Kalmeshwar, which is very busy due to vehicular movement, produce lot of dust. Transportation roads, agricultural and local activities, vehicular traffic etc also contributes to the pollution.

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area. The air pollution due to working of the UG mine is insignificant.

Sampling Location :

Ambient Air Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	At Pathakhedi GP Office	- NAUA-1
2.	Project Manager office	- NAUA-2
3.	Colony (W.T.Plant)	- NAUA-3
4.	Kotodi village	- NAUA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- NAUW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Fan House	- NAUN-1
2.	Manager Office	- NAUN-2
3.	Colony (Saoner)	- NAUN-3

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.


Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

<p>Environment Laboratory CMPDI, RI IV, Nagpur</p>	<h2>Test Report</h2>	 TC-7102
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TEST REPORT NO. : RIN/TR/MAY-19/A
 NAME OF CUSTOMER: WCL, NAGPUR
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)
 SPM*

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : NAGPUR MONTH : MAY
 NAME OF THE PROJECT : ADASA UG

At Pathakhedi GP Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
05/05/19	300 [#]	212 [#]	40	29	12
31/05/19	287 [#]	139 [#]	36	36	16
TLV	200	100	80	80	60
# - Above std. value.					
Project Manager office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
05/05/19	241	194	42	34	15
31/05/19	264	135	44	32	18
TLV	600	300	120	120	60
# - Above std. value.					
Colony –Water filter plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
06/05/19	294	165	41	31	28
31/05/19	227	163	55	39	12
TLV	200	100	80	80	60
#-AboveStd.Value					


Kotodi village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	231#	125#	10	37	26
31/05/19	189	76	27	37	28
TLV	200	100	80	80	60

- Above std. value.

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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3) * - Test parameter not under NABL scope

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : NAGPUR MONTH MAY
 NAME OF THE PROJECT : ADASA UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
04/05/2019	8.20	20	14	<2
31/05/2019	8.30	24	14	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY: WCL
NAME OF THE AREA : NAGPUR
NAME OF THE PROJECT : ADASA UG

YEAR : 2019
MONTH : MAY

Name of the Location : Near Fan House - NAUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	04/05/2019	71.9
MAY.2019	31/05/2019	70.1
TLV		75

Name of the Location : Near Manager Office – NAUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	04/05/2019	50.2
MAY.2019	31/05/2019	49.8
TLV		75

Name of the Location : Colony (Saoner) - NAUN-4

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	04/05/2019	38.2
MAY.2019	31/05/2019	50.2
TLV		55

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**ENVIRONMENTAL MONITORING REPORT
BHANEGAON OCP
(NAGPUR AREA)
WESTERN COALFIELDS LTD.**

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014

AN ISO 9001:2015 COMPANY

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2.	AIR QUALITY MONITORING DATA	4-5
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4.	NOISE LEVEL DATA	7

INTRODUCTION

Location :

The Bhanegaon opencast project is located in Nagpur district of Maharashtra state and administered by Nagpur area of Western Coalfields Ltd.

Communication :

The mine is situated in Kamptee coalfield adjoining GondegaonOC. This area is approachable by all weather road. Kanhan is the nearest railway station which is on Howrah-Mumbai main line of South Eastern Railway.

Drainage :Kanhan river acts as the main drainage channel of the area.

Climate :

The climate of the area is tropical. The temperature rises as high as 47°C in summer. In winter temperature is ranging about 22°C. Monsoon period is generally from June to September. Annual rainfall is about 1000mm.

Other Industry/Coal Mines :

Besides other coal mines viz. Kamptee OC, Inder OC, Gondegaon OC, Ferro Alloys Plants are the major industries in the vicinity of the project area.

Pollution due to other sources:

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area. Transportation road, Vehicular traffic, Agricultural and local activities etc., also contribute to the pollution.

Sampling Location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Bina Village	- NBOA-1
2.	Dorli Village	- NBOA-2
3.	Near Manager Office	- NBOA-3
4.	Near Mandir - Sangam	- NBOA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- NBOW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Contractor Camp	- NBON-1

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.


Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

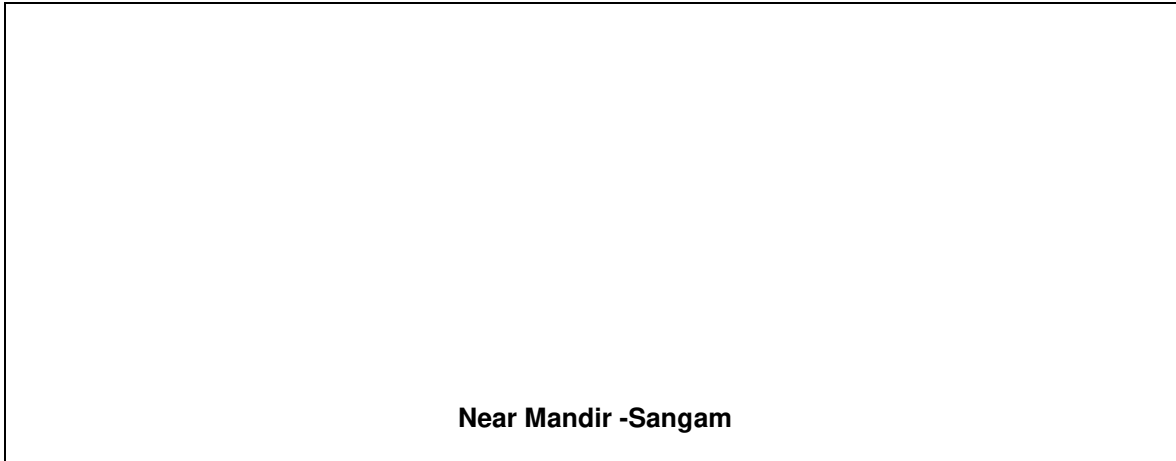
Environment Laboratory CMPDI, RI IV, Nagpur	Test Report AIR QUALITY MONITORING DATA	 TC -7102
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)
 SPM*

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : NAGPUR MONTH : MAY
 NAME OF THE PROJECT : BHANEGAON OC

Bina Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
09/05/19	341#	213#	27	30	19
26/05/19	381#	189#	57	39	17
TLV	200	100	60	80	80
# - Above Std. Value.					
Dorli Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
09/05/19	319#	139#	13	37	16
27/05/19	171	69	21	31	13
TLV	200	100	60	80	80
# - Above Std. Value.					
Near Manager Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
09/05/19	422	166	35	31	22
26/05/19	504	216	59	34	22
TLV	600	300	60	120	120
# - Above Std. Value.					



Near Mandir -Sangam


DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
06/05/19	264#	133#	35	32	22
26/05/19	275#	94	37	35	15
TLV	200	100	60	80	80

- Above Std. Value.

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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3) * - Test parameter not under NABL scope.
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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : NAGPUR MONTH MAY
 NAME OF THE PROJECT : BHANEGAON OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
09/05/2019	8.20	24	14	<2
26/05/2019	8.20	28	18	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
 (Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : NAGPUR MONTH : MAY
NAME OF THE PROJECT : BHANEGAON OC

Name of the Location : Contractor camp - NBON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	09/05/2019	54.4
MAY.2019	25/05/2019	56.4
TLV		75

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**ENVIRONMENTAL MONITORING REPORT
GONDEGAON EXTN. OC**

(NAGPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

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2.	AIR QUALITY MONITORING DATA	4-5
3.	EFFLUENT WATER QUALITY MONITORING DATA	6-8
4.	NOISE LEVEL DATA	9

INTRODUCTION

Location :

The Gondegaon opencast mine is located in Nagpur district of Maharashtra state and administered by Nagpur area of Western Coalfields Ltd.

Communication :

The mine is situated in Kamptee coalfield adjoining Inder Colliery and Kanhan river. This area is approachable by all weather road. Kanhan is the nearest railway station which is on Howrah-Mumbai main line of South Eastern Railway.

Drainage : Kanhan river acts as the main drainage channel of the area.

Climate :

The climate of the area is tropical. The temperature rises as high as 47°C in summer. In winter temperature is ranging about 22°C. Monsoon period is generally from June to September. Annual rainfall is about 1000mm.

Other Industry/Coal Mines :

Besides other coal mines viz. Kamptee OC, Inder OC, Ferro Alloys Plants are the major industries in the vicinity of the project area.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area. The air pollution due to working of the UG mine is insignificant. Transportation road, Vehicular traffic, Agricultural and local activities etc., also contribute to the pollution.

Sampling Location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Colony/ Guest house	- NGOA-1
2.	Ghatrohna village	- NGOA-2
3.	Gondegaon village school	- NGOA-3
4.	Near Substation	- NGOA-4

Fugitive Dust Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Security Check Post / W Bridge	- NGOAF-1

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- NGOW-1
2.	Workshop water (treated) discharge	- NGOW-2

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- NGON-1

- | | |
|----------------------------|----------|
| 2. Colony/Gondegao Village | - NGON-2 |
| 3. Ghatrohna Village | - NGON-3 |
| 4. Juni Kamptee Village | - NGON-4 |

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

Heavy Metals : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.


NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated

by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE : 10.07.19
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 2
TEST REQUIRED:IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : NAGPUR MONTH : MAY
NAME OF THE PROJECT : GONDEGAON OC

Colony/ Guest house					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	381#	204#	55	32	9
07/05/19	347#	165#	41	34	11
11/05/19	354#	182#	46	30	15
12/05/19	397#	199#	38	34	12
19/05/19	326#	213#	56	34	25
TLV	200	100	60	80	80
# - Above Std. value.					
Ghatrohna village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	369 #	110 #	11	38	16
07/05/19	341 #	186 #	24	31	30
11/05/19	279 #	104 #	22	31	17
12/05/19	308 #	154 #	30	29	23
25/05/19	321 #	119 #	51	29	19
TLV	200	100	60	80	80
# - Above Std. value					

Gondegaon village school					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	325 #	208 #	86	33	17
07/05/19	415 #	218 # #	72	34	17
11/05/19	313 #	213	42	30	20
12/05/19	354 #	245 #	57	32	30
25/05/19	140	73	49	18	17
TLV	200	100	60	80	80
# - Above Std. value					
Near Substation					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	562	271	28	30	23
25/05/19	538	286	55	32	21
TLV	600	300	60	100	100

FUGITIVE DUS MONITORING DATA

1. Security check post/ W.Bridge


(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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3) * - Test parameter not under NABL scop

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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Test Report NO : RIN/TR/MAY'19/A Date of Issue : 10/07/2019
 Name of the Customer: WCL,Nagpur Sampling method : IS-5182
 Customer letter Ref. No. : WCL/HQ/ENV/17-K/520-522 Sample Description :water
 DATED-18.04.19 sample
 No. of pages :1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : NAGPUR MONTH MAY
 NAME OF THE PROJECT : GONDEGAON OC


Mine Water Discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	8.30	24	16	<2
24/05/2019	8.20	20	12	<2
TLV	5.5 – 9.0	250	100	10

Workshop Effluent (WETP) Water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.80	36	24	<2
24/05/2019	8.40	24	14	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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Test Report No. : RIN/TR/MAY'19/W - **Date of Issue** : 10.07.2019
Name of the Customer : Env.,CMPDI,Nagpur **Sampling method** : By the party
Customer letter Ref. No : क्षे.स.4/प.अ./पा.का./19-20
Sample Description : Water sample **No. of pages** : 2

SURFACE WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL **YEAR** : 2019
NAME OF THE AREA : NAGPUR **MONTH** : MAY
NAME OF THE PROJECT : GONDEGAON OC **SamplingDate** :11/05/2019
Name of the Location : 1. Erai river upstream w.r.t Mine Water Discharge – US
 2. Erai river downstream w.r.t Mine Water Discharge – DS

Sl. No	Parameters	Test Method	Below Detection Limit	IS 2296 Inland Surface Water (1982) Class C	Analysis Result		Remarks
					US 05/05/2019	DS 05/05/2019	
1	pH Value	IS-3025/11:1983 Electrometric	0.2	6.5-8.5	8.30	8.20	
2	Colour (Hz)	APHA, 22 nd Edition Platinum Cobalt	5	300	3	4	
3	TDS -mg/l	IS-3025/16:1984 Gravimetric	25	1500	430	470	
4	Oil & Grease –mg/l	IS-3025/39:1991 Partition Gravimetric	2	0.1	<2	<2	
5	Dissolved Oxygen- mg/l	IS-3025/38:1989 Winkler Azide	0.1	4	4.8	5.4	
6	B.O.D. (3 days at 27°C-mg/l	IS 3025 (Part 44) : 1993	2	3	4.2	4.5	
7	Arsenic -mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.2	<0.005	<0.005	
8	Lead -mg/l	APHA, 22 nd Edition AAS-GTA	0.005	0.1	<0.005	<0.005	
9	Hexavalent Chromium -mg/l	APHA, 22 nd Edition 1,5-Diphenylcarbohydrazide	0.01	0.05	<0.01	<0.01	
10	Copper -mg/l	IS-3025/42:1992 AAS-Flame	0.03	1.5	<0.03	<0.03	
11	Zinc -mg/l	IS-3025/49:1994 AAS-Flame	0.01	15	<0.01	<0.01	
12	Selenium- mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.05	<0.005	<0.005	
13	Cadmium - mg/l	APHA, 22 nd Edition AAS-GTA	0.0005	0.01	0.001	0.001	
14	Fluoride- mg/l	APHA, 22 nd Edition SPADNS	0.02	1.5	1.82	1.89	

15	Iron -mg/l	IS-3025/53:2003 AAS-Flame	0.06	50	<0.06	<0.06	
16	Nitrate Nitrogen- mg/l	APHA, 22 nd Edition UV-Spectrophotometric	0.5	50	2.3	2.6	
17	Sulphate -mg/l	APHA, 22 nd Edition Turbidity	2	400	56.3	72.42	
18	Chlorides- mg/l	IS-3025/32:1988, Argentometric	2	600	56	65	

(Scientific Assistant)

*Deepanshu Sahu
(Authorized Signatory)*

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : NAGPUR MONTH : MAY
 NAME OF THE PROJECT : GONDEGAON OCP

Name of the Location : CHP - NGON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	66.2
MAY.2019	24/05/2019	65.7
TLV		75

Name of the Location : Gondegao Village /Colony-NGON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	43.6
MAY.2019	24/05/2019	41.3
TLV		55

Name of the Location : Ghatrohna Village- NGON-3

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/05/2019	41.7
MAY.2019	24/05/2019	42.4
TLV		55

Name of the Location : Juni Kamptee Village - NGON-4

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	05/05/2019	44.3
MAY.2019	24/05/2019	44.2
TLV		55

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ENVIRONMENTAL MONITORING REPORT
INDER UG TO OC EXPN.
(NAGPUR AREA)
WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY- 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014**

AN ISO 9001:2015 COMPANY

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1.	INTRODUCTION	1-3
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INTRODUCTION

Location :

Inder UG to OC Project is situated about 35 kms from Nagpur in Maharashtra State and is administered by the Nagpur Area of the Western Coalfields Limited.

