



# Environmental Monitoring Report

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Project Number: 45224-003  
July 2017  
Part B: Annexures

Period: October 2016 – March 2017

## IND: Rajasthan Renewable Energy Transmission Investment Program - Tranche 1

Subprojects: 400 kv D/C LILO of Jodhpur – Merta Transmission Line to Bhadla (ICB-6)

Submitted by  
Rajasthan Rajya Vidyut Prasaran Nigam Limited, Jaipur

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**Asian Development Bank**



# Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036  
 Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)  
 Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275  
 ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved

## Test Certificate

Sample Number:	VEL/TPL/N/08	Report No.:	VEL/N/1612/14008
Name & Address of Client :	M/s Tata Projects Limited	Format No.:	5.10 F-01
	Construction of 400 kV /DC Quad ACSR Moose	Party Reference	NIL
	Bhadla- Jodhapur ICB 6 Transmission Line-	No.:	
	RVPNL Project (200135)	Reporting Date:	17/12/2016
Sample Description :	AMBIENT NOISE LEVEL MONITORING	Receipt Date:	14/12/2016

### General Information:-

Client Representative	: Mr.Prateek Singh
Sample collected by	: Mr. Tarun Singh
Sampling Location	: JajiwalGehlotan
Latitude	: ---
Longitude	: ---
Instrument Used	: Sound Level Meter
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 13-14/12/2016
Surrounding Activity	: Human, Vehicular and Other Activities
Scope of Monitoring	: Internal Use
Control measure if Any	: --
Sampling & Analysis Protocol	: CPCB Guidelines & IS-9989
Sampling Duration	: 24 Hrs
Parameter Required	: As per work order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L <sub>eq</sub>	CPCB Guidelines/ IS 9989	47.78	41.80	dB(A)
<b>CPCB Noise Standards</b>					
2.	Industrial Area		75	70	dB(A)
3.	Commercial Area		65	55	
4.	Residential Area		55	45	
5.	Sensitive Area		50	40	

**Note:** - On the basis of Monitoring carried out, Noise levels are found well within tolerance level as described for Residential Area

*[Signature]*







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**(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)**

## Test Certificate

Sample Number:  
 Issued To:

**VEL/TPL /W/001**  
**M/s Tata Projects Limited**  
 Construction of 400 kV /DC Quad ACSR Moose  
 Bhadla- Jodhapur ICB 6  
 Transmission Line-RVPL Project (200135)

Report No.:  
 Format No.:  
 Party Reference  
 No.:

**VEL/W/1612/14001**  
**5.10 F-01**  
**NIL**

Reporting Date: **17/12/2016**  
 Receipt Date: **14/12/2016**  
 Sampling Date: **13/12/2016**  
 Sampling Type: **Grab**  
 Sampling Quantity: **2.0 Ltr**  
 Parameter Required: **As per Work Order**

Sample Description:  
 Sampling Location:  
 Sample Collected by:  
 (Name & Designation)  
 Client Representative:  
 Sampling & Analysis  
 Protocol:

**Ground Water (Tank water supply by Bore Well)**  
**NEAR BHADLA VILLAGE**  
**Mr. Tarun Singh**  
**(Field Analyst)**  
**Mr. Prateek Singh**  
**IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012**

Sampling & Analysis Protocol:

S. No.	Parameter	Result	Unit	Limits of IS:10500 -2012		Test-Method
				Desirable limit (Max.)	Permissible limit in the Absence of Alternate Source (Max.)	
Physical Parameters						
1.	Color, Hazen Units	< 1	--	5	25	IS: 3025 Part 4 - 1983
2.	Odour	Unobjectionable	Hazen	Unobjectionable	-	IS: 3025 Part 5 - 1983
3.	Taste	Agreeable	---	Agreeable	-	IS: 3025 Part 7,8 -1984
4.	Turbidity, NTU	< 1	NTU	5	10	IS: 3025 Part 10 - 1984
5.	pH	7.46	--	6.5 – 8.5	-	IS: 3025 Part 11 - 1984
General Parameters						
6.	Total Hardness as CaCO3	576.00	mg/l	300	600	IS: 3025 Part 21 - 1983
7.	Iron as Fe	0.13	mg/l	0.3	1.0	IS: 3025 Part 53 - 2003
8.	Chloride as Cl	675.90	mg/l	250	1000	IS: 3025 Part 32 - 1983
9.	Residual Free Chlorine	< 0.1	mg/l	0.2	-	IS: 3025 Part 26 - 1986
10.	Dissolved Solids	1867.0	mg/l	500	2000	IS: 3025 Part 16 - 1984
11.	Calcium as Ca	123.89	mg/l	75	200	IS: 3025 Part 40 - 1991
12.	Magnesium as Mg	64.85	mg/l	30	100	IS: 3025 Part 46 - 1994
13.	Copper as Cu	< 0.02	mg/l	0.05	1.5	IS: 3025 Part 42 - 1992
14.	Manganese as Mn	< 0.10	mg/l	0.1	0.3	IS: 3025 Part 59 - 2006
15.	Sulphate as SO4	146.90	mg/l	200	400	IS: 3025 Part 24 - 1986
16.	Nitrate as NO3	8.67	mg/l	45	No relaxation	IS: 3025 Part 34 - 1988
17.	Fluoride as F	1.45	mg/l	1.0	1.5	IS: 3025 Part 60 - 2008

