

తెలంగాణ ప్రభుత్వం

Annexure R-1



సాగునీటి పారుదల మెరియం ఆయకట్టు అభివృద్ధి కార్య
 పర్యవేక్షక ఇంజనీరు వారి కార్యాలయము, పాలమూరు-రంగారెడ్డి ఎత్తిపోతల పథకము,
 సర్కిల్ నెం. 2, మహబూబ్ నగర్, మహబూబ్ నగర్ జిల్లా.

పాలమూరు-రంగారెడ్డి ఎత్తిపోతల పథకము

ఈ క్రింది పనుల కొరకు బిడ్డను ఆహ్వానించడమైనది.

తేదీ: 18-01-2016

R-1

క్రమ సంఖ్య	పాటర్న్ నెం.	పని పేరు	ఖరీదా ధర (రూ. కోట్లలో)	దరావత్తు (రూ. కోట్లలో)	దొందడు లభ్యమయ్యే తేదీ	దొందడు సమయము	పని పూర్తి చేయాలగు తేదీ
1	02/2015-16 02/15-01/2016	పాలమూరు రంగారెడ్డి ఎత్తిపోతల పథకము. ప్యాన్లెట్ నెం. 18 ఉద్దండాఫ్టర్ జంక్షనుము, ఉద్దండాఫ్టర్ గ్రామము, జిల్లా ఉద్దండాఫ్టర్ నెం. 4 నుండి పూర్వ నర్సాపేటకు మరుగులు తులసిలో స్టేజ్ ప్రాజెక్ట్ ఓపెన్ ముట్ ముట్టి మోషన్ల పనులు అన్ని అనెసిరివెలో కలిపి 5 నెలల బిడ్డ కోర్కె 145M/W ల సీస్కోగ్స్ మోడల్ నెట్ అగ్జెస్, సర్దుకా అమలక పుట్టిండు. కమీషింగ్ నుంచి కొరత మరుగులు. ఓడనులారా అలాగే ముందు. 500 ఎకర గ్రామము. మోషూర్ మండలము నుండి ఉద్దండాఫ్టర్ జంక్షనుము, ఉద్దండాఫ్టర్ గ్రామము, జిల్లా ఉద్దండాఫ్టర్ మండలము వరకు అసోస్ కాలువ త్రవ్వకం, C.M.E. CD పనుల నిర్మాణములో కూడిన టెన్ కాలువ. హెడ్ రెగ్యులేటర్ నిర్మాణము, పారలగము త్రవ్వకము పనులు కొరత.	3250.80	32.51	15-01-2016 నుండి 10-02-2016	10-02-2016	30 నెలలు
2	02/2015-16 02/15-01/2016	పాలమూరు రంగారెడ్డి ఎత్తిపోతల పథకము. ప్యాన్లెట్ నెం. 17 ఉద్దండాఫ్టర్ జంక్షనుము, ఉద్దండాఫ్టర్ గ్రామము, జిల్లా ఉద్దండాఫ్టర్ నెం. 4 నుండి 0.00 నుండి 3.50.7.20 వరకు ఉద్దండాఫ్టర్ జంక్షనుం కట్ట నిర్మాణము కొరత.	573.82	5.74	15-01-2016 నుండి 10-02-2016	10-02-2016	30 నెలలు
3	02/2015-16 02/15-01/2016	పాలమూరు రంగారెడ్డి ఎత్తిపోతల పథకము. ప్యాన్లెట్ నెం. 18 ఉద్దండాఫ్టర్ జంక్షనుము, ఉద్దండాఫ్టర్ గ్రామము, జిల్లా ఉద్దండాఫ్టర్ నెం. 4 నుండి 0.00 నుండి 3.50.10.75 వరకు ఉద్దండాఫ్టర్ జంక్షనుం కట్ట నిర్మాణము కొరత.	2100.09	21.00	15-01-2016 నుండి 10-02-2016	10-02-2016	30 నెలలు