Communication :

This area is approachable by all weather road. Nagpur - Jabalpur State highway is about 5 km from the Colliery. Kanhan is the nearest Railway Station, which is on Howrah - Mumbai main line of South Eastern railway.

Drainage : Kanhan river acts as the main drainage channel of the area.

Climate :

The climate of this area is tropical. The temperature rises as high as 47°C in summer. Winter is mild with temperature ranging about 22°C. Monsoon period is generally from June to September. Annual rainfall is about 1000 mm.

Industry/Coal Mines :

Khandelwal tube and Khandelwal Ferro Alloys are about 8 kms from the mine. Kamptee OC mine and Gondagaon OC mine are near to this project.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area. The air pollution due to working of the UG mine is insignificant. Transportation road, Vehicular traffic, Agricultural and local activities etc., also contribute to the pollution load of the area.

Sampling Location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CMPDI Tekadi Camp	- NIOA-1
2.	Near pit no. 6/ Manager office	- NIOA-2
3.	G.P. office- Kandri	- NIOA-3
4.	Colony-Water treatment plant	- NIOA-3

Fugitive Dust Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	W Bridge	- NIOAF-1
2.	Near Coal Stock Yard	- NIOAF-2

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- NIOW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Project Office	- NION-1


Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

- Water** : Water quality is monitored on fortnightly basis.
Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler and Fine Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x), PM-2.5 etc.
- SPM** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fibre Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM-2.5** Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N (1-naphthyl) ethylenediaminedihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. :WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED:IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : NAGPUR MONTH : MAY
 NAME OF THE PROJECT : INDER OC

CMPDI TekadiCamp					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/5/2019	779*	357*	22	370	20
24/5/2019	683*	357*	84*	32	20
TLV	600	300	60	120	120
Near pit no. 6/ Manager office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/2019	283	88	66	40	26
23/05/2019	416	389*	84*	30	15
TLV	600	300	60	120	120
G.P. office- Kandri					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/2019	671*	292*	149*	30	16
07/05/2019	1319*	503*	83*	41	24
14/05/2019	737*	384*	26	34	18
15/05/2019	480*	277*	72*	30	15
24/5/2019	343*	170*	8	32	14
TLV	200	100	60	80	80
# - Above Std. value.					

Colony-Water treatment plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/2019	478*	212*	106*	35	23
07/05/2019	797*	296*	128*	31	28
14/05/2019	664*	316*	23	39	20
15/05/2019	796*	360*	15	32	22
24/05/2019	307*	145*	34	35	23
TLV	200	100	60	80	80

- Above Std. value.

FUGITIVE DUST MONITORING DATA

1. Weigh Bridge

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

2. Inder near coal stock yard

(24 hourly values in µg/m³)


Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu

(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.19
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. :WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1
TEST REQUIRED:IS-

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
NAME OF THE AREA : NAGPUR MONTH MAY
NAME OF THE PROJECT : INDER OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	8.20	32	26	<2
24/05/2019	8.40	36	24	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

DeepanshuSahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : NAGPUR MONTH. :MAY.
NAME OF THE PROJECT : INDER UG TO OC

Name of the Location : R.C. Office - NION-1

Month	Date of Data collection	Noise Level in dB(A)	
		Day Time	Night Time
MAY.2019	9/5/2019	54.8	
MAY.2019	22/5/2019	54.6	
TLV		75	70

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ENVIRONMENTAL MONITORING REPORT

KAMPTEE UG TO OC

(NAGPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY- 2019

Environment Laboratory

NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
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AN ISO 9001: 2015 COMPANY

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4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

The Kamptee UG to OC Project is located in Nagpur district of Maharashtra state and administered by Nagpur area of Western Coalfields Ltd.

Communication :The mine is situated to the west of National Highway No.7, connecting Nagpur with Jabalpur. The distance by road from Nagpur is about 25 km and the nearest railway station is Kanhan, which is an industrial township on Nagpur-Howrah broad-gauge line of South Eastern Railway.

Drainage :The drainage of the area is controlled by Kanhan River, which flows in the north east direction about 1 km south of the mine.

Climate :The climate of the area is tropical. The region experiences dry hot summer from MAY to June with relative humidity falling below 20%. The temperature rises to a maximum of 47°C. during May. The winter is mild with temperature ranging about 22°C. The rainy season is between mid July and September and the annual rainfall is about 1000mm.

Other Industry/Coal Mines : Besides other coal mines viz. Inder UG to OC, Gondagaon OC, Khandelwal tube and Ferro Alloys Plants are the major industries, which fall in the vicinity of the Kamptee Opencast Project.

Pollution due to other sources:The above-mentioned industries are also expected to contribute in increasing the pollution load of the area.

Sampling Location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Colony-Water treatment plant	- NKcOA-1
2.	G.P. office- Kandri	- NKcOA-2
3.	JuniKamptee Village	- NKcOA-3
4.	Substation- Kamptee	- NKcOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1	Railway siding	- NKcOAF-1
2.	CHP	- NKcOAF-2

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- NKcOW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- NKcON-1
2.	Colony	- NKcON-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM),

ENV. MONITORING REPORT
KAMPTEE OC(MAY-19)JOB NO.8000002

Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.


Heavy Metals Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.

NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediaminedihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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TEST REPORT NO. : RIN/TR/MAY-19/A

DATE OF ISSUE: 10.07.19

NAME OF CUSTOMER: WCL, NAGPUR

SAMPLE DESCRIPTION: AIR SAMPLE

CUSTOMER LETTER REF. NO. :WCL/HQ/ENV/17-K/520-522 DATED-18.04.19

NO. OF PAGES: 2

TEST REQUIRED:IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY	: WCL	YEAR	: 2019
NAME OF THE AREA	: NAGPUR	MONTH	: MAY
NAME OF THE PROJECT	: KAMPTEE OC		

Colony-Water treatment plant					
DATE OF SAMPLING	Parameters (24 hourly values in $\mu\text{g}/\text{m}^3$)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
05/05/2019	478*	212*	106*	35	23
07/05/2019	797*	296*	128*	31	28
14/05/2019	664*	316*	23	39	20
15/05/2019	796*	360*	15	32	22
24/05/2019	307*	145*	34	35	23
TLV	200	100	60	80	80
# - Above Std. value.					
G.P. office- Kandri					
DATE OF SAMPLING	Parameters (24 hourly values in $\mu\text{g}/\text{m}^3$)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
05/05/2019	671*	292*	149*	30	16
07/05/2019	1319*	503*	83*	41	24
14/05/2019	737*	384*	26	34	18
15/05/2019	480*	277*	72*	30	15
24/05/2019	343*	170*	8	32	14
TLV	200	100	60	80	80

JuniKamptee Village					
DATE OF SAMPLING	Parameters (24 hourly values in $\mu\text{g}/\text{m}^3$)				
	SPM*	PM-10	PM-2.5	NOx	SO_x
12/05/2019	253*	96	51	35	26
13/05/2019	584*	262*	40	32	20
07/05/2019	678*	304*	16	35	14
08/05/2019	653*	240*	123*	30	17
25/05/2019	412*	146*	28	37	16
TLV	200	100	60	80	80
# - Above Std. value.					
Substation- Kamptee					
DATE OF SAMPLING	Parameters (24 hourly values in $\mu\text{g}/\text{m}^3$)				
	SPM*	PM-10	PM-2.5	NOx	SO_x
05/05/2019	592	295	72*	33	16
24/05/2019	319	136	23	37	18
TLV	600	300	60	120	120

- Above Std. value.

FUGITIVE DUS MONITORING DATA

1. CHP

(24 hourly values in $\mu\text{g}/\text{m}^3$)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

2. RIY. Siding


(24 hourly values in $\mu\text{g}/\text{m}^3$)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

DeepanshuSahu
(Authorized Signatory)

-
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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE:
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1
 TEST REQUIRED:IS-

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : NAGPUR MONTH : MAY
 NAME OF THE PROJECT : KAMPTEE OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	8.10	28	24	<2
21/05/2019	8.30	32	22	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

DeepanshuSahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : NAGPUR MONTH. : MAY
NAME OF THE PROJECT : KAMPTEE UG TO OC

Name of the Location :CHP

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/5/2019	67.4
MAY.2019	23/5/2019	64.6
TLV		75

Name of the Location: Colony

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	11/5/2019	41.6
MAY.2019	23/5/2019	43.2
TLV		55

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**ENVIRONMENTAL MONITORING REPORT
PATANSAONGI UG EXPN.**

(NAGPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
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CMPDI
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3.	EFFLUENT WATER QUALITY MONITORING DATA	4
4.	NOISE LEVEL DATA	5

INTRODUCTION

Location :

Patansaongi UG project is located in Nagpur district of Maharashtra state and is administered by Nagpur area of Western Coalfields Limited.

Communication :

The project is situated at a distance of about 22 km from Nagpur on Nagpur-Chhindwara road. Nagpur-Chhindwara narrow gauge rail line passes through the northern part of the project area.

Drainage : The drainage of the area is controlled by Kolar river.

Climate :

The climate of the area is tropical. May is the hottest month with temperature touching 47°C. The coldest month is December, when temperature falls to 10°C. Average annual rainfall is 1050 mm.

Other Industries/Coal Mines :

Silewara, Pipla and Saoner underground projects and Khaparkheda Thermal Power Station are the major industries which fall within the 10 km radius of the project area.

Pollution due to other sources :

State highway is adjacent to the project. State highway and Khaparkheda Thermal Power Station are also expected to contribute in increasing the air pollution load of the area. The air pollution due to working of the UG mine is insignificant. Transportation road, Vehicular traffic, Agricultural and local activities etc., also contribute to the pollution load of the area.

Sampling location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Colliery Manager office /Near CHP	- NPUA-1
2.	Near LCH Qr.	- NPUA-2
3.	Sadbhavna Nagar(filter plant)	- NPUA-3

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- NPUW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- NPUN-1
2.	Colony	- NPUN-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM),

Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.


Heavy Metals Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.

NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED:IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : NAGPUR MONTH. : MAY
 NAME OF THE PROJECT : PATANSAONGI UG


Colliery Manager office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/19	288	123	40	30	24
31/05/19	496	196	47	33	14
TLV	600	300	60	120	120
Near LCH Qr.					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	352 [#]	244 [#]	81	29	15
29/05/19	193	85	28	35	20
TLV	200	100	60	80	80
Sadbhavna Nagar(filter plant)					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/19	195	94	19	38	20
31/05/19	348 [#]	219 [#]	45	30	12
TLV	200	100	60	80	80

- Above std. value

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.19
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
NAME OF THE AREA : NAGPUR MONTH MAY
NAME OF THE PROJECT : PATANSAONGI UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
04/05/2019	8.5	36	26	<2
31/05/2019	7.80	32	22	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : NAGPUR MONTH. : MAY
NAME OF THE PROJECT : PATANSAONGI UG

Name of the Location : CHP - NPUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	04/05/2019	68.3
MAY.2019	28/05/2019	66.3
TLV		75

Name of the Location : Colony (Sadbhavna Nagar) - NPUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	04/05/2019	39.2
MAY.2019	28/05/2019	42.7
TLV		55

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ENVIRONMENTAL MONITORING REPORT

PIPLA UG

(NAGPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

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3.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Pipla Colliery is situated in the West of Silewara Colliery in Nagpur District of Maharashtra State. It is under the administrative control of Nagpur Area of Western Coalfields Limited.

Communication :

The project area is about 2 km from Nagpur-Chhindwara State Highway. It is also connected to Silewara colliery. The Nagpur-Chhindwara narrow gauge railway line of SE Railway passes immediate south of the colliery property.

Drainage :

The drainage of the area is principally controlled by Kolar-Pimpri river in the South and Kanhan river in the North. There are a number of small seasonal nallahs which traverse over the area and discharge the water during rainy season into these two rivers.

Climate :

The climate of this area is tropical. The temperature rises as high as 47°C in summer. Monsoon period is generally from June to September.

Industry/Coal Mines :

Khaparkheda and Koradi Thermal Power Stations of MSEB lies at a distance of 6 kms and 7 kms respectively. Patansaongi UG and Silewara UG mines of WCL are also near to this mine.

Pollution due to other sources :

Nagpur - Chhindwara State highway is about 2 kms from the project. Road traffic is also likely to contribute to the air pollution in the surrounding area.

Sampling Location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Filter plant	- NPLUA-1
2.	In zone -4	- NPLUA-2
3.	Near Magazine/Manager office	- NPLUA-3
4.	Shiv Mandir	- NPLUA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- NPLUW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Fan House	- NPLUN-1

Frequency of Monitoring :


- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is

transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Day time and Night time Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : NAGPUR MONTH : MAY
 NAME OF THE PROJECT : PIPLA UG

Filter plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
05/05/19	321#	145#	76	31	20
29/05/19	300#	104#	49	33	22
TLV	200	100	60	80	80
# - Above Std. value.					
In zone -4					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
05/05/19	220	93	24	34	10
29/05/19	172	56	22	30	22
TLV	600	300	60	120	120
Near Magzine/Manager office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
05/05/19	408	216	47	32	9
29/05/19	138	65	30	30	23
TLV	600	300	60	120	120

Shiv Mandir					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/19	204#	166#	27	39	30
29/05/19	130	49	29	29	15
TLV	200	100	60	80	80

- Above Std. value.

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : NAGPUR MONTH : MAY
NAME OF THE PROJECT : PIPLA UG

Name of the Location : Near Fan House - NP_LUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	07/05/2019	44.5
MAY.2019	27/05/2019	68.6
TLV		75

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ENVIRONMENTAL MONITORING REPORT SAONER UG EXPN.

(NAGPUR AREA)

WESTERN COALFIELDS LTD.

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INTRODUCTION

Location :

SaonerUG mine is situated in Nagpur District of Maharashtra State and is administered by the Nagpur area of the Western Coalfields Limited. There are three projects - Saoner-I UG, Saoner -II UG and Saoner -III UG.

Communication :

These projects are well connected by all weathermetalled road. These projects are about 40 kms away from Nagpur city. Nagpur - Chhindwara road is about 5 km from the mines. Saoner - Kalmeshwar road is also very near to the projects. Saoner railway station of S.E. Railway is the nearest rail head.