**NOTE:** a) The results listed refer only to the tested samples & applicable parameters  
 b) The liability of our lab will be restricted to the invoice amount only







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Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

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## Test Certificate

18.	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	< 0.001	mg/l	0.001	0.002	IS: 3025 Part 43 - 1991
19.	Mercury as Hg	< 0.001	mg/l	0.001	No relaxation	IS: 3025 Part 48 - 1994
20.	Cadmium as Cd	< 0.005	mg/l	0.01	No relaxation	IS: 3025 Part 41 - 1992
21.	Selenium as Se	< 0.001	mg/l	0.01	No relaxation	IS: 3025 Part 56 - 2003
22.	Arsenic as As	< 0.01	mg/l	0.05	No relaxation	IS: 3025 Part 37 - 1998
23.	Cyanide as CN	< 0.02	mg/l	0.05	No relaxation	IS: 3025 Part 27 - 1986
24.	Lead as Pb	< 0.01	mg/l	0.05	No relaxation	IS: 3025 Part 47 - 1994
25.	Zinc as Zn	< 0.20	mg/l	5	15	IS: 3025 Part 49 - 1994
26.	Anionic Detergents as MBAS	< 0.1	mg/l	0.2	1.0	APHA 5540 C
27.	Chromium as Cr+6	< 0.02	mg/l	0.05	No relaxation	IS: 3025 Part 52 - 2003
28.	Mineral Oil	< 0.01	mg/l	0.01	0.03	IS: 3025 Part 39 - 1991
29.	Alkalinity	415.80	mg/l	200	600	IS: 3025 Part 23 - 1986
30.	Aluminum as Al	< 0.02	mg/l	0.03	0.2	IS: 3025 Part 55 - 2003
31.	Boron as B	< 0.50	mg/l	1	5	IS: 3025 Part 57 - 2005
32.	Coliform Organisms	5	CFU	10	10	IS: 1622 - 1981
33.	E. Coli	Absent	-	Absent	Absent	IS: 1622 - 1981

Note: - On the basis of Analysis report, the water is suitable for drinking purpose as per IS: 10500-2012







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**(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)**

## Test Certificate

Sample Number:  
 Issued To:

**VEL/TPL /W/002**  
**M/s Tata Projects Limited**  
 Construction of 400 kV /DC Quad ACSR Moose  
 Bhadla- Jodhapur ICB 6  
 Transmission Line-RVPNL Project (200135)

Report No.: **VEL/W/1612/14002**  
 Format No.: **5.10 F-01**  
 Party Reference: **NIL**  
 No.:  
 Reporting Date: **17/12/2016**  
 Receipt Date: **14/12/2016**  
 Sampling Date: **13/12/2016**  
 Sampling Type: **Grab**  
 Sampling: **2.0 Ltr**  
 Quantity:  
 Parameter: **As per Work Order**  
 Required:

Sample Description:  
 Sampling Location:  
 Sample Collected by:  
 (Name & Designation)

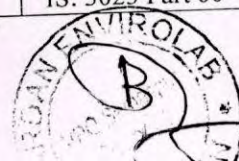
**Kannasar Canal water Supply Tank**  
**NEAR NOORE KI BURJ VILLAGE**  
**Mr. Tarun Singh**  
**(Field Analyst)**

Count Representative: **Mr. Prateek Singh**  
 Sampling & Analysis Protocol: **IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012**