బిడ్డల కొరత : 4.5 ఏకర్

తేదీ: 03-02-2016 ఉ. 11.00 గంటల నుండి మ. 2.00 గంటల వరకు దీని ఇంజనీర్ వారి కార్యాలయము, పాలమూరు-రంగారెడ్డి ఎత్తిపోతల పథకము

బిడ్డల కొరత తేదీ మరుగులు : బిడ్డల కొరత తేదీ: 11-02-2016 ఉ. 11.30 గంటలకు

పాలమూరు-రంగారెడ్డి ఎత్తిపోతల పథకము : శ్రీ డి.నరసింహా. డి. జి. వర్మవేత్త ఇంజనీరు, పాలమూరు రంగారెడ్డి ఎత్తిపోతల పథకము, సర్కిల్ నెం. 2, మహబూబ్ నగర్.

పాలమూరు-రంగారెడ్డి ఎత్తిపోతల పథకము : www.oproucreationt.gov.in వెబ్ సైట్ నుండి చూడగలరు.

సం/-
 పర్యవేక్షక ఇంజనీరు,
 పాలమూరు-రంగారెడ్డి ఎత్తిపోతల పథకము,
 సర్కిల్ నెం. 2, మహబూబ్ నగర్



ತೆರಿಗಾಣಾ ಪ್ರಭುತ್ವಂ
Ammature R-1

ನಾಗುಣಿ ಹಿ ನಾರಿದಲ ಮಿರಿಯು ಅಯಿ ಕಟ್ಟು ಅಭಿವೃದ್ಧಿ ಸಾಖು
ವ್ಯವಸ್ಥಿತ ಪಾಟುನು ಪಾಂಶ್ಚಾಯಮು-ರಂಗಾಪ್ಪ ಪಟ್ಟಣುಲ ಪಡೆಸಮು ನೂತನ ನಂ.1
ಕಾಣಿಕೆ ಪಡು ರಿ. ಮುಖಾಂತರ ಕೆರೆ ಕಡೆ.

ಮಾಲಮುದು-ರಂಗಾಪ್ಪ ವೃತ್ತಮಾಲಮುದು ಪಟ್ಟಣುಲ
ಕಟ್ಟು ಕೆರೆ ಮುಖಾಂತರ ಕೆರೆ ಕಡೆ.

ದಿನ: 16-01-2018

ಕ್ರಮ ಸಂಖ್ಯೆ	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
1	2	3	4	5	6	7
1	01/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
2	02/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
3	03/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
4	04/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
5	05/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
6	06/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
7	07/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
8	08/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
9	09/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
10	10/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
11	11/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
12	12/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
13	13/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
14	14/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
15	15/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
16	16/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
17	17/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
18	18/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
19	19/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು
20	20/2015-18	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು	ಮಾಲಮುದು

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20. ಮಾಲಮುದು

18 January 2018
Mangalore Chapter Manager

Government of Telangana
Irrigation Development and Catchment Area development Department
Office of the Superintending Engineer, Palamuru - Rangareddy Lift Irrigation Scheme.
Circle NO.2, Mahabubnagar, Mahabubnagar District.
PALAMURU-RANGA REDDY LIFT IRRIGATION SCHEME
Bids are invited for the following works.

Date:-16-01-2016.