Drainage : The drainage is principally controlled by Kolar river.

Climate : The area has tropical climate with very hot summer. The temperature rises as high as 46°C in summer. The average annual rainfall is about 1050 mm. The monsoon period is between June to Sept.

Industry/Coal Mines :

There are a few small industries near the town. There is no major industry near to the project. The state highway and road to Kalmeshwar, which is very busy due to vehicular movement, produce lot of dust.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area. The air pollution due to working of the UG mine is insignificant.

Sampling Location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Colliery Manager Office, SaonerUG-I	-	NSUA-1
2.	Colliery Manager office, SaonerUG-II	-	NSUA-2
3.	Water Treatment Plant	-	NSUA-3
4.	Kotodi village	-	NSUA-4

Fugitive Dust Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	CHP	-	NSUAF-1
2.	Rly. Siding	-	NSUAF-2

Water Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge - Saoner - I UG	-	NSUW-1
2.	Mine water discharge - Saoner - II UG	-	NSUW-2
3.	Mine water discharge - Saoner - III UG	-	NSUW-3

Noise Level Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near CHP - Saoner - I UG	- NSUN-1
2.	Near CHP - Saoner - II UG	- NSUN-2
3.	Near CHP – Saoner - III UG	- NSUN-3
4.	Colony	- NSUN-4

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

Heavy Metals : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.


NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite

ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A

DATE OF ISSUE : 10.07.19

NAME OF CUSTOMER: WCL, NAGPUR

SAMPLE DESCRIPTION: AIR SAMPLE

CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19

NO. OF PAGES: 2

TEST REQUIRED: IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY	: WCL	YEAR	: 2018
NAME OF THE AREA	: NAGPUR	MONTH.	: MAY
NAME OF THE PROJECT	: SAONER UG		

C.M.Office- Saoner -I UG					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	460	135	21	28	21
31/05/19	191	94	31	31	16
TLV	600	300	60	120	120
C.M.Office- Saoner -II UG					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	332	243	53	36	24
31/05/19	362	137	44	32	18
TLV	600	300	60	120	120
Colony -Water filter plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	294 [#]	165 [#]	41	31	28
31/05/19	227 [#]	163 [#]	55	39	12
TLV	200	100	60	80	80
#-AboveStd.Value					

Kotodi village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	231 [#]	125 [#]	10	37	26
31/05/19	189	76	27	37	28
TLV	200	100	60	80	80

#-AboveStd.Value

FUGITIVE DUS MONITORING DATA

1. CHP

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

2. Raw\ilway Siding


(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : NAGPUR MONTH. MAY
 NAME OF THE PROJECT : SAONER UG

Mine water discharge (Saoner I)				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.90	24	14	<2
31/05/2019	7.70	36	26	<2
TLV	5.5 - 9.0	250	100	10
Mine water discharge (Saoner II)				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.80	32	24	<2
31/05/2019	8.00	28	14	<2
TLV	5.5 - 9.0	250	100	10

Mine water discharge (Saoner III)				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	8.10	24	12	<2
31/05/2019	8.10	32	24	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : NAGPUR MONTH. : MAY
 NAME OF THE PROJECT : SAONER UG

Name of the Location : Near Fan House (Saoner – I UG) - NSUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	05/05/2019	66.8
MAY.2019	30/05/2019	69.8
TLV		75

Name of the Location : Near Fan House (Saoner – II UG) - NSUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	05/05/2019	69.2
MAY.2019	30/05/2019	67.2
TLV		75

Name of the Location : Near Fan House (Saoner – III UG) - NSUN-3

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	05/05/2019	68.7
MAY.2019	30/05/2019	68.9
TLV		75

Name of the Location : Colony (Saoner) - NSUN-4

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	05/05/2019	38.2
MAY.2019	30/05/2019	50.2
TLV		55

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ENVIRONMENTAL MONITORING REPORT

SILEWARA UG

(NAGPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY- 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

AN ISO 9001:2015 COMPANY

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2.	AIR QUALITY MONITORING DATA	4-5
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4.	NOISE LEVEL DATA	7

INTRODUCTION

Location :

The Silewara UG project is located in the Nagpur district of Maharashtra state and is administered by Nagpur Area of Western Coalfields Limited.

Communication :

The project is approachable by an all weather Nagpur-Chhindwara State Highway from Khaparkheda Thermal Power Station. Nagpur-Chhindwara narrow gauge railway line of South-Eastern Railways passes through south of this area.

Drainage :

The drainage of the area is controlled by Kolar river to the south and Kanhan river in the north.

Climate :

The climate of the area is tropical. The temperature falls down to 7.°C in winter and rises as high as 47°C in summer. The annual rainfall is about 1050mm and it normally occurs between June and September.

Other Industries/Coal Mines :

Besides other coal mines viz. Pipla UG, Patansaongi UG, Koradi TPS and Kaparkheda TPS are the main industries which fall within 10 km radius of the Silewara UG Project.

Pollution due to the sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area.

Sampling Location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Chankapur Pump house	- NSLUA-1
2.	Mandir (Near Kanhan river)	- NSLUA-2
3.	V.T.C. – Silewara	- NSLUA-3
4.	Water filter plant	- NSLUA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- NSLUW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Fan house	- NSLUN-1
2.	Colony	- NSLUN-2

Frequency of Monitoring :


- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of "West and Gaeke method". Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate

solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : NAGPUR MONTH. : MAY
 NAME OF THE PROJECT : SILEWARA UG


Chankapur pump house/Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
08/05/19	198	81	22	27	16
28/05/19	284	114	58	37	16
TLV	200	100	60	80	80
Mandir (near Kanhan river)					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	Pm-10	PM-2.5	NOx	SOx
08/05/19	308	168	42	39	14
28/05/19	246	111	54	34	12
TLV	200	100	60	80	80
V.T.C. – Silewara					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
08/05/19	179	91	41	30	16
28/05/19	289	145	57	37	26
TLV	600	300	60	120	120
#-Above std. value					

Water filter plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
08/05/19	248	147	42	33	11
28/05/19	351	126	49	32	20
TLV	600	300	60	120	120

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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<p>Environment Laboratory CMPDI, RI IV, Nagpur</p>	<p>Test Report</p>	 <p>TC-7102</p>
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE:
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1
 TEST REQUIRED:IS-

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : NAGPUR MONTH MAY
 NAME OF THE PROJECT : SILEWARA UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	8.30	28	18	<2
20/05/2019	7.90	24	14	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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 3) ** - Value not specified in NAAQS

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : NAGPUR MONTH.: MAY
NAME OF THE PROJECT : SILEWARA UG

Name of the Location : Near Fan House - NSLUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	68.3
MAY.2019	27/05/2019	66.2
TLV		75

Name of the Location : Colony - NSLUN-2

Month	Date of Data Collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	45.9
MAY.2019	27/05/2019	41.2
TLV		55

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ENVIRONMENTAL MONITORING REPORT SINGORI OC

(NAGPUR AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014**

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4.	NOISE LEVEL DATA	7

INTRODUCTION

Location :

Singori OC mine is situated in Nagpur District of Maharashtra State and is administered by the Nagpur area of the Western Coalfields Limited.

Communication :

These projects are well connected by all weathermetalled road. These projects are about 40 kms away from Nagpur city. Nagpur - Chhindwara road is about 5 km from the mines. Saoner - Kalmeshwar road is also very near to the projects. Saoner railway station of S.E. Railway is the nearest rail head.

Drainage : The drainage is principally controlled by Kolar river.

Climate : The area has tropical climate with very hot summer. The temperature rises as high as 46°C in summer. The average annual rainfall is about 1050 mm. The monsoon period is between June to Sept.

Industry/Coal Mines :

There are a few small industries near the town. There is no major industry near to the project. The state highway and road to Kalmeshwar, which is very busy due to vehicular movement, produce lot of dust.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area. The air pollution due to working of the UG mine is insignificant.

Sampling Location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Contactor Camp	-	NSOA-1
2.	Soholi Village	-	NSOA-2
3.	Doroli Village	-	NSOA-3
4.	Hingana village	-	NSOA-4

Fugitive Dust Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Coal Stock Yard	-	NSOAF-1
2.	Weigh Bridge	-	NSOAF-2

Water Quality Monitoring location

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	NSOAW-1

Noise Level Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Contactor Camp	-	NSON-1
2.	Soholi Village	-	NSON-2

Frequency of Monitoring :


- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of "West and Gaeke method". Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate

solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A
 NAME OF CUSTOMER: WCL, NAGPUR
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)
 SPM*

DATE OF ISSUE : 10.07.19
 SAMPLE DESCRIPTION: AIR SAMPLE

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL
 NAME OF THE AREA : NAGPUR
 NAME OF THE PROJECT : SINGORI OC

YEAR : 2019
 MONTH : MAY

(24 hourly values in µg/m³)

Contactor Camp					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
10/05/19	503	210	25	36	21
27/05/19	284	114	58	37	16
TLV	600	300	60	120	120

Soholi Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
10/05/19	241 [#]	160 [#]	25	31	24
27/05/19	235 [#]	91	55	30	17
TLV	200	100	60	80	80

Doroli Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
09/05/19	319 [#]	139 [#]	13	37	16
27/05/19	171	69	21	31	13
TLV	200	100	60	80	80

Hingana Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SO _x
10/05/19	332 [#]	224 [#]	22	36	22
27/05/19	334 [#]	122 [#]	54	34	24
TLV	200	100	60	80	80

Above Std. Value

FUGITIVE DUST MONITORING DATA

1. Weigh Bridge

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

2. Coal Stock


(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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 3) * - Test parameter not under NABL scope.

<p>Environment Laboratory CMPDI, RI IV, Nagpur</p>	<p>Test Report</p>	 <p>TC - 7102</p>
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : NAGPUR MONTH MAY
 NAME OF THE PROJECT : SINGORI OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
09/05/2019	7.90	36	24	<2
26/05/2019	8.30	24	14	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : NAGPUR MONTH. : MAY
NAME OF THE PROJECT : SINGORI OC

**Name of the Location:
Contractor Camp**

Month	Date of Data collection	Noise Level in dB(A)	
		Day Time	
MAY.2019	09/05/2019	55.6	
MAY.2019	26/05/2019	55.2	
TLV		75	

**Name of the Location:
Sohali Village**

Month	Date of Data collection	Noise Level in dB(A)	
		Day Time	Night Time
MAY.2019	09/05/2019	42.7	
MAY.2019	26/05/2019	42.5	
TLV		55	

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ENVIRONMENTAL MONITORING REPORT DINESH / MAKARDHOKRA-III OC

(UMRER AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014**

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2.	AIR QUALITY MONITORING DATA	4-5
3.	EFFLUENT WATER QUALITY MONITORING DATA	6
4.	NOISE LEVEL DATA	7

INTRODUCTION

Location :

The Dinesh/ Makardhokra- III OC project is located in Nagpur district of Maharashtra State and is administered by the Umrer area of Western Coalfields Limited.

Communication :

The project is connected by road with Nagpur city. It is about 55 km south west of Nagpur and 10 km west of Umrer. The nearest railway station is Umrer on the Nagpur-Nagbhid-Chandrapur Fort (Narrow gauge) of SE railway.

Drainage :

The drainage of the area is controlled by Amb river which flows in the east of the area.

Climate :

The climate of the area is generally dry and hot. May is the hottest month and the temperature rises to 47°C. December is the coldest month with temperature falling to 7°C. Average annual rainfall in this area is around 1200 mm.

Other Industries/Coal Mines :

Umrer opencast project falls within 10 km radius of the Makardhokra OC project. There is no other major industry in the vicinity of the project area.

Pollution due to other sources :

As there is no other major industry nearby the project area, only road transport is the other source, which may contribute to the air pollution.

Sampling Location :

Ambient Air Quality Monitoring locations :

S.No.	Location Details		Location Code
1.	Manger Office/	-	UM ₃ OA-1
2.	Near Railway in motion weigh Bridge	-	UM ₃ OA-2
3.	Sirpur Village	-	UM ₃ OA-3
4.	Kanwa village	-	UM ₃ OA-4

Water Quality Monitoring location :

S.No.	Location Details		Location Code
1.	Mine Water Discharge	-	UM ₃ OW-1
2.	ETP (Workshop) - treated water sample-		UM ₃ OW-2

Noise Level Monitoring location :

S.No.	Location Details	Location Code
1.	Near Pit office	UM ₃ ON-1

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium

hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.


Kanwa village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
07/05/19	185	81	18	6	10
08/05/19	179	92	54	7	9
15/05/19	196	87	18	7	10
16/05/19	194	95	19	7	9
30/05/19	133	93	43	6	10
TLV	200	100	60	80	80

Above Std. Value

(Scientific Assistant)

DeepanshuSahu
(Authorized Signatory)

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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : UMRER MONTH MAY
 NAME OF THE PROJECT : MAKARDHOKRA-III OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	7.90	40	28	<2
23/05/2019	7.60	40	28	<2
TLV	5.5 - 9.0	250	100	10
ETP (Workshop) - Treated water sample				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	8.10	52	34	<2
23/05/2019	8.10	36	26	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : UMRER MONTH : MAY
NAME OF THE PROJECT : MAKARDHOKRA - III OC

Name of the Location : Pit Office - UM₃ON-I

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	53.6
MAY.2019	21/05/2019	53.7
TLV		75

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ENVIRONMENTAL MONITORING REPORT

GOKUL OC

(UMRER AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory

NABL Accredited vide Cert. No. TC-7102

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4.	NOISE LEVEL DATA	7

INTRODUCTION

Location :

The Gokul OC project is located in Nagpur district of Maharashtra State and is administered by the Umrer area of Western Coalfields Limited.

Communication :

The project is connected by road with Nagpur city. The nearest railway station is Umrer on the Nagpur-Nagbhid-Chandrapur Fort (Narrow gauge) of SE railway.

Drainage :

The drainage of the area is controlled by Amb river which flows in the east of the area.

Climate :

The climate of the area is generally dry and hot. May is the hottest month and the temperature rises to 47°C. December is the coldest month with temperature falling to 7°C. Average annual rainfall in this area is around 1200 mm.

Other Industries/Coal Mines :

Umrer opencast project falls within 10 km radius of the Makardhokra OC project. There is no other major industry in the vicinity of the project area.

Pollution due to other sources :

As there is no other major industry nearby the project area, only road transport is the other source, which may contribute to the air pollution.