Sampling & Analysis Protocol: IS-10500-2012, APHA 22 Edition 2012

S. No.	Parameter	Result	Unit	Limits of IS:10500 -2012		Test-Method
				Desirable limit (Max.)	Permissible limit in the Absence of Alternate Source (Max.)	
Physical Parameters						
1.	Color, Hazen Units	< 1	--	5	25	IS: 3025 Part 4 - 1983
2.	Odour	Unobjectionable	Hazen	Unobjectionable	-	IS: 3025 Part 5 - 1983
3.	Taste	Agreeable	---	Agreeable	-	IS: 3025 Part 7,8 -1984
4.	Turbidity, NTU	< 1	NTU	5	10	IS: 3025 Part 10 - 1984
	pH	7.34	--	6.5 – 8.5	-	IS: 3025 Part 11 - 1984
General Parameters						
6.	Total Hardness as CaCO <sub>3</sub>	112.89	mg/l	300	600	IS: 3025 Part 21 - 1983
7.	Iron as Fe	0.10	mg/l	0.3	1.0	IS: 3025 Part 53 - 2003
8.	Chloride as Cl	48.80	mg/l	250	1000	IS: 3025 Part 32 - 1988
9.	Residual Free Chlorine	< 0.1	mg/l	0.2	-	IS: 3025 Part 26 - 1986
10.	Dissolved Solids	247.0	mg/l	500	2000	IS: 3025 Part 16 - 1984
11.	Calcium as Ca	25.76	mg/l	75	200	IS: 3025 Part 40 - 1991
12.	Magnesium as Mg	11.81	mg/l	30	100	IS: 3025 Part 46 - 1994
13.	Copper as Cu	< 0.02	mg/l	0.05	1.5	IS: 3025 Part 42 - 1992
14.	Manganese as Mn	< 0.10	mg/l	0.1	0.3	IS: 3025 Part 59 - 2006
15.	Sulphate as SO <sub>4</sub>	18.34	mg/l	200	400	IS: 3025 Part 24 - 1986
16.	Nitrate as NO <sub>3</sub>	7.67	mg/l	45	No relaxation	IS: 3025 Part 34 - 1988
17.	Fluoride as F	0.98	mg/l	1.0	1.5	IS: 3025 Part 60 - 2008

**NOTE:** a) The results listed refer only to the tested samples & applicable parameters  
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Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

18.	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	< 0.001	mg/l	0.001	0.002	IS: 3025 Part 43 - 1991
19.	Mercury as Hg	< 0.001	mg/l	0.001	No relaxation	IS: 3025 Part 48 - 1994
20.	Cadmium as Cd	< 0.005	mg/l	0.01	No relaxation	IS: 3025 Part 41 - 1992
21.	Selenium as Se	< 0.001	mg/l	0.01	No relaxation	IS: 3025 Part 56 - 2003
22.	Arsenic as As	< 0.01	mg/l	0.05	No relaxation	IS: 3025 Part 37 - 1998
23.	Cyanide as CN	< 0.02	mg/l	0.05	No relaxation	IS: 3025 Part 27 - 1986
24.	Lead as Pb	< 0.01	mg/l	0.05	No relaxation	IS: 3025 Part 47 - 1994
25.	Zinc as Zn	< 0.20	mg/l	5	15	IS: 3025 Part 49 - 1994
26.	Anionic Detergents as MBAS	< 0.1	mg/l	0.2	1.0	APHA 5540 C
27.	Chromium as Cr+6	< 0.02	mg/l	0.05	No relaxation	IS: 3025 Part 52 - 2003
28.	Mineral Oil	< 0.01	mg/l	0.01	0.03	IS: 3025 Part 39 - 1991
29.	Alkalinity	176.80	mg/l	200	600	IS: 3025 Part 23 - 1986
30.	Aluminum as Al	< 0.02	mg/l	0.03	0.2	IS: 3025 Part 55 - 2003
31.	Boron as B	< 0.50	mg/l	1	5	IS: 3025 Part 57 - 2005
32.	Coliform Organisms	6	CFU	10	10	IS: 1622 - 1981
33.	E. Coli	Absent	-	Absent	Absent	IS: 1622 - 1981

Note: - On the basis of Analysis report, the water is suitable for drinking purpose as per IS: 10500-2012

*Signature*







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{ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved}

## Test Certificate

Sample Number:  
Issued To:

VEL/TPL /W/003  
M/s Tata Projects Limited  
Construction of 400 kV /DC Quad ACSR Moose  
Bhadla- Jodhapur ICB 6  
Transmission Line-RVPL Project (200135)

Report No.:  
Format No.:  
Party Reference No.:  
Reporting Date:  
Receipt Date:  
Sampling Date:

VEL/W/1612/14003  
5.10 F-01  
NIL  
17/12/2016  
14/12/2016  
13/12/2016

Sample Description:

Ground Water (Tank Water Supply by Govt.  
Bore well)

Sampling Location:

NEAR AMLA VILLAGE

Sample Collected by:

Mr. Tarun Singh

(Name & Designation)

(Field Analyst)

Client Representative:

Mr. Prateek Singh

Sampling & Analysis

IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012

Protocol:

Sampling Type:  
Sampling Quantity:  
Parameter Required:

Grab  
2.0 Ltr  
As per Work Order

Sampling & Analysis Protocol:						
S. No.	Parameter	Result	Unit	Limits of IS:10500 -2012		Test-Method
				Desirable limit (Max.)	Permissible limit in the Absence of Alternate Source (Max.)	
Physical Parameters						
1.	Color, Hazen Units	< 1	--	5	25	IS: 3025 Part 4 - 1983
2.	Odour	Unobjectionable	Hazen	Unobjectionable	-	IS: 3025 Part 5 - 1983
3.	Taste	Agreeable	---	Agreeable	-	IS: 3025 Part 7,8 -1984
4.	Turbidity, NTU	< 1	NTU	5	10	IS: 3025 Part 10 - 1984
5.	pH	7.45	--	6.5 – 8.5	-	IS: 3025 Part 11 - 1984
General Parameters						
6.	Total Hardness as CaCO3	365.78	mg/l	300	600	IS: 3025 Part 21 - 1983
7.	Iron as Fe	0.17	mg/l	0.3	1.0	IS: 3025 Part 53 - 2003
8.	Chloride as Cl	167.23	mg/l	250	1000	IS: 3025 Part 32 - 1988
9.	Residual Free Chlorine	< 0.1	mg/l	0.2	-	IS: 3025 Part 26 - 1986
10.	Dissolved Solids	924.0	mg/l	500	2000	IS: 3025 Part 16 - 1984
11.	Calcium as Ca	81.78	mg/l	75	200	IS: 3025 Part 40 - 1991
12.	Magnesium as Mg	39.30	mg/l	30	100	IS: 3025 Part 46 - 1994
13.	Copper as Cu	< 0.02	mg/l	0.05	1.5	IS: 3025 Part 42 - 1992
14.	Manganese as Mn	< 0.10	mg/l	0.1	0.3	IS: 3025 Part 59 - 2006
15.	Sulphate as SO4	97.56	mg/l	200	400	IS: 3025 Part 24 - 1986
16.	Nitrate as NO3	23.50	mg/l	45	No relaxation	IS: 3025 Part 34 - 1988
17.	Fluoride as F	1.32	mg/l	1.0	1.5	IS: 3025 Part 60 - 2008
18.	Phenolic Compounds as	< 0.001	mg/l	0.001	0.002	IS: 3025 Part 43 - 1991

NOTE: a) The results listed refer only to the tested samples & applicable parameters  
b) The results will be restricted to the invoice amount only







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Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

	C6H5OH					
19.	Mercury as Hg	< 0.001	mg/l	0.001	No relaxation	IS: 3025 Part 48 - 1994
20.	Cadmium as Cd	< 0.005	mg/l	0.01	No relaxation	IS: 3025 Part 41 - 1992
21.	Selenium as Se	< 0.001	mg/l	0.01	No relaxation	IS: 3025 Part 56 - 2003
22.	Arsenic as As	< 0.01	mg/l	0.05	No relaxation	IS: 3025 Part 37 - 1998
23.	Cyanide as CN	< 0.02	mg/l	0.05	No relaxation	IS: 3025 Part 27 - 1986
24.	Lead as Pb	< 0.01	mg/l	0.05	No relaxation	IS: 3025 Part 47 - 1994
25.	Zinc as Zn	< 0.20	mg/l	5	15	IS: 3025 Part 49 - 1994
26.	Anionic Detergents as MBAS	< 0.1	mg/l	0.2	1.0	APHA 5540 C
	Chromium as Cr+6	< 0.02	mg/l	0.05	No relaxation	IS: 3025 Part 52 - 2003
	Mineral Oil	< 0.01	mg/l	0.01	0.03	IS: 3025 Part 39 - 1991
28.	Alkalinity	323.20	mg/l	200	600	IS: 3025 Part 23 - 1986
29.	Aluminum as Al	< 0.02	mg/l	0.03	0.2	IS: 3025 Part 55 - 2003
30.	Boron as B	< 0.50	mg/l	1	5	IS: 3025 Part 57 - 2005
31.	Coliform Organisms	9	CFU	10	10	IS: 1622 - 1981
32.	E. Coli	Absent	-	Absent	Absent	IS: 1622 - 1981
33.						

Note: - On the basis of Analysis report, the water is suitable for drinking purpose as per IS: 10500-2012



NOTE: a) The results listed refer only to the tested samples & applicable parameters  
b) The results will be restricted to the invoice amount only





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{ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved}

## Test Certificate

Sample Number:  
Issued To:

VEL/TPL /W/004  
M/s Tata Projects Limited  
Construction of 400 kV /DC Quad ACSR Moose  
Bhadla- Jodhapur ICB 6  
Transmission Line-RVPL Project (200135)

Report No.:  
Format No.:  
Party Reference No.:  
Reporting Date:  
Receipt Date:  
Sampling Date:  
Sampling Type:  
Sampling Quantity:  
Parameter Required:

VEL/W/1612/14004  
5.10 F-01  
NIL  
17/12/2016  
14/12/2016  
13/12/2016  
Grab  
2.0 Ltr  
As per Work Order

Sample Description:  
Sampling Location:  
Sample Collected by:  
(Name & Designation)  
Client Representative:  
Sampling & Analysis  
Protocol:

Ground Water (Govt. Bore well)  
NEAR SIRMANDI VILLAGE  
Mr. Tarun Singh  
(Field Analyst)  
Mr. Prateek Singh  
IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012

Sampling & Analysis Protocol:

S. No.	Parameter	Result	Unit	Limits of IS:10500 -2012		Test-Method
				Desirable limit (Max.)	Permissible limit in the Absence of Alternate Source (Max.)	
Physical Parameters						
1.	Color, Hazen Units	< 1	--	5	25	IS: 3025 Part 4 - 1983
2.	Odour	Unobjectionable	Hazen	Unobjectionable	-	IS: 3025 Part 5 - 1983
3.	Taste	Agreeable	---	Agreeable	-	IS: 3025 Part 7,8 -1984
4.	Turbidity, NTU	< 1	NTU	5	10	IS: 3025 Part 10 - 1984
5.	pH	7.56	--	6.5 – 8.5	-	IS: 3025 Part 11 - 1984
General Parameters						
.	Total Hardness as CaCO <sub>3</sub>	578.90	mg/l	300	600	IS: 3025 Part 21 - 1983
7.	Iron as Fe	0.15	mg/l	0.3	1.0	IS: 3025 Part 53 - 2003
8.	Chloride as Cl	675.90	mg/l	250	1000	IS: 3025 Part 32 - 1988
9.	Residual Free Chlorine	< 0.1	mg/l	0.2	-	IS: 3025 Part 26 - 1986
10.	Dissolved Solids	1867.0	mg/l	500	2000	IS: 3025 Part 16 - 1984
11.	Calcium as Ca	123.89	mg/l	75	200	IS: 3025 Part 40 - 1991
12.	Magnesium as Mg	65.56	mg/l	30	100	IS: 3025 Part 46 - 1994
13.	Copper as Cu	< 0.02	mg/l	0.05	1.5	IS: 3025 Part 42 - 1992
14.	Manganese as Mn	< 0.10	mg/l	0.1	0.3	IS: 3025 Part 59 - 2006
15.	Sulphate as SO <sub>4</sub>	198.90	mg/l	200	400	IS: 3025 Part 24 - 1986
16.	Nitrate as NO <sub>3</sub>	18.67	mg/l	45	No relaxation	IS: 3025 Part 34 - 1988
17.	Fluoride as F	1.47	mg/l	1.0	1.5	IS: 3025 Part 60 - 2008
18.	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	< 0.001	mg/l	0.001	0.002	IS: 3025 Part 43 - 1991

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NOTE: a) The results listed refer only to the tested samples & applicable parameters  
b) The results will be restricted to the invoice amount only







# Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036

Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

19.	Mercury as Hg	< 0.001	mg/l	0.001	No relaxation	IS: 3025 Part 48 - 1994
20.	Cadmium as Cd	< 0.005	mg/l	0.01	No relaxation	IS: 3025 Part 41 - 1992
21.	Selenium as Se	< 0.001	mg/l	0.01	No relaxation	IS: 3025 Part 56 - 2003
22.	Arsenic as As	< 0.01	mg/l	0.05	No relaxation	IS: 3025 Part 37 - 1998
23.	Cyanide as CN	< 0.02	mg/l	0.05	No relaxation	IS: 3025 Part 27 - 1986
24.	Lead as Pb	< 0.01	mg/l	0.05	No relaxation	IS: 3025 Part 47 - 1994
25.	Zinc as Zn	< 0.20	mg/l	5	15	IS: 3025 Part 49 - 1994
26.	Anionic Detergents as MBAS	< 0.1	mg/l	0.2	1.0	APHA 5540 C
27.	Chromium as Cr+6	< 0.02	mg/l	0.05	No relaxation	IS: 3025 Part 52 - 2003
28.	Mineral Oil	< 0.01	mg/l	0.01	0.03	IS: 3025 Part 39 - 1991
29.	Alkalinity	298.90	mg/l	200	600	IS: 3025 Part 23 - 1986
30.	Aluminum as Al	< 0.02	mg/l	0.03	0.2	IS: 3025 Part 55 - 2003
31.	Boron as B	< 0.50	mg/l	1	5	IS: 3025 Part 57 - 2005
32.	Coliform Organisms	8	CFU	10	10	IS: 1622 - 1981
33.	E. Coli	Absent	-	Absent	Absent	IS: 1622 - 1981

Note: - On the basis of Analysis report, the water is suitable for drinking purpose as per IS: 10500-2012







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 Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275  
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## Test Certificate

Sample Number: **VEL/TPL /W/005** Report No.: **VEL/W/1612/14005**

Issued To: **M/s Tata Projects Limited** Format No.: **5.10 F-01**  
 Construction of 400 kV /DC Quad ACSR Moose  
 Bhadla- Jodhapur ICB 6 Party Reference No.: **NIL**  
 Transmission Line-RVPNL Project (200135) Reporting Date: **16/12/2016**  
 Receipt Date: **14/12/2016**  
 Sampling Date: **13/12/2016**

Sample Description: **Ground Water (Tanker Water Supply from Govt. Bore well )** Sampling Type: **Grab**