Sl No	Sl. No. Procurement Notice No.	Name of the work	Estimated Value (Rupees in Crores)	Deposit money value (rupees in crores)	Tender documents available period	Final date for receiving date / time	work completion period
2	3	Palamuru- Rangareddy Lift Irrigation scheme- Package No.16, Uddandapur Reservoir, Uddandapur Village, Jacherla Mandalam, Stage 4, Pump House construction and Vertical single stage-Pransistation pump electromechanica works all with accessories included 5 Nos. each 145 MW Scripvas Motor set-Akriti, supply, fitting, examining, running of work and Kurumurthyra reservoir, Kiraveena Village, BhutpurMandalam to Uddandapur reservoirs, Uddandapur Village, up to Jacherla Mandalam, excavation of approach canal CM * & CID workincluded with construction open canal regulator construction, excavation of tunnel works.	3250.80	32.51	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months
2	2	Palamuru - Ranga reddy Lift Irrigation Scheme- Package No.17 , Uddandapur Reservoirs, Uddandapur Village, Jacherla Mandalam from KM 0.00 to KM 7.20 for construction of Uddandapur Reservoirs Bund.	573.82	5.74	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months
2	1	Palamuru - Ranga reddy Lift Irrigation Scheme- Package No.18 Uddandapur Reservoirs, Uddandapur Village, Jacherla Mandalam from KM 7.20 to KM 16.75 for construction of Uddandapur Reservoirs Bund	2100.09	21.00	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months

Pre-bid Meeting date and entrance

Date: 03-02-2016 from morning 11.00 hours to evening 2.00 hours in Chief Engineer's office, Palamuru -Ranga reddy Lift Irrigation Scheme, Jalasowda, 5th floor, IITRamanzil, Hyderabad

Opening of Technical Bid date and time

Tender Notice No.1 to Notice No.3 on dt.11-02-2016 at morning 11.30 hours.

Related officer's name and Address

Sr V. Narasimha, B.E., Superintendent Engineer, Palamuru - Rangareddy Lift Irrigation Scheme, Circle NO.2, Mahabubnagar.

For amp details visit procurement market place.

See the website:- www.eprocurement.gov.in.

Sd/-

Superintending Engineer,
Palamuru - Ranga Reddy
Lift Irrigation scheme
Circle NO.2, Mahabubnagar.

Government of Telangana
Irrigation Development and Catchment Area development Department
Office of the Superintending Engineer, Palamuru - Rangareddy Lift Irrigation Scheme.
Circle No.1, Nagarkurnool, Mahabubnagar District.
PALAMURU-RANGA REDDY LIFT IRRIGATION SCHEME
Bids are invited for the following works.

Date:-16-01-2016.

Sl. No.	E-Procurement Notice No.	Name of the work	Estimated Value (Rupees in Crores)	Deposit money value (rupees in crores)	Tender documents available period	Final date for receiving date /time	work completion period
1	2	3	4	5	6	7	8
	01/2015-16 Date:-16-01-2016.	Palamuru- Rangareddy Lift Irrigation scheme- Package No.1, Ravipati Reservoir, Narpur Village, Kollapur Reservoirs near Stage -1 Pump house construction, vertical Single pransi turn Pump Electro mechanical works all and each one 145 MW ansosis motor sets, pump house construction, supply arrangement, examination and commissioning of works and Kollapur Mandalam, Narpur village at Srisaillam Reservoirs from upper area of excavation and its related construction, execution of Tunnel works.	3220.46	32.27	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months
	02/2015-16 Date:-16-01-2016	Palamuru - Ranga reddy Lift Irrigation Scheme- Package No.2, Narpur Village, Kollapur Mandalam at Ayyena Reservoir construction works.	729.51	7.40	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months
	03/2015-16 Date:-16-01-2016	Palamuru - Ramnga reddy Lift Irrigation Scheme - Package No.3, Anjanagiri reservoirs, From Narpur Village, Kollapur Mandalam from 8.325 KM to 8.325, Veeranjeneya, Reservoirs Padugula Village, Gopalpet Mandalam side Approach canal excavation CM & MD construction open canal and head regulator construction works.	391.50	3.92	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months
	04/2015-16 Date:-16-01-2016	Palamuru - Ramnga reddy Lift Irrigation Scheme - Package No.4, Anjanagiri reservoirs, From Narpur Village, Kollapur Mandalam from 8.325 KM to 21.835 Veeranjeneya Reservoirs Padugula Village, Gopalpet Mandalam side Approach canal excavation and construction works.	1668.69	16.69	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months
	05/2015-16 Date:-16-01-2016	Palamuru - Ramnga reddy Lift Irrigation Scheme - Package No.5, Veeranjeneya Reservoirs, Yedula Village, Gopalpet Mandalam near-stage Pump house construction, S.V. Vertical Single Stage Francis Turbine pump of electromechanical works along with all accessories 8 Nos, each 145 MW senses motor sets, Akkruti arrangement commissioning works and 4 KM to 3.325 stage up to pump house tunnel construction works.	4027.90	40.28	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months
	06/2015-16 Date:-16-01-2016	Palamuru - Ramnga reddy Lift Irrigation Scheme - Package No.6, Veeranjeneya Reservoirs, Edula Village Gopalpet Mandalam reservoir construction and Veeranjeneyulu Reservoirs to Venkatadrai Reservoirs.	640.58	6.41	From dt.25-01-2016 to 10-02-2016 up the	10-02-2015 up to evening 5.00 hours.	30 months