Sampling Location :

Ambient Air Quality Monitoring locations :

S.No.	Location Details		Location Code
1.	Besur Village	-	UGOA-1
2.	Contractor Camp	-	UGOA-2
3.	Nand Village	-	UGOA-3
4.	Polgaon	-	UGOA-4

Water Quality Monitoring location :

S.No.	Location Details		Location Code
1.	Mine water discharge	-	UGOW-1
2.	ETP (Workshop) water discharge	-	UGOW-2

Noise Level Monitoring location :

S.No.	Location Details	Location Code
1.	Contractor Camp	UGON-1

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :


- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated

by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED:IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : UMRER MONTH : MAY
 NAME OF THE PROJECT : GOKUL OC

Besur Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/19	214#	183#	24	6	14
21/05/19	311#	213#	57	7	10
22/05/19	179	112#	27	6	14
30/05/19	307#	213#	50	6	11
31/05/19	244#	60	44	6	20
TLV	200	100	60	80	80
# Above Std. Valu					
Contractor Camp					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/19	475	234	54	5	16
21/05/19	362	102	43	6	17
TLV	600	300	60	120	120


Nand Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/19	118	39	14	5	14
21/05/19	338#	183#	38	7	12
22/05/19	245#	76	42	6	10
30/05/19	128	44	24	5	16
31/05/19	161	53	31	6	13
TLV	200	100	60	80	80
# Above Std. Valu					
Polgaon Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
05/05/19	127	75	28	6	14
21/05/19	179	85	29	6	11
22/05/19	184	92	35	6	10
30/05/19	95	49	26	6	14
31/05/19	109	67	29	6	14
TLV	200	100	60	80	80

Above Std. Value.

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC- 7102
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TEST REPORT NO. : RIN/TR/MAY-19/

DATE OF ISSUE: 10.07.19

NAME OF CUSTOMER: WCL, NAGPUR

SAMPLE DESCRIPTION: WATER
SAMPLE

CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19

NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY	: WCL	YEAR	2019
NAME OF THE AREA	: UMRER	MONTH	MAY
NAME OF THE PROJECT	: GOKUL OC		

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	8.20	44	30	<2
21/05/2019	8.20	68	40	<2
TLV	5.5 - 9.0	250	100	10

ETP (Workshop) water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
05/05/2019	7.90	52	34	<2
21/05/2019	7.60	44	34	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : UMRER MONTH. : MAY
NAME OF THE PROJECT : GOKUL OC

Name of the Location : Contractor Camp - UGON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	04/05/2019	54.6
MAY.2019	20/05/2019	55.8
TLV		75

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ENVIRONMENTAL MONITORING REPORT MAKARDHOKRA – II OC

(UMRER AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
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INTRODUCTION

Location :

The Makardhokra- II OC project is located in Nagpur district of Maharashtra State and is administered by the Umrer area of Western Coalfields Limited.

Communication :

The project is connected by road with Nagpur city. It is about 55 km south west of Nagpur and 10 km west of Umrer. The nearest railway station is Umrer on the Nagpur-Nagbhid-Chandrapur Fort (Narrow gauge) of SE railway.

Drainage :

The drainage of the area is controlled by Amb river which flows in the east of the area.

Climate :

The climate of the area is generally dry and hot. May is the hottest month and the temperature rises to 47°C. December is the coldest month with temperature falling to 7°C. Average annual rainfall in this area is around 1200 mm.

Other Industries/Coal Mines :

Umrer opencast project falls within 10 km radius of the Makardhokra OC project. There is no other major industry in the vicinity of the project area.

Pollution due to other sources :

As there is no other major industry nearby the project area, only road transport is the other source, which may contribute to the air pollution.

Sampling Location :

Ambient Air Quality Monitoring locations :

S.No.	Location Details		Location Code
1.	SAM office	-	UMOA-1
2.	Near Manager office	-	UMOA-2
3.	Kanwa village	-	UMOA-3
4.	Colony (Near Pump House	-	UMOA-4

Water Quality Monitoring location :

S.No.	Location Details		Location Code
1.	Mine water discharge	-	UMOW-1
2.	ETP (Workshop) - treated water sample	-	UM(ETP)OW-2

Noise Level Monitoring location :

S.No.	Location Details		Location Code
1.	Near Pit office	-	UMON-1
2.	Colony (Umrer)	-	UMON-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :


- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium (Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a

Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION : AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED:IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : UMRER MONTH : MAY
 NAME OF THE PROJECT : MAKARDHOKRA - II OC

SAM Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
08/05/19	455	190	53	7	10
23/05/19	161	102	59	6	10
TLV	600	300	60	120	120
Near Manager office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
14/05/19	183	149	31	7	9
31/05/19	99	55	35	6	14
TLV	600	300	120	120	60
Kanwa village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
07/05/19	185	81	18	6	10
08/05/19	179	92	54	7	9
15/05/19	196	87	18	7	10
16/05/19	194	95	19	7	9
30/05/19	133	93	43	6	10
TLV	200	100	60	80	80
#-above Std.Value					


Near pump house/Colony					
DATE OF SAMPLING	Parameters (24 hourly values in $\mu\text{g}/\text{m}^3$)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
07/05/19	313 [#]	94	27	6	18
08/05/19	364 [#]	133 [#]	54	7	10
15/05/19	304 [#]	124 [#]	58	6	14
16/05/19	130	91	30	6	8
23/05/19	357 [#]	165 [#]	41	6	11
TLV	200	100	60	80	80

- Above Std. value.

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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- Note: 1) This Report refers to the values related to the items tested as received.
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3) * - Test parameter not under NABL scope.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC 7102
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : UMRER MONTH MAY
 NAME OF THE PROJECT : MAKARDHOKRA-II OC

ETP (Workshop) water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	7.70	36	26	<2
23/07/2019	7.50	44	30	
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
 (Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : UMRER MONTH.: MAY
NAME OF THE PROJECT : MAKARDHOKRA - II OC

Name of the Location : Near Pit Office - UMON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	55.2
MAY.2019	31/05/2019	54.4
TLV		75

Name of the Location : Colony - UMON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	07/05/2019	43.6
MAY.2019	23/05/2019	42.6
TLV		55

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ENVIRONMENTAL MONITORING REPORT MAKARDHOKRA – I OC

(UMRER AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

AN ISO 9001:2015 COMPANY

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2.	AIR QUALITY MONITORING DATA	3-4
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4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

The Makardhokra- I OC project is located in Nagpur district of Maharashtra State and is administered by the Umrer area of Western Coalfields Limited.

Communication :

The project is connected by road with Nagpur city. It is about 55 km south west of Nagpur and 10 km west of Umrer. The nearest railway station is Umrer on the Nagpur-Nagbhid-Chandrapur Fort (Narrow gauge) of SE railway.

Drainage :

The drainage of the area is controlled by Amb river which flows in the east of the area.

Climate :

The climate of the area is generally dry and hot. May is the hottest month and the temperature rises to 47°C. December is the coldest month with temperature falling to 7°C. Average annual rainfall in this area is around 1200 mm.

Other Industries/Coal Mines :

Umrer opencast project falls within 10 km radius of the Makardhokra OC project. There is no other major industry in the vicinity of the project area.

Pollution due to other sources :

As there is no other major industry nearby the project area, only road transport is the other source, which may contribute to the air pollution.

Sampling Location :

Ambient Air Quality Monitoring locations :

S.No.	Location Details		Location Code
1.	Pit office	-	UM ₁ OA-1
2.	Sirpur village	-	UM ₁ OA-2
3.	Near Kanwa Village)	-	UM ₁ OA-3
4.	Near pump house/Colony	-	UM ₁ OA-4

Water Quality Monitoring locations :

S.No.	Location Details		Location Code
1.	Mine Water Discharge	-	UM ₁ OW-1

Noise Level Monitoring location :


S.No.	Location Details		Location Code
1.	Near Pit office	-	UM ₁ ON-1

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION : AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : UMRER MONTH. : MAY
 NAME OF THE PROJECT : **MAKARDHOKRA - I OC**

Pit office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
07/05/19	542	281	45	6	10
23/05/19	204	191	52	7	10
TLV	600	300	60	120	120
Sirpur Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	Sox
07/05/19	196	97	11	6	8
08/05/19	161	72	31	7	9
15/05/19	187	73	37	9	13
16/05/19	102	50	24	6	8
30/05/19	156	89	44	7	9
TLV	200	100	60	80	80
# - Above Std. value.					

Kanwa village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	Sox
07/05/19	185	81	18	6	10
08/05/19	179	92	54	7	9
15/05/19	196	87	18	7	10
16/05/19	194	95	19	7	9
30/05/19	133	93	43	6	10
TLV	200	100	60	80	80

- Above Std. value.


Near pump house/Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	Nox	Nox	Sox
07/05/19	313 [#]	94	27	6	18
08/05/19	364 [#]	133 [#]	54	7	10
15/05/19	304 [#]	124 [#]	58	6	14
16/05/19	130	91	30	6	8
23/05/19	357 [#]	165 [#]	41	6	11
TLV	200	100	60	80	80

- Above Std. value.

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.19
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
NAME OF THE AREA : UMRER MONTH APRIL
NAME OF THE PROJECT : MAKARDHOKRA-I OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	7.90	32	28	<2
23/05/2019	7.60	36	24	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : UMRER MONTH. : MAY
NAME OF THE PROJECT : MAKARDHOKRA - I OC

Name of the Location : Near Pit Office - UM₁ON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	52.7
MAY.2019	22/05/2019	54.4
TLV		75

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ENVIRONMENTAL MONITORING REPORT

MURPAR UG

(UMRER AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

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**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
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3.	EFFLUENT WATER QUALITY MONITORING DATA	5-7
4.	NOISE LEVEL DATA	8

INTRODUCTION

Location :

Murpar Underground Project is located in Chandrapur district of Maharashtra State and is administered by Umrer Area of Western Coalfields Limited.

Communication :

This project is situated on Warora - Wani State High Way. Chimur, a small block town is situated about 8 Kms from the project. Warora is the nearest Railway Station about 43 Kms away from the project, located in Chennai - Nagpur C. R. Line.

Drainage : Drainage of the area is controlled by Gani nalla, which flows through central part of the project area.

Climate : The climate of the area is tropical with well-defined summer from MAY to June, rainy season from July to September and winter from December to MAYuary. In summer, the temperature generally goes to a maximum of 47°C whereas in winter, it generally falls to a minimum of 7°C. The average annual rainfall is about 1200 mm.

Other Industries : There is no other major industries in the vicinity of the project area.

Pollution due to other sources : As there is no other major industry nearby the project area, only road transport is the other source, which may contribute to the air pollution.

Sampling Location :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		
1.	Colony	-	UMUA-1
2.	Morpar village	-	UMUA-2
3.	Near magazine building	-	UMUA-3
4.	Near pit house	-	UMUA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	UMUW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Fan house	-	UMUN-1
2.	Colony	-	UMUN-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM),

Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.


Heavy Metals : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.

NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION : AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED:IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

*

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : UMRER MONTH : MAY
 NAME OF THE PROJECT : MURPAR UG

Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	170	99	14	6	18
31/05/19	175	76	19	6	18
TLV	200	100	60	80	80
Morpar village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	83	29	13	7	9
31/05/19	199	89	23	7	8
TLV	200	100	60	80	80
Near magazine building					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	132	64	35	6	14
31/05/19	182	95	41	6	13
TLV	600	300	60	120	120

#-Above Std.Value.


Near pit house

DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	327	174	42	6	19
31/05/19	138	81	41	6	19
TLV	600	300	60	120	120

(Scientific Assistant)

*Deepanshu Sahu
(Authorized Signatory)*

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3) * - Test parameter not under NABL scope.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : UMRER MONTH MAY
 NAME OF THE PROJECT : MURPAR UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
06/05/2019	8.50	48	34	<2
21/05/2019	8.00	44	30	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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Test Report No. : RIN/TR/MAY'19/W -17A Date of Issue : 10.07.2019
Name of the Customer : Env.,CMPDI,Nagpur Sampling method : By the party
Customer letter Ref. No : क्षे.स.4/प.अ./पा.का./19-20
Sample Description : Water sample No. of pages : 2

SURFACE WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : UMRER MONTH : MAY
NAME OF THE PROJECT : MURPAR UG SamplingDate :11/05/2019
Name of the Location : 1. Erai river upstream w.r.t Mine Water Discharge – US
2. Erai river downstream w.r.t Mine Water Discharge – DS

Sl. No	Parameters	Test Method	Below Detection Limit	IS 2296 Inland Surface Water (1982) Class C	Analysis Result		Remarks
					US 15/05/2019	DS 15/05/2019	
1	pH Value	IS-3025/11:1983 Electrometric	0.2	6.5-8.5	8.20	8.60	
2	Colour (Hz)	APHA, 22 nd Edition Platinum Cobalt	5	300	1	2	
3	TDS -mg/l	IS-3025/16:1984 Gravimetric	25	1500	661	286	
4	Oil & Grease -mg/l	IS-3025/39:1991 Partition Gravimetric	2	0.1	<2	<2	
5	Dissolved Oxygen- mg/l	IS-3025/38:1989 Winkler Azide	0.1	4	4.7	5.1	
6	B.O.D. (3 days at 27°C-mg/l	IS 3025 (Part 44) : 1993	2	3	1.8	2.43	
7	Arsenic -mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.2	<0.005	<0.005	
8	Lead -mg/l	APHA, 22 nd Edition AAS-GTA	0.005	0.1	<0.005	<0.005	
9	Hexavalent Chromium -mg/l	APHA, 22 nd Edition 1,5-Dibenzylcarbohydrazide	0.01	0.05	<0.01	0.011	
10	Copper -mg/l	IS-3025/42:1992 AAS-Flame	0.03	1.5	<0.03	<0.03	
11	Zinc -mg/l	IS-3025/49:1994 AAS-Flame	0.01	15	<0.01	<0.01	
12	Selenium- mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.05	<0.005	<0.005	
13	Cadmium - mg/l	APHA, 22 nd Edition AAS-GTA	0.0005	0.01	0.002	0.005	
14	Fluoride- mg/l	APHA, 22 nd Edition SPADNS	0.02	1.5	0.48	0.60	

RIN/TR/MAY19/W -17A

15	Iron -mg/l	IS-3025/53:2003 AAS-Flame	0.06	50	<0.06	<0.06	
16	Nitrate Nitrogen- mg/l	APHA, 22 nd Edition UV-Spectrophotometric	0.5	50	2.2	2.5	
17	Sulphate -mg/l	APHA, 22 nd Edition Turbidity	2	400	35.5	38	
18	Chlorides- mg/l	IS-3025/32:1988, Argentometric	2	600	60	70	

(Scientific Assistant)

*Deepanshu Sahu
(Authorized Signatory)*

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : UMRER MONTH : MAY
NAME OF THE PROJECT : MURPAR UG

Name of the Location : Near Fan House - UMUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	05/05/2019	62.7
MAY.2019	31/05/2019	62.6
TLV		75

Name of the Location : Colony - UMUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	05/05/2019	42.2
MAY.2019	31/05/2019	42.4
TLV		55

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**ENVIRONMENTAL MONITORING REPORT
UMRER OC**

(UMRER AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

**Environment Laboratory
NABL Accredited vide Cert. No. TC-7102**

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014**

AN ISO 9001:2015 COMPANY

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2.	AIR QUALITY MONITORING DATA	4-5
3.	EFFLUENT WATER QUALITY MONITORING DATA	6-8
4.	NOISE LEVEL DATA	9

INTRODUCTION

Location :

Umrer opencast project falls in the Nagpur district of Maharashtra state and is administered by Umrer Area of Western Coalfields Limited.