Sampling Location: **NEAR JAJIWAL GEHLOTON** Sampling Quantity: **2.0 Ltr**  
 Sample Collected by: **Mr. Tarun Singh** Parameter Required: **As per Work Order**  
 (Name & Designation) **(Field Analyst)**

C. Representative: **Mr. Prateek Singh**  
 Sampling & Analysis Protocol: **IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012**

Sampling & Testing  
Protocol:

S. No.	Parameter	Result	Unit	Limits of IS:10500 -2012		Test-Method
				Desirable limit (Max.)	Permissible limit in the Absence of Alternate Source (Max.)	
Physical Parameters						
1.	Color, Hazen Units	< 1	--	5	25	IS: 3025 Part 4 - 1983
2.	Odour	Unobjectionable	Hazen	Unobjectionable	-	IS: 3025 Part 5 - 1983
3.	Taste	Agreeable	---	Agreeable	-	IS: 3025 Part 7,8 -1984
4.	Turbidity, NTU	< 1	NTU	5	10	IS: 3025 Part 10 - 1984
	pH	7.76	--	6.5 – 8.5	-	IS: 3025 Part 11 - 1984
General Parameters						
6.	Total Hardness as CaCO <sub>3</sub>	489.56	mg/l	300	600	IS: 3025 Part 21 - 1983
7.	Iron as Fe	0.16	mg/l	0.3	1.0	IS: 3025 Part 53 - 2003
8.	Chloride as Cl	425.23	mg/l	250	1000	IS: 3025 Part 32 - 1988
9.	Residual Free Chlorine	< 0.1	mg/l	0.2	-	IS: 3025 Part 26 - 1986
10.	Dissolved Solids	1389.0	mg/l	500	2000	IS: 3025 Part 16 - 1984
11.	Calcium as Ca	105.34	mg/l	75	200	IS: 3025 Part 40 - 1991
12.	Magnesium as Mg	55.10	mg/l	30	100	IS: 3025 Part 46 - 1994
13.	Copper as Cu	< 0.02	mg/l	0.05	1.5	IS: 3025 Part 42 - 1992
14.	Manganese as Mn	< 0.10	mg/l	0.1	0.3	IS: 3025 Part 59 - 2006
15.	Sulphate as SO <sub>4</sub>	176.23	mg/l	200	400	IS: 3025 Part 24 - 1986
16.	Nitrate as NO <sub>3</sub>	9.12	mg/l	45	No relaxation	IS: 3025 Part 34 - 1988

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## Test Certificate

Sample Number: **VEL/TPL/S/01**  
Name & Address of Party: **M/s Tata Projects Limited**  
**Construction of 400 kV /DC Quad ACSR**  
**Moose Bhadla- Jodhapur ICB 6 Transmission**  
**Line-RVPL Project (200135)**

Report No.: **VEL/TCL/S/1612/14001**  
Format No.: **5.10 F-01**  
Party Reference: **NIL**  
No.:  
Reporting Date: **17/12/2016**  
Receipt Date: **14/12/2016**  
Sampling Date: **13/12/2016**  
Type of Sampling: **Composite**  
Sampling Quantity: **2.0 Kg**  
Depth of Sampling: **30 cm**  
Packing Status: **Temp Sealed**

Sample Description: **SOIL**  
Sampling Location: **NEAR BHADLA VILLAGE**  
Sample Collected by: **VardanEnviro Lab Team**  
Sampling & Analysis Protocol: **IS 2720 & USDA**

S. No.	Parameter	Protocol	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26,1987)	7.88	--
2.	Color	USDA Method, 1968	Light Brown	---
3.	Conductivity(1:5)	IS:14767-2000 Reaffirmed 2006	178	µS/cm
4.	Moisture	USDA Method, 1968	7.08	%
5.	Chlorides as Cl	USDA Method, 1968	0.005	%
6.	Sulphate as SO <sub>4</sub>	USDA Method, 1968	0.004	%
7.	Total Carbonates	IS:2720 (P-22, 1972)	0.09	%
8.	Total Soluble Solids	IS:2720 (P-22, 1972)	0.066	%
9.	Total Organic Matter	IS:2720 (P-22, 1972)	0.18	%
10.	Nitrogen as N	IS:14684, 1999	0.08	%
11.	Phosphorus as P	USDA, APHA-4500PC	< 0.0003	%
12.	Potassium as K	USDA Method, 1968	0.014	%
13.	Zinc	APHA-3030D, APHA-3111B	2.12	mg / kg
14.	Copper	APHA-3030D, APHA-3111B	3.23	mg / kg
15.	Chromium	APHA-3030D, APHA-3111B	BDL	mg / kg
16.	Cadmium	APHA-3030D, APHA-3111B	BDL	mg / kg
17.	Nickel	APHA-3030D, APHA-3111B	0.23	mg / kg
18.	Lead	APHA-3030D, APHA-3111B	0.67	mg / kg