		Vaitan Village - Bijinepalli Mandalam between 0.00 KM to 0.40 KM approach channel excavation. CM & CD construction related open canal construction related works.				evening 3.00		
07/2015-16	Palampur - Ramnga reddy Lift Irrigation Scheme - Package No.7. Veeranjenya Reservoirs, Edula Village	2126.48	21.27	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months		
08/2015-16	Palampur - Ramnga reddy Lift Irrigation Scheme - Package No.8. Makuri Reservoirs, Vaitan Village, Bijinepalli Mandala near Stage-1 House pump construction, Akruvi rully, arrangement, examination and commissioning vertical single phase pump electromechanical all works and each No.142 MM motor pump constructions from 25.40 KM siqre 8 pump house construction works.	4303.37	43.04	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months		
9/2015-16	Palampur - Ramnga reddy Lift Irrigation Scheme - Package No.9. Venkatadri Reservoirs, Vaitan Village, Bijinepalli Mandalam from 0.00 KM to 6.30 KM for construction of Venkatadri reservoirs works.	1433.28	143.4	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months		
10/2015-16	Palampur - Ramnga reddy Lift Irrigation Scheme - Package No.10. Patem Village, Bijinepalli Mandalam near from 4.90 KM to 11.55 KM at venkatadri Reservoirs bund constructions works.	916.71	9.17	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months		
11/2015-16	Palampur - Ramnga reddy Lift Irrigation Scheme - Package No.11. Venkatadri Reservoir, Pattem Village, Bijinepalli Mandalam near from 11.550 KM to 16.300 KM of Venkatadri Reservoirs constructions works.	1400.56	14.89	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months		
12/2015-16	Palampur - Ramnga reddy Lift Irrigation Scheme - Package No.12. Venkatadri reservoirs Pattem Village, Bijinepalli Mandalam to Kavvena Village, Bhupur Mandalam. Kurumuthy reservoirs approach canal digging. CM * JD works construction of 10.715 KM Open canal and Head regulator construction works related.	453.73	4.54	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months		
13/2015-16	Palampur - Ramnga Reddy Lift Irrigation Scheme - Package No.13. Kurumuthi raya Reservoirs, Kuvena Village, Bhupur Mandalam 0.000 KM to 4.50 KM up to Kurumuthyraya Reservoirs bund construction works.	839.61	8.40	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months		
14/2015-16	Palampur - Ramnga Reddy Lift Irrigation Scheme - Package No.14. Kurumuthi raya Reservoirs, Kuvena Village, Bhupur Mandalam 4.50 KM to 7.60 KM up to Kurumuthyraya Reservoirs bund construction works.	905.59	9.08	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months		
15/2015-16	Palampur - Ramnga Reddy Lift Irrigation Scheme - Package No.14. Kurumuthi raya Reservoirs, Kuvena Village, Bhupur Mandalam 7.600 KM to 14.40 KM up to Kurumuthyraya Reservoirs bund construction works.	838.30	8.39	From dt.25-01-2016 to 10-02-2016 up the evening 3.00	10-02-2015 up to evening 5.00 hours.	30 months		