Communication :

This area is approachable by an all weather road Nagpur - Umrer state Highway. The distance of the project is about 45 km from Nagpur city.

Drainage : The drainage of the area is controlled by Amb river.

Climate :

The climate of the area is tropical. In summer the temperature rises as high as 46°C. The average annual rainfall is 1200 mm. Monsoon period normally occurs between June and September. In summer relative humidity goes down as low as 18%.

Industry :

There is no major industry near the project. Makardhokra opencast mine has been working about 4 km from the project.

Pollution due to other source :

The state highway roads which are adjacent to the project produce lot of dust due to heavy vehicular traffic.

Sampling Locations :

Ambient Air Quality Monitoring Locations :

S.No.	<u>Details of Location</u>	<u>Code No.</u>
1.	Near pump house/Colony	- UUOA-1
2.	Near Kanwa village	- UUOA-2
3.	Near Workshop	- UUOA-3
4.	Colony (Pump house)	- UUOA-4

Fugitive Dust Monitoring Locations :

S.No.	<u>Details of Location</u>	<u>Code No.</u>
1.	Weigh Bridge	- UUOAF-1
2.	CHP	- UUOAF-2
3.	Rly Siding	- UUOAF-3

Water Quality Monitoring Locations :

S.No.	<u>Details of Location</u>	<u>Code No.</u>
1.	Mine water discharge	- UUOW-1
2.	ETP (Workshop) - treated water sample	- UU(ETP)W-2

Noise Level Monitoring Locations :

S.No.	<u>Details of Location</u>	<u>Code No.</u>
1.	CHP	- UUON-1
2.	Colony	- UUON-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :


- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size > 10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size < 10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of

Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-17 DATE OF ISSUE: 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : UMRER MONTH : MAY
 NAME OF THE PROJECT : UMRER OC

Near pump house/Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
07/05/19	313 [#]	94	27	6	18
08/05/19	364 [#]	133 [#]	54	7	10
15/05/19	304 [#]	124 [#]	58	6	14
16/05/19	130	91	30	6	8
23/05/19	357 [#]	165 [#]	41	6	11
TLV	200	100	60	80	80
Kanwa village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
07/05/19	185	81	18	6	10
08/05/19	179	92	54	7	9
15/05/19	196	87	18	7	10
16/05/19	194	95	19	7	9
30/05/19	133	93	43	6	10
TLV	200	100	60	80	80

Near Workshop					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
13/05/19	169	68	21	6	13
31/05/19	198	94	37	6	19
TLV	600	300	60	120	120
#-above Std.Value.					
Umrer Manager Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
13/05/19	389	97	32	6	14
30/05/19	210	140	53	6	10
TLV	600	300	60	120	120

#-above Std.Value

FUGITIVE DUST MONITORING DATA

1.Rly Siding

(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
16/05/19	360	216	47

2. CHP

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

3.Weigh Bridge


(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/ DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA


NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : UMRER MONTH MAY
 NAME OF THE PROJECT : UMRER OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	7.80	48	34	<2
23/05/2019	7.70	36	24	<2
TLV	5.5 - 9.0	250	100	10
ETP (Workshop) - Treated water sample				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	7.80	44	32	<2
23/05/2019	7.70	48	32	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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Test Report No. : RIN/TR/MAY'19/W -17A **Date of Issue** : 10.07.2019

Name of the Customer : Env.,CMPDI,Nagpur **Sampling method** : By the party

Customer letter Ref. No : क्षे.स.4/प.अ./पा.का./19-20

Sample Description : Water sample **No. of pages** : 2

SURFACE WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL **YEAR** : 2019
NAME OF THE AREA : UMRER **MONTH** : MAY
NAME OF THE PROJECT : UMRER OC **Sampling Date** :11/05/2019
Name of the Location : 1. Amb river upstream w.r.t Mine Water Discharge – US
2. Amb river downstream w.r.t Mine Water Discharge – DS

Sl. No	Parameters	Test Method	Below Detection Limit	IS 2296 Inland Surface Water (1982) Class C	Analysis Result		Remarks
					US 11/05/2019	DS 11/05/2019	
1	pH Value	IS-3025/11:1983 Electrometric	0.2	6.5-8.5	7.80	8.20	
2	Colour (Hz)	APHA, 22 nd Edition Platinum Cobalt	5	300	2	3	
3	TDS -mg/l	IS-3025/16:1984 Gravimetric	25	1500	820	834	
4	Oil & Grease –mg/l	IS-3025/39:1991 Partition Gravimetric	2	0.1	<2	<2	
5	Dissolved Oxygen- mg/l	IS-3025/38:1989 Winkler Azide	0.1	4	4.1	4.6	
6	B.O.D. (3 days at 27°C-mg/l	IS 3025 (Part 44) : 1993	2	3	2.4	3	
7	Arsenic -mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.2	<0.005	<0.005	
8	Lead -mg/l	APHA, 22 nd Edition AAS-GTA	0.005	0.1	0.030	0.041	
9	Hexavalent Chromium -mg/l	APHA, 22 nd Edition 1,5-Diphenylcarbohydrazide	0.01	0.05	<0.01	<0.01	
10	Copper -mg/l	IS-3025/42:1992 AAS-Flame	0.03	1.5	<0.03	<0.03	
11	Zinc -mg/l	IS-3025/49:1994 AAS-Flame	0.01	15	<0.01	<0.01	
12	Selenium- mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.05	<0.005	<0.005	
13	Cadmium - mg/l	APHA, 22 nd Edition AAS-GTA	0.0005	0.01	0.007	0.007	
14	Fluoride- mg/l	APHA, 22 nd Edition SPADNS	0.02	1.5	0.56	0.72	

RIN/TR/MAY19/W -17A

15	Iron -mg/l	IS-3025/53:2003 AAS-Flame	0.06	50	<0.06	<0.06	
16	Nitrate Nitrogen- mg/l	APHA, 22 nd Edition UV-Spectrophotometric	0.5	50	3.66	3.91	
17	Sulphate -mg/l	APHA, 22 nd Edition Turbidity	2	400	155.25	186.87	
18	Chlorides- mg/l	IS-3025/32:1988, Argentometric	2	600	196	200	

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : UMRER MONTH : MAY
NAME OF THE PROJECT : UMRER OCP

Name of the Location : CHP - UUON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	07/05/2019	68.2
MAY.2019	23/05/2019	66.2
TLV		75

Name of the Location : Colony - UUON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	07/05/2019	43.6
MAY.2019	23/05/2019	42.6
TLV		55

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ENVIRONMENTAL MONITORING REPORT

KOLGAON OC EXPN.

(WANI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014

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3.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Kolgaon Opencast Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani Area of Western Coalfields Limited.

Communication :

The project is well connected by all weather road with Wani and also approachable by fair weather road from Ghugus.

Drainage :

Drainage of the area is controlled by Wardha river in North and Penganga river in South.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, ACC Cement Factory and Sindhale Limestone mines are the major industries nearby the project area.

Pollution due to other sources :

The above mentioned industries and the busy road traffic are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Manager Office	- WKOA-1
2.	Kolgaon village	- WKOA-2
3.	Kailash Nagar township near Filter Plant	- WKOA-3
4.	SAM Office (Mugoli)	- WKOA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- WKOW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- WKON-1
2.	Colony(Mugoli)	- WKON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.


Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-39 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION : AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI MONTH. : MAY
 NAME OF THE PROJECT : KOLGAON OCP

Manager Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
13/05/19	293	130	58	20	10
25/05/19	269	155	36	21	19
TLV	600	300	60	120	120
Kolgaon Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
13/05/19	250 [#]	164 [#]	57	21	5
25/05/19	253 [#]	114 [#]	45	18	10
TLV	200	100	60	80	80
Kailashnagar Township -F.Plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
11/05/19	194	89	17	17	10
26/05/19	238 [#]	150 [#]	51	21	14
TLV	200	100	60	80	120
# - Above Std. Value					


SAM Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
13/05/19	664#	433#	90	21	9
25/05/19	163	88	49	24	21
TLV	600	300	60	120	120

- Above Std. Value

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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3) * - Test parameter not under NABL scope.
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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-39 DATE OF ISSUE : 10.07.2019
NAME OF CUSTOMER: WCL, NAGPUR SMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI MONTH. : MAY
NAME OF THE PROJECT : KOLGAON OCP

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
12/05/2019	7.80	36	40	<2
26/05/2019	8.00	32	38	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI MONTH. : MAY
NAME OF THE PROJECT : KOLGAON OC

Name of the Location : Manager's Office - WKON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
10/05/2019	12/05/2019	55.6
25/05/2019	24/05/2019	54.8
TLV		75

Name of the Location : Colony (Mugoli) - WKON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	44.6
MAY.2019	24/05/2019	43.9
TLV		55

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ENVIRONMENTAL MONITORING REPORT

MUGOLI OC EXPN.

(WANI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

AN ISO 9001:2015 COMPANY

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1.	INTRODUCTION	1-3
2.	AIR QUALITY MONITORING DATA	4-5
3.	EFFLUENT WATER QUALITY MONITORING DATA	6
4 .	NOISE LEVEL DATA	7

INTRODUCTION

Location :

Mugoli Opencast Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani Area of Western Coalfields Limited.

Communication :

The project is well connected by all weather road with Wani and also approachable by fair weather road from Ghughus.

Drainage :

Drainage of the area is controlled by Wardha river in North and Penganga river in South.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, ACC Cement Factory and Sindhale Limestone mines are the major industries nearby the project area.

Pollution due to other sources :

The above mentioned industries and the busy road traffic are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Sub-station	-	WMOA-1
2.	Kailash Nagar township (Filter Plant)	-	WMOA-2
3.	Tube well near Sakhara village	-	WMOA-3
4.	SAM Office	-	WMOA-4

Fugitive Dust Monitoring locations :

<u>S NO</u>	<u>Location Details</u>		
1.	Security Check post	-	WMOAF-1

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	WMOW-1
2.	WETP water discharge	-	WMOW-2
3.	DETP water discharge	-	WMOW-3

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	CHP	-	WMON-1
2.	Colony	-	WMON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.


Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment

Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

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TEST REPORT NO. : RIN/TR/MAY-19/A-40 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI MONTH. : MAY
 NAME OF THE PROJECT : MUGOLI OCP

SAM Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
13/05/19	664 [#]	433 [#]	90	21	9
25/05/19	163	88	49	24	21
TLV	600	300	60	120	120
Kailash nagar Township - F. Plant					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
11/05/19	194	89	17	17	10
26/05/19	238 [#]	150 [#]	51	21	14
TLV	200	100	60	80	80
Tube well Near Sakhara Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
13/05/19	496 [#]	226 [#]	55	21	10
25/05/19	199	95	44	25	18
TLV	200	100	60	80	80
# - Above std. value					

Sub – Station					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
11/05/19	479	293	57	22	9
26/05/19	458	217	47	23	19
TLV	600	300	60	120	120

- Above std. value.


FUGITIVE DUST MONITORING DATA

Security check post			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-40 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI MONTH : MAY
 NAME OF THE PROJECT : MUGOLI OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
10/05/2019	7.80	36	34	<2
25/05/2019	7.90	32	34	<2
TLV	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
10/05/2019	7.50	40	48	<2
25/05/2019	7.20	28	30	<2
TLV	5.5 - 9.0	250	100	10
S.T.P. (Domestic Effluent) - Treated Water				
Date of Sample Collection	Analysis Results			
	TSS (mg/l) IS-3025/17:1984		BOD (3 days 27°C) mg/l	
Below Detection Limit	10		2	
-	-		-	
TLV	100		30	

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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 3) * - Test parameter not und

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI MONTH. : MAY
NAME OF THE PROJECT : MUGOLI OC

Name of the Location : CHP - WMON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	65.6
MAY.2019	24/05/2019	64.8
TLV		75

Name of the Location : Colony - WMON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	10/05/2019	44.6
MAY.2019	24/05/2019	43.9
TLV		55

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ENVIRONMENTAL MONITORING REPORT
BELLORA-NAIGAON DEEP EXPN. OC
(WANI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014

AN ISO 9001:2015 COMPANY

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1.	INTRODUCTION	1-3
2.	AIR QUALITY MONITORING DATA	4-5
3.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Bellora-Naigaon Opencast Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani Area of Western Coalfields Limited.

Communication :

The approach road to the project is connected to Nagpur-Chandrapur highway roughly at a distance of 28 km from Chandrapur city by a 20 km long road branching off westward. The project is also well connected by Tadali-Ghughus branch line of Central railway.

Drainage :

Drainage of the area is controlled by Wardha River in North and Penganga River in South.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, ACC Cement Factory and Sindhale Limestone mines are the major industries nearby the project area.