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

NOTE: a) The results listed refer only to the tested samples & applicable parameters  
b) Liability of our lab will be restricted to the invoice amount only







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## Test Certificate

Sample Number:  
 Name & Address of Party:

**VEL/TPL/S/02**  
**M/s Tata Projects Limited**  
 Construction of 400 kV /DC Quad ACSR  
 Moose Bhadla- Jodhapur ICB 6 Transmission  
 Line-RVPNL Project (200135)

Report No.: **VEL/TCL/S/1612/14002**  
 Format No.: **5.10 F-01**  
 Party Reference: **NIL**  
 No.:  
 Reporting Date: **17/12/2016**  
 Receipt Date: **14/12/2016**  
 Sampling Date: **13/12/2016**  
 Type of Sampling: **Composite**  
 Sampling Quantity: **2.0 Kg**  
 Depth of Sampling: **30 cm**  
 Packing Status: **Temp Sealed**

Sample Description:  
 Sampling Location:  
 Sample Collected by  
 Sampling & Analysis  
 Protocol:

**SOIL**  
**Noore Ki Burj**  
**VardanEnviro Lab Team**  
**IS 2720 & USDA**

S. No.	Parameter	Protocol	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26,1987)	7.65	--
2.	Color	USDA Method, 1968	Light Brown	---
3.	Conductivity(1:5)	IS:14767-2000 Reaffirmed 2006	158	µS/cm
4.	Moisture	USDA Method, 1968	6.23	%
5.	Chlorides as Cl	USDA Method, 1968	0.007	%
6.	Sulphate as SO4	USDA Method, 1968	0.004	%
7.	Total Carbonates	IS:2720 (P-22, 1972)	1.05	%
8.	Total Soluble Solids	IS:2720 (P-22, 1972)	0.060	%
9.	Total Organic Matter	IS:2720 (P-22, 1972)	0.19	%
10.	Nitrogen as N	IS:14684, 1999	0.07	%
11.	Phosphorus as P	USDA, APHA-4500PC	< 0.0003	%
12.	Potassium as K	USDA Method, 1968	0.012	%
13.	Zinc	APHA-3030D, APHA-3111B	2.20	mg / kg
14.	Copper	APHA-3030D, APHA-3111B	3.45	mg / kg
15.	Chromium	APHA-3030D, APHA-3111B	BDL	mg / kg
16.	Cadmium	APHA-3030D, APHA-3111B	BDL	mg / kg
17.	Nickel	APHA-3030D, APHA-3111B	0.20	mg / kg
18.	Lead	APHA-3030D, APHA-3111B	0.69	mg / kg

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

NOTE: a) The results listed refer only to the tested samples & applicable parameters  
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## Test Certificate

Sample Number: **VEL/TPL/S/03**  
Name & Address of Party: **M/s Tata Projects Limited**  
**Construction of 400 kV /DC Quad ACSR**  
**Moose Bhadla- Jodhapur ICB 6 Transmission**  
**Line-RVPL Project (200135)**

Report No.: **VEL/TCL/S/1612/14003**  
Format No.: **5.10 F-01**  
Party Reference: **NIL**  
No.:  
Reporting Date: **17/12/2016**  
Receipt Date: **14/12/2016**  
Sampling Date: **13/12/2016**  
Type of Sampling: **Composite**  
Sampling Quantity: **2.0 Kg**  
Depth of Sampling: **30 cm**  
Packing Status: **Temp Sealed**

Sample Description: **SOIL**  
Sampling Location: **Amla**  
Sample Collected by: **VardanEnviro Lab Team**  
Sampling & Analysis Protocol: **IS 2720 & USDA**

S. No.	Parameter	Protocol	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26,1987)	7.38	--
2.	Color	USDA Method, 1968	Light Brown	---
3.	Conductivity(1:5)	IS:14767-2000 Reaffirmed 2006	467	μS/cm
4.	Moisture	USDA Method, 1968	3.67	%
5.	Chlorides as Cl	USDA Method, 1968	0.015	%
6.	Sulphate as SO <sub>4</sub>	USDA Method, 1968	0.005	%
7.	Total Carbonates	IS:2720 (P-22, 1972)	5.07	%
8.	Total Soluble Solids	IS:2720 (P-22, 1972)	0.160	%
9.	Total Organic Matter	IS:2720 (P-22, 1972)	0.12	%
10.	Nitrogen as N	IS:14684, 1999	0.019	%
11.	Phosphorus as P	USDA, APHA-4500PC	< 0.0003	%
12.	Potassium as K	USDA Method, 1968	0.005	%
13.	Zinc	APHA-3030D, APHA-3111B	2.0	mg / kg
14.	Copper	APHA-3030D, APHA-3111B	3.10	mg / kg
15.	Chromium	APHA-3030D, APHA-3111B	BDL	mg / kg
16.	Cadmium	APHA-3030D, APHA-3111B	BDL	mg / kg
17.	Nickel	APHA-3030D, APHA-3111B	0.20	mg / kg
18.	Lead	APHA-3030D, APHA-3111B	0.56	mg / kg