Field Meeting date and entrance

Date: 03-02-2016 from morning 11.00 hours to evening 2.00 hours in Chief Engineer's office, Palampur. Ranga reddy Lift Irrigation Scheme, Jatasoudha, 5th floor, Irramanzil, Hyderabad

3	Opening of Technical Bid date and time	Tender Notice No.1 to Notice No.15 on dt.11-02-2016 at morning 11.30 hours
4	Related officer's name and Address	Sri K. Narendra reddy, M.Tech. Superintendenting Engineer, Palanur Rangareddy Lift Irrigation Scheme, Circle No.1, Nagarkurnool
For other details "1" procurement market place		See the website: www.sprocurement.gov.in

SD/-

Superintending Engineer,
Palanur - Ranga Reddy
Lift Irrigation scheme
Circle No.1, Nagarkurnool

THE ~~MOON~~ HINDU

HYDERABAD

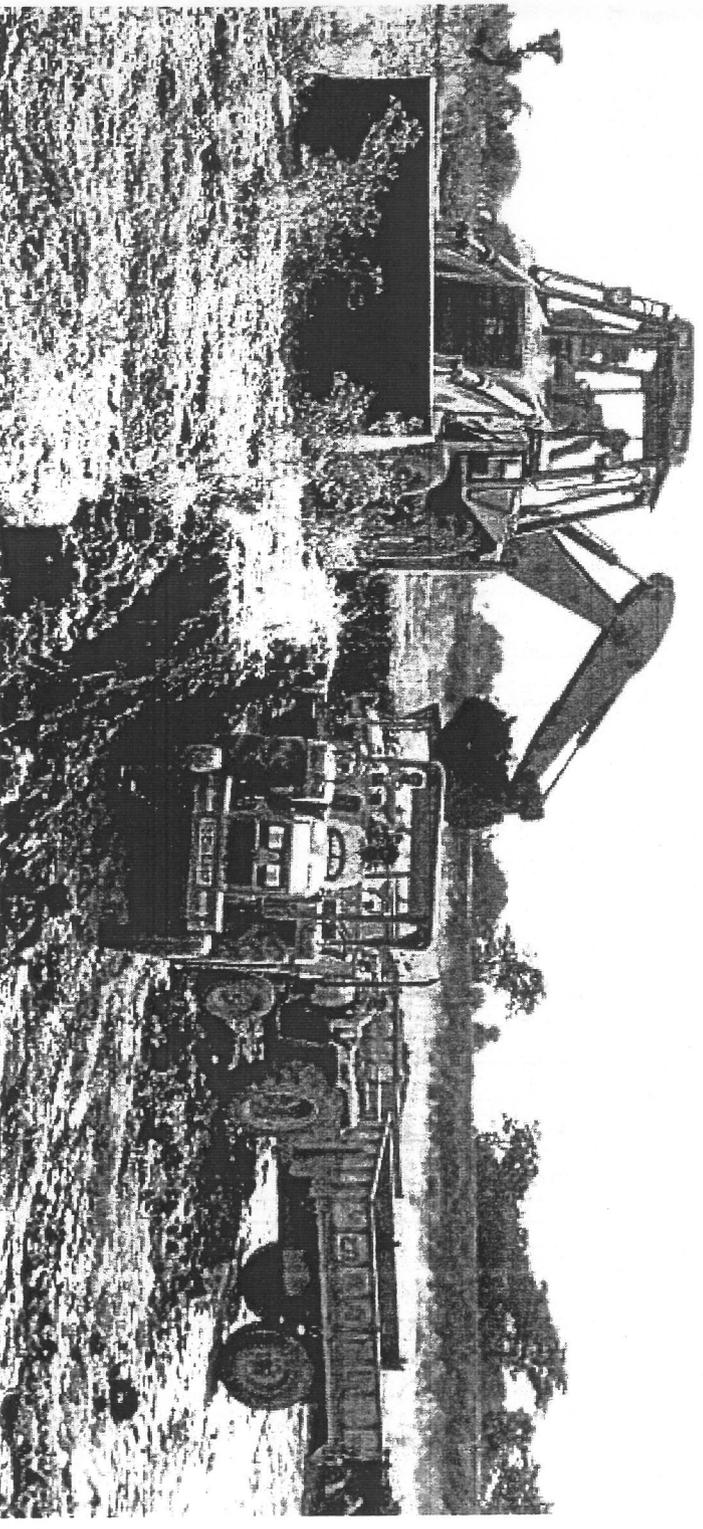
Mission Kakatiya: contractors in a bind

N. Rahul

HYDERABAD:, JANUARY 22, 2016 00:00 IST

UPDATED: SEPTEMBER 23, 2016 02:18 IST

They quoted 20 to 22 p.c. less in the first phase of works and suffered losses due to strict quality control measures



The works of restoration of tanks under Mission Kakatiya which brought a windfall saving of Rs. 1,000 crore to Telangana government might not see the same kind of tendering as last year, with the contractors apparently having learnt a lesson or two and not inclined to quote less. They quoted 20 to 22 per cent less in the first phase of works for 8,200 tanks and suffered losses due to strict quality control measures taken up by the government. Sources said the contractors believed that it would be the same earth work as in the previous governments which they could carry out by machinery without having to exert much. Therefore, they quoted less cost and made a fast buck.

To the surprise of contractors, the government was serious about quality and released only Rs 600 crore out of the sanctioned Rs 2,600 crore after satisfying itself. It was a double benefit for the government because it saved Rs.1,000 crore due to less quotations in bids and also ensured quality works.