Pollution due to other sources :

The above-mentioned industries and busy road traffic are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	SAM Office	- WN _G OA-1
2.	Bellora Rehabilitation	- WN _G OA-2
3.	Filter plant near VIP guest house	- WN _G OA-3
4.	Workshop (ETP) NOCM - I	- WN _G OA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Weight Bridge	- WN _G OAF-1

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- WN _G OW-1
2.	ETP discharge	- WN _G OW-2

Noise Level Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- WN _G ON-1
2.	Colony (Ghughus)	- WN _G ON-2

Frequency of Monitoring :


- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is

transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

<p>Environment Laboratory CMPDI, RI IV, Nagpur</p>	<p>Test Report</p>	 <p>TC - 7102</p>
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TEST REPORT NO. : RIN/TR/MAY-19/A DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED:IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI MONTH : MAY
 NAME OF THE PROJECT : BELLORA-NAIGAON OCP

SAM Office					
DATE OF SAMPLING	Parameters (24 hourly values in $\mu\text{g}/\text{m}^3$)				
	SPM*	PM-10	PM-2.5	NOx	SOx
08/05/19	611#	441#	41	25	18
26/05/19	328	150	56	23	21
TLV	600	300	60	120	120
Bellora Rehabililtation Village					
DATE OF SAMPLING	Parameters (24 hourly values in $\mu\text{g}/\text{m}^3$)				
	SPM*	PM-10	PM-2.5	NOx	SOx
09/05/19	401#	245#	22	23	15
26/05/19	56	23	11	22	20
TLV	200	100	60	80	80
Filter plant near VIP guest house					
DATE OF SAMPLING	Parameters (24 hourly values in $\mu\text{g}/\text{m}^3$)				
	SPM*	PM-10	PM-2.5	NOx	SOx
09/05/19	336#	248#	15	23	15
23/05/19	105	54	21	19	9
TLV	200	100	60	80	80
# - Above Std. Value					

Workshop ETP NOCM – I					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
08/05/19	633 [#]	465 [#]	34	24	18
27/05/19	340	214	55	24	20
TLV	600	300	60	120	120

- Above Std. Value

FUGITIVE DUST MONITORING DATA

WEIGHT BRIDGE.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

**Deepanshu Sahu
 (Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI MONTH : MAY
NAME OF THE PROJECT : BELLORA-NAIGAON OC

Name of the Location : CHP - WN_GON-1

Month	Date of Data Collection	Noise Level in dB(A)
		Day Time
MAY.2019	08/05/2019	65.8
MAY.2019	25/05/2019	65.4
TLV		75

Name of the Location : Colony(Ghugus) - WN_GON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	44.5
MAY.2019	22/05/2019	43.9
TLV		55

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ENVIRONMENTAL MONITORING REPORT

NILJAI OC

(WANI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014

AN ISO 9001:2015 COMPANY

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INTRODUCTION

Location :

Niljai opencast project is administered by Wani Area of Western Coalfields Limited. It falls in Wani Tahsil of Yeotmal district of Maharashtra state.

Communication :

The nearest rail head is Ghugus Rly. Station on Tadali-Ghugus branch line of Central Railway. The project is connected by road with Ghugus and Wani.

Drainage : Wardha River serves as the main drainage during rainy season.

Climate :

The climate of this area is tropical. In summer the temperature goes up as high as 46°C. to 47°C. and relative humidity goes down as low as 18%.

Industry :

Within a range of 10 km there are number of major industries viz; (1) ACC (2) Lloyed Steel (3) Coal mines viz - Naigaon OC, Ghugus OC etc.

Pollution due to other sources :

The industries like Cement Plant, Lloyed Steel, and Brick Kiln are also likely to contribute in increasing the pollution in nearby villages/colony.

Sampling Locations :

Ambient Air Quality Monitoring Locations :

S.No.	<u>Details of Location</u>		<u>Code No.</u>
1.	Niljai Colony	-	WNOA-1
2.	Taroda village	-	WNOA-2
3.	Civil Office	-	WNOA-3
4.	Workshop (ETP) of NOCM - I	-	WNOA-4

Fugitive Dust Monitoring Locations :

S.No.	<u>Details of Location</u>		<u>Code No.</u>
1.	Weigh Bridge	-	WNOAF-1
2.	CHP	-	WNOAF-2

Water Quality Monitoring Locations :

S.No.	<u>Details of Location</u>		<u>Code No.</u>
1.	Mine water discharge, Niljai-I	-	WNOW-1
2.	Mine water discharge, Niljai-II	-	WNOW-2
3.	ETP (Niljai) treated water	-	WN(ETP)W-3
4.	ETP (Niljai - S) treated water	-	WN(ETP)W-4
5.	STP (Domestic Effluent) - treated water	-	WN(STP)W-5

Noise Level Monitoring Locations (with Location Code) :

S.No.	<u>Details of Location</u>		<u>Code No.</u>
1.	CHP (Niljai OC)	-	WNON-1
2.	CHP (Niljai – S OC)	-	WNON-2
3.	Colony	-	WNON-3

Frequency of Monitoring :

- Air** : Frequency of monitoring is as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.


Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected once in each fortnight in a month with APM 451 Respirable dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended Particulate Matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM** : Ambient air laden with suspended particulates enters the Respirable dust sampler through the inlet pipe of sampler by means of a high flow rate blower. As the air passes through the cyclone, coarse, non-respirable dust (size > 10 micron) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass micro fiber filter paper. The Respirable dust (**PM-10**) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM-2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- NO_x** : Determination of Oxides of Nitrogen is based on the procedure of "**Jacobs and Hochheiser method**". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of "**West and Gaeke method**". Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphito-mercurate. The amount of

Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Water samples are collected from prefixed locations in plastic zaricanes and are transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-42 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI MONTH : MAY
 NAME OF THE PROJECT : NILJAI OCP

Niljai colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
08/05/19	279 [#]	98	24	23	19
27/05/19	101	45	22	23	16
TLV	200	100	60	80	80
Taroda Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
08/05/19	306 [#]	174 [#]	26	21	10
27/05/19	208 [#]	137 [#]	25	22	20
TLV	200	100	60	80	80
Civil office -Niljai					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
09/05/19	431	192	38	22	15
27/05/19	340	151	27	24	20
TLV	600	300	60	120	120
# - Above Std. Value.					

Workshop (ETP) of NOCM - I					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
08/05/19	633 [#]	465 [#]	34	24	18
27/05/19	340	214	55	24	20
TLV	600	300	60	120	120

- Above Std. Value.

FUGITIVE DUST MONITORING DATA


WEIGHT BRIDGE.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

CHP			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-42 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

1NAME OF THE COMPANY : WCL YEAR 2019
 NAME OF THE AREA : WANI MONTH : MAY
 NAME OF THE PROJECT : NILJAI OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	7.90	28	26	<2
26/05/2019	8.10	36	32	<2
TLV	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
07/05/2019	8.10	32	40	<2
26/05/2019	8.00	28	24	<2
TLV	5.5 - 9.0	250	100	10
S.T.P. (Domestic Effluent) - Treated Water				
Date of Sample Collection	Analysis Results			
	TSS (mg/l) IS-3025/17:1984		BOD (3 days 27°C) mg/l	
Below Detection Limit	10		2	
07/05/2019	44		9	
26/05/2019	56		14	
TLV	100		30	

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI MONTH. : MAY
NAME OF THE PROJECT : NILJAI OC

Name of the Location : CHP – Niljai OC - WNON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	07/05/2019	64.7
MAY.2019	26/05/2019	65.5
TLV		75

Name of the Location : CHP – Niljai (S) OC - WNON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	07/05/2019	63.8
MAY.2019	26/05/2019	64.4
TLV		75

Name of the Location : Colony - WNON-3

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	07/05/2019	43.5
MAY.2019	26/05/2019	43.7
TLV		55

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ENVIRONMENTAL MONITORING REPORT

PENGANGA OC

(WANI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014**

AN ISO 9001:2015 COMPANY

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4.	NOISE LEVEL DATA	8

INTRODUCTION

Location :

Penganga Opencast Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani Area of Western Coalfields Limited.

Communication :

The project is well connected by all weather road with Wani and also approachable by fair weather road from Ghugus.

Drainage :

Drainage of the area is controlled by Wardhariver and Penganga river.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, ACC Cement Factory and Sindhale Limestone mines are the major industries nearby the project area.

Pollution due to other sources :

The above mentioned industries and the busy road traffic are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
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Fugitive Dust Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
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1.	WrokShop	- WPOAF-1
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Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
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1.	Mine water discharge	- WPOW-1
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Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
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1.	Workshop	- WPON-1
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Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.


Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-43 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI MONTH : MAY
 NAME OF THE PROJECT : PENGANGA OCP

Gadegaon Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	411#	218#	53	19	13
07/05/19	313#	168#	31	22	20
11/05/19	368#	147#	44	18	9
12/05/19	354##	179#	53	18	10
24/05/19	323	123#	11	22	7
TLV	200	100	60	80	80
Manager Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	539	290	48	23	13
24/05/19	235	74	19	23	19
TLV	600	300	60	120	120
# - Above Std. Value					

Near Mine					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	223	126	57	23	12
24/05/19	302	149	51	24	14
TLV	600	300	60	120	120

Virur Village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NOx	SOx
06/05/19	247 [#]	112 [#]	47	24	15
07/05/19	269 [#]	151 [#]	22	23	19
11/05/19	222 [#]	146 [#]	52	21	12
12/05/19	287 [#]	175 [#]	48	21	13
24/05/19	264 [#]	178 [#]	27	22	8
TLV	200	100	60	80	80

- Above Std. Value

FUGITIVEDUSTMONITORING DATA

1. Workshop


(24 hourly values in µg/m³)

Dates of Sampling	Parameters		
	SPM	PM-10	PM-2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 T - 2969
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TEST REPORT NO. : RIN/TR/MAY-19/W-43 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA


NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI MONTH. : MAY
 NAME OF THE PROJECT : PENGANGAOCP

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
-	-	-	-	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC-7102
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Test Report No. : RIN/TR/MAY'19/W - **Date of Issue** : 10.07.2019
Name of the Customer : Env.,CMPDI,Nagpur **Sampling method** : By the party
Customer letter Ref. No : क्षे.स.4/प.अ./पा.का./19-20
Sample Description : Water sample **No. of pages** : 2

SURFACE WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL **YEAR** : 2019
NAME OF THE AREA : WANI **MONTH** : MAY
NAME OF THE PROJECT : PENGANGAOC **SamplingDate** :11/05/2019
Name of the Location : 1. Erai river upstream w.r.t Mine Water Discharge – US
2. Erai river downstream w.r.t Mine Water Discharge – DS

Sl. No	Parameters	Test Method	Below Detection Limit	IS 2296 Inland Surface Water (1982) Class C	Analysis Result		Remarks
					US 11/05/2019	DS 11/05/2019	
1	pH Value	IS-3025/11:1983 Electrometric	0.2	6.5-8.5	8.40	8.50	
2	Colour (Hz)	APHA, 22 nd Edition Platinum Cobalt	5	300	2	3	
3	TDS -mg/l	IS-3025/16:1984 Gravimetric	25	1500	440	452	
4	Oil & Grease –mg/l	IS-3025/39:1991 Partition Gravimetric	2	0.1	<2	<2	
5	Dissolved Oxygen- mg/l	IS-3025/38:1989 Winkler Azide	0.1	4	4.2	4.4	
6	B.O.D. (3 days at 27°C-mg/l	IS 3025 (Part 44) : 1993	2	3	3	4	
7	Arsenic -mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.2	<0.005	<0.005	
8	Lead -mg/l	APHA, 22 nd Edition AAS-GTA	0.005	0.1	0.007	0.008	
9	Hexavalent Chromium -mg/l	APHA, 22 nd Edition 1,5-Dibenzylcarbohydrazide	0.01	0.05	0.024	0.026	
10	Copper -mg/l	IS-3025/42:1992 AAS-Flame	0.03	1.5	<0.03	<0.03	
11	Zinc -mg/l	IS-3025/49:1994 AAS-Flame	0.01	15	<0.01	<0.01	
12	Selenium- mg/l*	APHA, 22 nd Edition AAS-GTA	0.005	0.05	<0.005	<0.005	
13	Cadmium - mg/l	APHA, 22 nd Edition AAS-GTA	0.0005	0.01	0.007	0.007	
14	Fluoride- mg/l	APHA, 22 nd Edition SPADNS	0.02	1.5	0.65	0.71	

RIN/TR/MAY19/W -

15	Iron -mg/l	IS-3025/53:2003 AAS-Flame	0.06	50	<0.06	<0.06	
16	Nitrate Nitrogen- mg/l	APHA, 22 nd Edition UV-Spectrophotometric	0.5	50	0.80	0.90	
17	Sulphate -mg/l	APHA, 22 nd Edition Turbidity	2	400	234	237	
18	Chlorides- mg/l	IS-3025/32:1988, Argentometric	2	600	50	56	

(Scientific Assistant)

*Deepanshu Sahu
(Authorized Signatory)*

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3) * - Test parameter not under NABL scope.
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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI MONTH : MAY
NAME OF THE PROJECT : PENGANGA OC

Name of the Location : Workshop - WPON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	05/05/2019	54.9
MAY.2019	23/05/2019	55.6
TLV		75

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ENVIRONMENTAL MONITORING REPORT

EXPN. OF GHUGUS OC
(WANI AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

AN ISO 9001:2015 COMPANY

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INTRODUCTION

Location :

Ghugus Opencast Project is located in Chandrapur district of Maharashtra State. It is administered by Wani Area of Western Coalfields Limited.

Communication :

The approach road to the project is connected to Nagpur-Chandrapur highway roughly at a distance of 28 km from Chandrapur city by a 20 km long road branching off westward. The project is also well connected by Tadali-Ghugus branch line of Central railway.

Drainage : Wardha river and its tributaries serve as the main drainage of the area.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, ACC Cement Factory and Sindhale Limestone mines are the major industries nearby the project area.

Pollution due to other sources :

The above-mentioned industries and the busy road traffic are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	ACC patch / Manager office	-	WGOA-1
2.	Ramnagar colony	-	WGOA-2
3.	SAM Office	-	WGOA-3
4.	Ghugus village	-	WGOA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	WGOW-1
2.	Workshop water discharge	-	WGOW-2

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	CHP	-	WGON-1
2.	Colony	-	WGON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of

nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.


Heavy Metals : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.

NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-38 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED:IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI MONTH. : MAY
 NAME OF THE PROJ T : GHUGUS OCP

ACC Patch Near ACC Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
07/05/19	609#	431#	55	24	18
23/05/19	251	155	38	25	18
TLV	600	300	60	120	120
Ram Nagar Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
16/05/19	77	42	7	16	11
28/05/19	422#	122#	22	21	8
TLV	200	100	60	80	80
SAM Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
07/05/19	445	255	55	25	18
23/05/19	352	193	53	22	12
TLV	600	300	60	120	120

#-Above std.value

Ghugus village (GP Office)					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
09/05/19	490#	337#	30	21	10
23/05/19	312#	181#	50	22	15
TLV	200	100	60	80	80

#-Above std.value

FUGITIVE DUST MONITORING DATA

CHP			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
12/05/19	2407	1279	212

Rly. Sidding			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
12/05/19	1181	689	196

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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- Note: 1) This Report refers to the values related to the items tested as received.
 2) This Report cannot be reproduced in part or full without written permission of the management.
 3) * - Test parameter not under NABL scope.
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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI MONTH. : MAY
NAME OF THE PROJECT : GHUGUS OC

Name of the Location : CHP - WGON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	64.9
MAY.2019	22/05/2019	64.8
TLV		75

Name of the Location : Colony - WGON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	44.5
MAY.2019	22/05/2019	43.9
TLV		55

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ENVIRONMENTAL MONITORING REPORT

GHONSA OC EXPN.