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

NOTE: a) The results listed refer only to the tested samples & applicable parameters  
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## Test Certificate

Sample Number: **VEL/TPL/S/04** Report No.: **VEL/TCL/S/1612/14004**  
Name & Address of Party: **M/s Tata Projects Limited** Format No.: **5.10 F-01**  
**Construction of 400 kV /DC Quad ACSR** Party Reference: **NIL**  
**Moose Bhadla- Jodhapur ICB 6 Transmission** No.:  
**Line-RVPNL Project (200135)** Reporting Date: **17/12/2016**  
Receipt Date: **14/12/2016**  
Sampling Date: **13/12/2016**  
Type of Sampling: **Composite**  
Sampling Quantity: **2.0 Kg**  
Depth of Sampling: **30 cm**  
Packing Status: **Temp Sealed**

Sample Description: **SOIL**  
Sampling Location: **Sirmandi Village**  
Sample Collected by: **VardanEnviro Lab Team**  
Sampling & Analysis Protocol: **IS 2720 & USDA**

S. No.	Parameter	Protocol	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26,1987)	7.35	--
2.	Color	USDA Method, 1968	Light Brown	---
3.	Conductivity(1:5)	IS:14767-2000 Reaffirmed 2006	348	µS/cm
4.	Moisture	USDA Method, 1968	3.07	%
5.	Chlorides as Cl	USDA Method, 1968	0.018	%
6.	Sulphate as SO4	USDA Method, 1968	0.011	%
7.	Total Carbonates	IS:2720 (P-22, 1972)	1.08	%
8.	Total Soluble Solids	IS:2720 (P-22, 1972)	0.150	%
9.	Total Organic Matter	IS:2720 (P-22, 1972)	0.15	%
10.	Nitrogen as N	IS:14684, 1999	0.014	%
11.	Phosphorus as P	USDA, APHA-4500PC	< 0.0003	%
12.	Potassium as K	USDA Method, 1968	0.004	%
13.	Zinc	APHA-3030D, APHA-3111B	2.34	mg / kg
14.	Copper	APHA-3030D, APHA-3111B	3.12	mg / kg
15.	Chromium	APHA-3030D, APHA-3111B	BDL	mg / kg
16.	Cadmium	APHA-3030D, APHA-3111B	BDL	mg / kg
17.	Nickel	APHA-3030D, APHA-3111B	0.29	mg / kg
18.	Lead	APHA-3030D, APHA-3111B	0.65	mg / kg

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

NOTE: a) The results listed refer only to the tested samples & applicable parameters  
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## Test Certificate

Sample Number:	VEL/TPL/S/05	Report No.:	VEL/TCL/S/1612/14005
Name & Address of Party:	M/s Tata Projects Limited Construction of 400 kV /DC Quad ACSR Moose Bhadla- Jodhapur ICB 6 Transmission Line-RVPNL Project (200135)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	17/12/2016
		Receipt Date:	14/12/2016
Sample Description:	SOIL	Sampling Date:	13/12/2016
Sampling Location:	JajiwalGehlota	Type of Sampling:	Composite
Sample Collected by	VardanEnviro Lab Team	Sampling Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720 & USDA	Depth of Sampling:	30 cm
		Packing Status:	Temp Sealed

S. No.	Parameter	Protocol	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26,1987)	7.39	--
2.	Color	USDA Method, 1968	Grey	---
3.	Conductivity(1:5)	IS:14767-2000 Reaffirmed 2006	412	µS/cm
4.	Moisture	USDA Method, 1968	3.07	%
5.	Chlorides as Cl	USDA Method, 1968	0.005	%
6.	Sulphate as SO <sub>4</sub>	USDA Method, 1968	0.012	%
7.	Total Carbonates	IS:2720 (P-22, 1972)	12.67	%
8.	Total Soluble Solids	IS:2720 (P-22, 1972)	0.223	%
9.	Total Organic Matter	IS:2720 (P-22, 1972)	0.189	%
10.	Nitrogen as N	IS:14684, 1999	0.023	%
11.	Phosphorus as P	USDA, APHA-4500PC	< 0.0003	%
12.	Potassium as K	USDA Method, 1968	0.005	%
13.	Zinc	APHA-3030D, APHA-3111B	2.80	mg / kg
14.	Copper	APHA-3030D, APHA-3111B	3.45	mg / kg
15.	Chromium	APHA-3030D, APHA-3111B	BDL	mg / kg
16.	Cadmium	APHA-3030D, APHA-3111B	BDL	mg / kg
17.	Nickel	APHA-3030D, APHA-3111B	0.27	mg / kg
18.	Lead	APHA-3030D, APHA-3111B	0.60	mg / kg

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