Sources also said there was no chance of less quotation in the circumstances in the second phase works which were notified on Wednesday and Thursday. The government issued three orders related to 603 tanks costing Rs. 193 crore with instructions that tendering should be over within a week and works grounded by February 1. In all, 10,680 tanks were identified for restoration till June end.

About 7,600 tanks were taken up in the first phase, of which works were completed 100 per cent in 2,400 of them while the rest were in different stages of completion up to March 31. Irrigation Minister T. Harish Rao who is playing a key role in the programme, has formed 18 What'sApp groups of engineers belonging to minor, medium and major irrigation to monitor the works

Mr. Rao also had five rounds of video conference with engineers for the second phase works. He has held a motivation meeting for officers of irrigation at the Secretariat recently to avoid red tape.

At the same time, the government is also speeding up land acquisition for Palamuru – Ranga Reddy lift irrigation scheme offering 10 to 20 per cent more money than market value to farmers. The government has prepared proposals for 18 packages of the project worth Rs. 29,000 crore for completion in 30 months.

THE HINDU

Our code of editorial values

Printable version | Aug 21, 2021 6:22:25 PM | <https://www.thehindu.com/news/cities/Hyderabad/Mission-Kakatiya-contractors-in-a-bind/article14013399.ece>

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Assessment of Fluoride in Ground Water for Drinking and Agricultural Purposes in Ramannapet Mandal of Nalgonda District, Telangana, India

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Original Research Article

Assessment of Fluoride in Ground Water for Drinking and Agricultural Purposes in Ramannapet Mandal of Nalgonda District, Telangana, India