(WITHIN EXISTING LAND)

(WANI NORTH AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
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INTRODUCTION

Location :

Ghonsa Open Cast Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani North Area of Western Coalfields Limited.

Communication :

The project is located at a distance of nearly 18 km SW of Wani township. It is approachable from Wani by a metalled, motorable road (Wani – Patan road). The nearest railway station is Wani on Majri-Rajur branch line of Central Railway.

Drainage : Vidarbha river serves as the main drainage of the area during rainy season.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Pollution due to other Sources:

Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Sampling Locations :

Ambient Air Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Manager Office	- W _N GOA-1
2.	Ghonsa village	-- W _N GOA-2
3.	SAM Office/ canteen	- W _N GOA-3
4.	Guest house/ Colony	- W _N GOA-4

Water Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Mine water discharge	- W _N GOW-1

Noise Level Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	Near Manager Office	-- W _N GON-1

Frequency of Monitoring :


- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/
PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

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TEST REPORT NO. : RIN/TR/MAY-19/A-44 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH : MAY
 NAME OF THE PROJECT : GHONSA OC

Manager Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
14/05/19	366	293	43	14	5
31/05/19	235	162	22	22	8
TLV	600	300	60	120	120
Ghonsa village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
15/05/19	108	82	28	20	15
31/05/19	181	36	21	18	14
TLV	200	100	60	80	80
SAM office/ Canteen					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
14/05/19	435	186	14	34	33
31/05/19	402	122	18	21	21
TLV	600	300	60	120	120
# - Above Std. Value					
Guest house/ Colony					

DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
14/05/19	347#	144#	30	12	4
31/05/19	213#	68	18	22	8
TLV	200	100	60	80	80

- Above Std. Value

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-44 DATE OF ISSUE : 10.07.2019
NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI NORTH MONTH : MAY
NAME OF THE PROJECT : GHONSA OCP

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
13/05/2019	8.00	28	20	<2
30/052019	6.40	28	20	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2098
NAME OF THE AREA : WANI NORTH MONTH.: MAY
NAME OF THE PROJECT : GHONSA OC

Name of the Location : Manager Office - W_NGON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	56.5
MAY.2019	30/05/2019	55.8
TLV		75

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ENVIRONMENTAL MONITORING REPORT

EXPN. OF JUNAD OC

(WANI NORTH AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY- 2019

Environment Laboratory
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INTRODUCTION

Location : Junad Opencast Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani North Area of Western Coalfields Limited.

Communication :The project is located at east of Ukni / Pimpalgaon project across Wardha river. It is connected by road from Wani town. The nearest railway head is Wani.

Drainage : The drainage of the area is controlled by Wardha river.

Climate :The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :Besides other coal mines, there are a lot of lime kiln and fire bricks industries near the project area.Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Pollution due to other sources :The above-mentioned industries are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Borgaon village	-	W _N JOA-1
2.	SAM office	-	W _N JOA-2
3.	Bhalar township	-	W _N JOA-3
4.	Ukni village	-	W _N JOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Security Post	-	W _N JOAF-1

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	W _N JOW-1
2.	Workshop water discharge	-	W _N JOW-2

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Near Manager Office	-	W _N JON-1
2.	Colony (Bhalar)	-	W _N JON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.


Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

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- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
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- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-46 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH : MAY
 NAME OF THE PROJECT : JUNAD OCP

Borgaon village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
10/05/19	110	86	13	14	15
30/05/19	84	27	13	22	8
TLV	200	100	60	80	80
SAM office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
16/05/19	458	207	49	19	17
31/05/19	132	40	13	19	17
TLV	600	300	60	120	120
Bhalar township					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
10/05/19	151	89	54	20	20
TLV	200	100	60	80	80

- Above Std. Value

Ukni village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	111	63	12	19	7
30/05/19	114	29	19	22	8
TLV	200	100	60	80	80

- Above Std. Value


FUGITIVE DUST MONITORING DATA

Security Post			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM-2.5
29/05/19	562	215	24

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-46 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DAT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH : MAY
 NAME OF THE PROJECT : JUNAD OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
15/05/2019	8.20	32	22	<2
30/05/2019	8.80	68	40	<2
TLV	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
15/05/2019	7.90	36	24	<2
30/05/2019	7.80	24	18	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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 3) * - Test parameter not under NABL scope.

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI NORTH MONTH. : MAY
NAME OF THE PROJECT : JUNAD OCP

Name of the Location : Near Manager Office - W_NJON-1

Month	Date of Data Collection	Noise Level in dB(A)
		Day Time
MAY.2019	15/05/2019	53.2
MAY.2019	29/05/2019	54.8
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Colony (Bhalar)

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	09/05/2019	43.8
MAY.2019	29/052019	43.6
Permissible Limit		55

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ENVIRONMENTAL MONITORING REPORT

KOLAR PIMPRI EXTN. OC

(WANI NORTH AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

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4.	NOISE LEVEL DATA	7

INTRODUCTION

Location :

Kolar-Pimpri Opencast Project is located on the right bank of Wardha river in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani North Area of Western Coalfields Limited.

Communication :

The project is connected by a fair weathered road with Wani town via Bhalar village in North-west and Ghughus colliery via Ukni village in south. Wani is connected to state highway 84 via Warora. Ghughus railway station is 12 km away and Wani railway station is 14 km away from the project.

Drainage : Wardha river serves as the main drainage of the area.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coalmines, there are a lot of lime kiln and fire bricks industries near the project area. Transportation roads, agricultural and local activities, vehicular traffic etc also contributes to the pollution.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Pimpri village	-	W _N KOA-1
2.	Rest Shelter	-	W _N KOA-2
3.	Substation-Kolarpimpri	-	W _N KOA-3
4.	Water filter plant - Pragati nagar	-	W _N KOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Weigh Bridge	-	W _N KOAF-1
2.	CHP		W _N KOAF-2
3.	Wani Rly. Sidding		W _N KOAF-3

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	W _N KOW-1
2.	Workshop water discharge	-	W _N KOW-2

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>	<u>Location Code</u>
1.	CHP	- W _N KON-1
2.	Colony (Pragati Nagar)	- W _N KON-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.


Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (TPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower. As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter in the ambient air is computed by measuring the mass of collected particulates and the volume of air sampled.
- PM-2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline

hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Water samples are collected on fortnightly basis in plastic zaricane and are transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

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TEST REPORT NO. : RIN/TR/MAY-19/A-48 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH. : MAY
 NAME OF THE PROJECT : KOLAR-PIMPRI OCP

Pimpri village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
07/05/19	65	43	20	39	20
21/05/19	124	49	21	21	10
Permissible Limits	200	100	60	80	80
Rest shelter					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
14/05/19	326	178	51	25	31
29/05/19	285	160	55	21	27
TLV	600	300	60	120	120
Substation-Kolarpimpri					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
08/05/19	552	285	47	22	22
22/05/19	90	33	13	19	19
TLV	600	300	60	120	120
# - Above Std. Value					

Water filter plant - Pragati nagar					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
16/05/19	192	95	47	15	11
31/05/19	177	81	38	20	15
Permissible Limits	200	100	60	80	80

- Above Std. Value

FUGITIVE DUST MONITORING DATA

WEIGHT BRIDGE.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-


CHP.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

Wani Rly. Siding			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-48 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH : MAY
 NAME OF THE PROJECT : KOLAR-PIMPRI OC

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
14/05/2019	7.70	36	24	<2
28/05/2019	8.00	32	26	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10

E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
14/05/2019	7.50	24	18	<2
28/05/2019	7.60	24	20	<2
TLV as per Env.(Protection) Amendment rule 2000	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI NORTH MONTH : MAY
NAME OF THE PROJECT : KOLAR-PIMRPI OCP

Name of the Location : CHP - W_NKON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	06/05/2019	62.4
MAY.2019	20/05/2019	62.0
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Colony (Pragati Nagar) - W_NKON-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	15/05/2019	42.5
MAY.2019	31/05/2019	42.6
Permissible Limit		55

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ENVIRONMENTAL MONITORING REPORT

KUMBHARKHANI UG EXPN.

(WANI NORTH AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

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2.	AIR QUALITY MONITORING DATA	3-4
3.	NOISE LEVEL DATA	5

KUMBHARKHANI UG

Location :

Kumbarkhani UG Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani North Area of Western Coalfields Limited.

Communication :

The project is located at a distance of nearly 18 km SW of Wani township. It is approachable from Wani by a metalled, motorable road (Wani – Patan road). The nearest railway station is Wani on Majri-Rajur branch line of Central Railway.

Drainage : Vidarbha river serves as the main drainage of the area during rainy season.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Pollution due to other Sources:

Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Sampling Locations :

Ambient Air Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Ghonsa village	-	W _N KUA-1
2.	SAM office/ Canteen	-	W _N KUA-2
3.	Guest house/ Colony	-	W _N KUA-3
4.	Project Manager Office	-	W _N KUA-4

Water Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	W _N KUW-1

Noise Level Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Fan house	-	W _N KUN-1
2.	Colony	-	W _N KUN-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.


Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5

m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-45 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH. : MAY
 NAME OF THE PROJECT : KUMBARKHANI UG

Ghonsa village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
15/05/19	108	82	28	20	15
31/05/19	181	36	21	18	14
TLV	200	100	60	80	80
SAM office/ Canteen					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
14/05/19	435	186	14	34	33
31/05/19	402	122	18	21	21
TLV	600	300	60	120	120
Guest house/ Colony					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
14/05/19	347 [#]	144 [#]	30	12	4
31/05/19	213 [#]	68	18	22	8
TLV	200	100	60	80	80
# - Above Std. Value					

Project Manager Office

DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
14/05/19	302	159	42	22	17
31/05/19	338	137	17	16	12
TLV	600	300	60	120	120

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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3) * - Test parameter not under NABL scope.
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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH.: MAY
 NAME OF THE PROJECT : KUMBHARKHANI UG

Name of the Location : Near Fan House - W_NKUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	46.8
MAY.2019	30/05/2019	46.5
TLV		75

Name of the Location : Colony -W_NKUN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	13/05/2019	42.9
MAY.2019	30/05/2019	42.6
TLV		55

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ENVIRONMENTAL MONITORING REPORT

PIMPALGAON OC

(WANI NORTH AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
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3.	NOISE LEVEL DATA	6

Introduction

Location :

Pimpalgaon Opencast Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani North Area of Western Coalfields Limited.

Communication :

The project is connected by a fair weathered road with Wani town via Bhalar village in North-west and Ghughus colliery via Ukni village in south. Wani is connected to state highway 84 via Warora. Ghughus railway station is 12 km away and Wani railway station is 14 km away from the project.

Drainage :

Wardha river which flows from North to west acts as the main drainage of the area and is about 2.5 km to 3 km from Pimpalgaon.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, there exist lime kiln and fire bricks industries also located around the project area. Transportation roads, agricultural and local activities, vehicular traffic etc also contributes to the pollution.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	SAM Office	-	W _N POA-1
2.	Water Filter Plant – Pragati Nagar	-	W _N POA-2
3.	Workshop	-	W _N POA-3
4.	Borgaon Village	-	W _N POA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Weigh Bridge	-	W _N POAF-1
2.	CHP	-	W _N POAF-2

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	W _N POW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	CHP	-	W _N PON-1
2.	Colony (Pragati Nagar)	-	W _N PON-2


Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.
- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-49 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH : MAY
 NAME OF THE PROJECT : PIMPALGAON OCP

Water filter plant - Pragati nagar					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
16/05/19	192	95	47	15	11
31/05/19	177	81	38	20	15
Permissible Limits	200	100	60	80	80
SAM office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
16/05/19	256	124	25	20	16
31/05/19	73	34	20	22	17
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120
Workshop					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m³)				
	SPM*	PM-10	PM-2.5	NO_x	SO_x
16/05/19	134	62	26	25	26
30/05/19	62	22	11	22	24
TLV as per Env.(Protection) Amendment Rule 2000	600	300	60	120	120

Borgaon village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	110	86	13	14	15
30/05/19	84	27	13	22	8
Permissible Limits	200	100	60	80	80

- Above Std. Value

FUGITIVE DUST MONITORING DATA

WEIGHT BRIDGE.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
29/05/19	705	347	31

CHP.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
-	-	-	-

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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- Note: 1) This Report refers to the values related to the items tested as received.
2) This Report cannot be reproduced in part or full without written permission of the management.
3) * - Test parameter not under NABL scope.

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI NORTH MONTH : MAY
NAME OF THE PROJECT : PIMPALGAON OCP

Name of the Location : **CHP** - **W_NPON-1**

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	15/05/2019	63.5
MAY.2019	31/05/2019	63.6
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : **Colony (Pragati Nagar) - W_NPON-1**

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	15/05/2019	42.5
MAY.2019	31/05/2019	42.6
Permissible Limit		55

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ENVIRONMENTAL MONITORING REPORT

RAJUR UG/ BHANDEWADA INCLINE

(WANI NORTH AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY-2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014**

AN ISO 9001:2015 COMPANY

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2.	AIR QUALITY MONITORING DATA	3-4
3.	EFFLUENT WATER QUALITY MONITORING DATA	5
4.	NOISE LEVEL DATA	6

INTRODUCTION

Location :

Rajur Underground Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani North Area of Western Coalfields Limited.

Communication :

The project is connected by all weathered road with Wani-Yeotmal road State Highway.

Drainage :

Wardha river serves as the main drainage of the area.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, there are a lot of lime kiln and fire bricks industries near the project area. Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Hutment / Substation	-	W _N RUA-1
2.	Near Bandewada incline	-	W _N RUA-2
3.	Pit office	-	W _N RUA-3
4.	SAM Office	-	W _N RUA-4

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	W _N RUW-1

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Fan house	-	W _N RUN-1
2.	Colony	-	W _N RUN-2

Frequency of Monitoring :


- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of

nitrogen (NO_x) etc.