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ABSTRACT

The fluoride concentration in ground water was analyzed during *kharij* and *rabi* (2012-13) seasons to identify the suitability of water for drinking and irrigation purposes in all the villages of Ramannapet Mandal of Nalgonda District, Telangana. Fluoride present in the ground water samples collected during *kharij* and *rabi* varied from 0.53 to 3.86 and 0.99 to 3.94, with an average of 1.71 and 2.08 ppm, respectively. As per drinking water standards, 53 % (16 samples) of the ground water samples in *kharij* and 67% (20 samples) of the ground water samples in *rabi* have fluoride content greater than that of maximum permissible limit of 1.50 ppm fluoride. On an average, maximum concentration of fluoride was noticed in 16 and 20 villages during *kharij* and *rabi*, respectively. Therefore drinking water is sufficient to produce severe form of dental fluorosis and mild form of skeletal fluorosis consumed for a long period. As far as irrigation is concerned, data show that none of the bore well and open well water samples have fluoride content above 10 mg L⁻¹, which is the safe limit for all type of crop plants. Thus, all water samples tested in this investigation can safely be used for agricultural purpose.

Keyword: Fluoride; Ground Water; Drinking; Irrigation; Nalgonda

INTRODUCTION

The occurrence of the high fluoride the 23 nations in the world. Over all 200 million concentrations in ground water is a problem people in worldwide and 65 million people faced by many countries; India is one among among 29 states of India are facing the problem

with fluorosis as groundwater of Indian aquifers varies from < 1.0 to 25.0 ppm. The probability of occurrence of high fluoride concentration in ground and surface water was detected in various states in India. Telangana state is facing major problem with fluoride pollution because ground water is used as drinking and an irrigation source, a natural occurrence of excessive amounts of fluoride levels in ground water. Nalgonda district is one of the poorest and most drought-prone districts of Telangana in southern India. The area has long been associated with high groundwater fluoride concentrations which have been reported to reach up to 20 ppm [1]. In spite of continuous efforts by the government, external support agencies, NGOs and private enterprises the problem still remains unsolved.

The main natural sources of fluoride in the ground water of Nalgonda district are weathering and dissolution of rocks and minerals, emissions from volcanoes and marine aerosols [2]. This high concentration of fluoride in drinking water causes dental and skeletal fluorosis in human beings and also has negative effect on crop production. So periodical measurement and control of the concentration of fluoride is very important to avoid both biological and environmental damage. Hence, keeping in view the above facts a survey was conducted to identify the suitability of ground water for drinking and irrigation purposes.

MATERIALS AND METHODS

The study area forms a part of Nalgonda district, Telangana, which is located at a distance of 90 km away from Hyderabad (Fig. 1). This area experiences arid to semiarid

climate. The study area goes through hot climate during the summer (March–May) with a temperature range from 30°C to 46.5°C, and in winter (November–January), it varies between 14°C and 29°C. The average annual rainfall in this area is about 1000 mm, occurring mostly during south-west monsoon (June–September). Groundwater samples were collected during the *kharij* (September) and *rabi* (March) seasons of 2012-13 from existing water sources (open wells and bore wells) with the help of a handheld Global Positioning System (GPS). Geographical information viz., latitude and longitude of the benchmark sites were recorded, so that the delineation of the areas having fluoride pollution can be done and ground water fluoride status maps can be prepared by depicting the element in water at village level. Totally 30 benchmark sites were fixed depending on the number of villages of study area for collection of water samples. The depth of the wells varied from 16 to about 30 m below ground level.

Water samples were collected in clean polyethylene bottles of 600 ml capacity. The sampling bottles were soaked in 1:1 diluted HCl solution for 24 h and washed with distilled water. In the case of bore wells, water samples were collected after pumping the water for 10 min. In the case of open wells, water samples were collected 30 cm below the water level using a depth sampler. Samples collected were transported to the laboratory and filtered using 0.45µm Millipore filter paper fortified with 1 ml toluene to arrest any biological activity. The samples were stored at 4°C until used for fluoride analysis. Fluoride was analyzed by using Specific Ion Electrode method [3].