- SPM/ PM-10** : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- PM2.5** : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.
- Heavy Metals** : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.
- NO_x** : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.
- SO₂** : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.
- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-50 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED:IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH. : MAY
 NAME OF THE PROJECT : RAJUR UG


Hutment					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
15/05/19	195	89	49	24	28
31/05/19	136	85	35	20	24
TLV	200	100	60	80	80
Near Bandewada incline					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
15/05/19	221	111	46	24	21
31/05/19	216	73	12	20	17
TLV	600	300	60	120	120
Pit office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
15/05/19	213	171	54	50	61
31/05/19	130	56	15	22	28
TLV	600	300	60	120	120
#-Above std.value					

SAM Office					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
15/05/19	238	106	38	39	49
31/05/19	196	122	36	17	22
TLV	600	300	60	120	120

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/W-50 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY REPORT

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH : MAY
 NAME OF THE PROJECT : RAJUR UG

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS- 3025/11:1983	COD (mg/l) APHA- Closed reflux	TSS (mg/l) IS- 3025/17:1984	O & G (mg/l) IS- 3025/39:1991
Below Detection Limit	0.2	4	10	2
14/05/2019	7.90	28	20	<2
31/05/2019	8.20	36	24	<2
TLV	5.5 - 9.0	250	100	10

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI NORTH MONTH: MAY
NAME OF THE PROJECT : RAJUR UG

Name of the Location : Near Fan House - W_NRUN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	14/052019	68.5
MAY.2019	31/05/2019	68.7
Noise Level Standard as per Env. (Protection) Amendment rule 2000		75

Name of the Location : Colony - W_NRUN-2

Month	Date of Data Collection	Noise Level in dB(A)
		Day Time
MAY.2019	14/052019	43.6
MAY.2019	31/05/2019	42.9
Permissible Limit		55

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ENVIRONMENTAL MONITORING REPORT

UKNI DEEP OCP

(WANI NORTH AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102

CMPDI

**REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440014**

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2.	AIR QUALITY MONITORING DATA	4-5
3.	EFFLUENT WATER QUALITY MONITORING DATA	6-7
4.	NOISE LEVEL DATA	8

INTRODUCTION

Location : Ukni Opencast Project is located in Wani Tahsil of Yeotmal district of Maharashtra State. It is administered by Wani North Area of Western Coalfields Limited.

Communication :

The project is connected by fair weathered road with Wani town in the North-west and Ghughus Colliery in the South. The Ghughus and Wani railway stations are located about 10 km away on the East bank and West bank respectively. Wani is connected to New Majri railway station (on Delhi-Madras line) by a rail bridge across the Wardha river.

Drainage : Wardha river serves as the main drainage of the area during rainy season.

Climate : The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coalmines, there are a lot of lime kiln and fire bricks industries near the project area. Transportation roads, agricultural and local activities ,vehicular traffic etc also contributes to the pollution.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Bhalar township	-	W _N UOA-1
2.	Ukni village	-	W _N UOA-2
3.	Workshop premises	-	W _N UOA-3
4.	Pimpri Village	-	W _N UOA-4

Fugitive Dust Monitoring Location:

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Weigh Bridge	-	W _N UOAF-1
2.	CHP		W _N UOAF-2

Water Quality Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Mine water discharge	-	W _N UOW-1
2.	Workshop (ETP) water discharge	-	W _N UOW-2
3.	DETP water discharge	-	W _N UOW-3

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	CHP	-	W _N UON-1
2.	Bhalar Colony	-	W _N UON-2

Frequency of Monitoring :

Air : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.

Water : Water quality is monitored on fortnightly basis.

Noise : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

Air : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM), Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

Heavy Metals : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.

NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

- Water** : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.
- Noise** : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-47 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NOx (06:2006), SO2 (02:2001)], SPM*, PM-2.5 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH : MAY
 NAME OF THE PROJECT : UKNI OCP

Bhalar township					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	151	89	54	20	20
TLV	200	100	60	80	80
Ukni village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	111	63	12	19	7
30/05/19	114	29	19	22	8
TLV	200	100	60	80	80
Workshop premises					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
10/05/19	284	111	59	38	34
30/05/19	300	199	14	23	21
TLV	600	300	60	120	120
# - Above Std. Valu					

Pimpri village					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
07/05/19	65	43	20	39	20
21/05/19	124	49	21	21	10
TLV	200	100	60	80	80

- Above Std. Value

FUGITIVE DUST MONITORING DATA


WEIGHT BRIDGE.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
29/05/19	372	178	53

CHP.			
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)		
	SPM*	PM-10	PM2.5
29/05/19	1156	627	59

(Scientific Assistant)

**Deepanshu Sahu
(Authorized Signatory)**

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Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	
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TEST REPORT NO. : RIN/TR/MAY-19/W-47 DATE OF ISSUE : 10.07.2019
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: WATER SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 1

EFFLUENT WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH : MAY
 NAME OF THE PROJECT : UKNI OCP

Mine water discharge				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
09/05/2019	7.10	32	24	<2
28/05/2019	7.70	24	18	<2
TLV	5.5 - 9.0	250	100	10
E.T.P.(Workshop)Treated Water				
Date of Sample Collection	Analysis Results			
	pH IS-3025/11:1983	COD (mg/l) APHA-Closed reflux	TSS (mg/l) IS-3025/17:1984	O & G (mg/l) IS-3025/39:1991
Below Detection Limit	0.2	4	10	2
09/05/2019	7.60	28	20	<2
28/05/2019	7.80	28	22	<2
TLV	5.5 - 9.0	250	100	10

S.T.P. (Domestic Effluent) - Treated Water

Date of Sample Collection	Analysis Results	
	TSS (mg/l) IS-3025/17:1984	BOD (3 days 27°C) mg/l
Below Detection Limit	10	2
09/05/2019	38	10
28/05/2019	44	12
TLV	100	30

(Scientific Assistant)

Deepanshu Sahu
(Authorized Signatory)

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3) * - Test parameter not under NABL scope.

NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI NORTH MONTH: MAY
NAME OF THE PROJECT : UKNI OCP

Name of the Location : CHP W_NUON-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	09/05/2019	65.7
MAY.2019	29/052019	64.9
TLV		75

Name of the Location : Colony (Bhalar)

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	09/05/2019	43.8
MAY.2019	29/052019	43.6
TLV		55

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ENVIRONMENTAL MONITORING REPORT

WANI RAILWAY SIDING

(WANI NORTH AREA)

WESTERN COALFIELDS LTD.

(JOB No. 8000002)



MAY - 2019

Environment Laboratory
NABL Accredited vide Cert. No. TC-7102
CMPDI
REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

AN ISO 9001:2015 COMPANY

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1.	INTRODUCTION	1-2
2.	AIR QUALITY MONITORING DATA	3-4
3.	NOISE LEVEL DATA	5

Introduction

Location :

Wani Railway Siding is located in Wani Tahsil of Yavatmal district of Maharashtra State. It is administered by Wani North Area of Western Coalfields Limited.

Communication :

The project is connected by road with Wani town via SH 233 in North-east and Ghughus colliery via Ukni village in south-east. Wani railway siding is connected via MSH 6 to Ghughus railway station which is 24 km away from the project.

Drainage :

Wardha river which flows from North to west acts as the main drainage of the area and is about 7.5 km to 8 km from Wani Railway Siding.

Climate :

The climate of this area is tropical with maximum and minimum temperature 48°C in summer and 10°C in winter respectively. The average annual rainfall is about 1200 mm.

Industry :

Besides other coal mines, there exist market place which is also located around the project area. Transportation roads, agricultural and local activities, vehicular traffic etc also contributes to the pollution.

Pollution due to other sources :

The above-mentioned industries are also expected to contribute in increasing the pollution load of the area.

Sampling Locations :

Ambient Air Quality Monitoring locations :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Farm House Nr. MSH6 Highway	-	W _N RSA-1
2.	Shethsri Bazar	-	W _N RSA-2
3.	Residential House Vittalwadi	-	W _N RSA-3

Noise Level Monitoring location :

<u>S.No.</u>	<u>Location Details</u>		<u>Location Code</u>
1.	Coal Stock yard	-	W _N RSN-1
2.	Nr. In charge Office	-	W _N RSN-2

Frequency of Monitoring :

- Air** : Frequency of monitoring is fortnightly as per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000.
- Water** : Water quality is monitored on fortnightly basis.
- Noise** : Noise level is monitored on fortnightly basis.

Methodology of Sampling and Analysis :

- Air** : 24 hourly air samples are collected with Respirable Dust Sampler at selected locations to monitor ambient air quality w.r.t. Suspended particulate matter (SPM),

Respirable Particulate Matter (PM-10), Sulphur di-oxide (SO₂) and Oxides of nitrogen (NO_x) etc.

SPM/ PM-10 : Ambient air laden with suspended particulates enters the Respirable Dust Sampler through the inlet pipe of sampler by means of a high flow rate blower (1.1 to 1.5 m³/min.). As the air passes through the cyclone, coarse, non-respirable dust (size >10 μ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particles fall through the cyclone's conical hopper and collect in the sampling bottle placed at bottom. The fine dust forming the respirable fraction (size <10 μ) of the Total Suspended Particulates passes through the cyclone and is carried by the air stream to the Glass Micro Fiber Filter Paper. The Respirable dust (PM-10) is retained by the filter and the carrier air exhausted from the system through the blower. The mass concentration (μg/m³) of Suspended Particulate Matter (non-respirable dust and respirable dust) and Respirable Particulate Matter (PM-10) in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.

PM2.5 : Ambient air enters the Fine dust sampler through an omni-directional air inlet designed to provide a clear aerodynamic cut point for particles greater than 10 microns. Particles in the air stream finer than 10 microns proceed to a second impactor that has an aerodynamic cut point at 2.5 microns. The air sample and fine particulates exiting from the PM 2.5 impactor are passed through a 47 mm diameter Teflon filter membrane that retains the PM-2.5. The mass concentrations (μg/m³) of PM-2.5 in the ambient air are computed by measuring the mass of collected particulates and the volume of air sampled.


Heavy Metals : Heavy Metals in Air Samples like Arsenic (As), Lead (Pb), Nickel (Ni), Chromium(Cr) and Cadmium (Cd) are analysed twice a year as per CPCB's guidelines after digestion of samples in microwave digester, with the help of Atomic Absorption Spectrophotometer (AAS) with Hydride generation system and Graphite furnace.

NO_x : Determination of oxides of Nitrogen is based on the procedure of "Jacobs and Hochheiser method". In this method the air sample is collected 24 hourly in the field and analysed in the laboratory using spectronic 20 D+ Spectrophotometer. Nitrogen oxides as Nitrogen di-oxide are collected by bubbling air through a Sodium hydroxide solution to form a stable solution of Sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically (with the help of Spectrophotometer, measuring absorbance at 540 nm) by reacting the exposed absorbing reagent with Phosphoric acid, Sulphanilamide and N(1-naphthyl) ethylenediamine dihydrochloride. The interference of Sulphur di-oxide is eliminated by converting it to Sulphuric acid with Hydrogen peroxide before analysis.

SO₂ : Determination of SO₂ is based on the procedure of West and Gaeke method. Sulphur di-oxide from the air stream is absorbed in a Sodium tetrachloromercurate solution to form a stable solution of Dichlorosulphitomercurate. The amount of Sulphur dioxide is then estimated by the colour produced when P-Rosaniline hydrochloride is added to the solution. The colour is estimated by a reading of absorbance at 560 nm in the Spectrophotometer.

Water : Mine water discharge is collected on fortnightly basis in plastic zaricane and is transported to the laboratory for analysis. As per the Env. (Protection) Amendment Rules published vide Gazette dt. 25.9.2000, water samples are analysed fortnightly for the parameters - pH, TSS, Oil & Grease and COD and once in a year for all parameters as per Schedule VI, Env. Protection rule.

Noise : Noise level data are recorded fortnightly.

Environment Laboratory CMPDI, RI IV, Nagpur	Test Report	 TC - 7102
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TEST REPORT NO. : RIN/TR/MAY-19/A-51 DATE OF ISSUE : 10.07.19
 NAME OF CUSTOMER: WCL, NAGPUR SAMPLE DESCRIPTION: AIR SAMPLE
 CUSTOMER LETTER REF. NO. : WCL/HQ/ENV/17-K/520-522 DATED-18.04.19
 NO. OF PAGES: 2
 TEST REQUIRED: IS-5182 [PM-10(04:1999), NO_x (06:2006), SO₂ (02:2001)], SPM*, PM-2.5
 (USEPA METHOD)

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2019
 NAME OF THE AREA : WANI NORTH MONTH : MAY
 NAME OF THE PROJECT : WANI RAILWAY SIDING OC

Farm House Nr. MSH6 Highway					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
07/05/19	197	58	27	18	19
08/05/19	153	48	24	30	31
14/05/19	155	44	21	8	5
15/05/19	184	62	35	24	23
21/05/19	161	42	11	18	19
22/05/19	62	28	14	22	24
29/05/19	66	57	18	6	4
30/05/19	100	34	13	21	21
TLV	600	300	60	120	120
Shethsri Bazar					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m ³)				
	SPM*	PM-10	PM-2.5	NO _x	SO _x
07/05/19	304 [#]	139 [#]	24	16	16
08/05/19	389 [#]	152 [#]	30	25	28
14/05/19	231 [#]	96	32	25	26
15/05/19	209 [#]	89	25	24	26
21/05/19	160	93	57	20	20
22/05/19	236 [#]	113 [#]	56	22	25
29/05/19	218 [#]	123 [#]	39	22	24
30/05/19	271 [#]	175 [#]	23	21	23
TLV	200	100	60	80	80

#-Above Std.Value					
Residential House Vittalwadi					
DATE OF SAMPLING	Parameters (24 hourly values in µg/m3)				
	SPM*	PM-10	PM-2.5	NOx	SOx
07/05/19	83	26	11	17	6
08/05/19	87	33	15	17	10
14/05/19	173	77	35	14	14
15/05/19	68	37	14	21	25
21/05/19	96	79	17	28	10
22/05/19	300#	178#	17	21	12
29/05/19	187	68	26	20	20
30/05/19	194	47	28	19	22
TLV	200	100	60	80	80

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NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2019
NAME OF THE AREA : WANI NORTH MONTH : MAY
NAME OF THE PROJECT : WANI RLY. SIDING OC

Name of the Location : Coal Stock Yard - W_NRSN-1

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	14/05/19	45.7
MAY.2019	30/05/19	52.6
TLV		75

Name of the Location : In charge Office - W_NRSN-2

Month	Date of Data collection	Noise Level in dB(A)
		Day Time
MAY.2019	14/05/19	43.5
MAY.2019	30/05/19	46.4
TLV		55