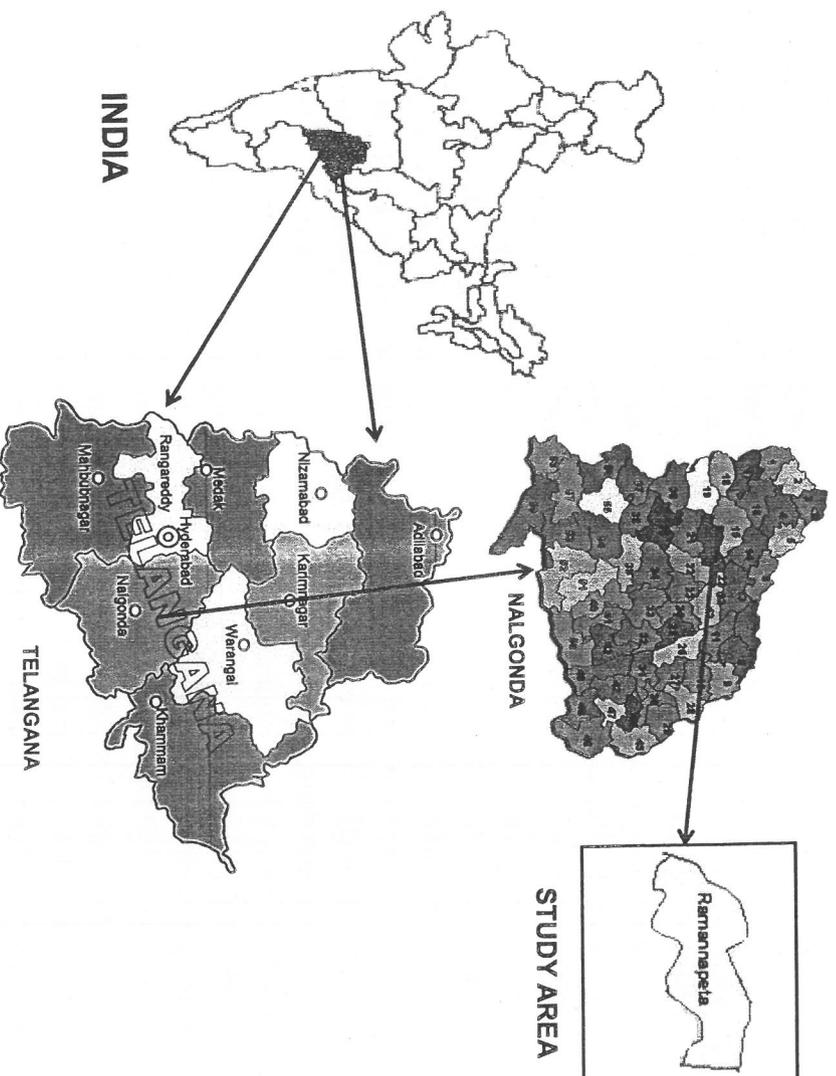


Fig. 1: Location map of the study area

RESULTS AND DISCUSSION

Fluoride content of ground water collected from open and bore wells in the villages of Ramannapet mandals of Nalgonda district during *kharif* and *rabi* are presented in Table 1. Fluoride present in the ground water samples collected during *kharif* and *rabi* varied from 0.53 to 3.86 and 0.99 to 3.94, with an average

of 1.71 and 2.08ppm F, respectively. Lowest content of fluoride was recorded in Venkatapuram village (0.53 and 0.99 ppm during *kharif* and *rabi*, respectively) while the highest was recorded in Rontakolla village (3.86 and 3.94 ppm during *kharif* and *rabi*, respectively). Groundwater F status map during *kharif* and *rabi* are shown in figures 2 and 3.

Table 1: Fluoride content in ground water samples collected in different villages of Ramannapet mandal during *kharif* (September) and *rabi* (March) seasons of 2012-13.

S.No.	Village	Fluoride Content (ppm)	
		<i>kharif</i>	<i>rabi</i>
1	Ramannapet	1.46	1.51
2	Neernemula	0.78	1.17
3	Shobanadripuram	0.95	1.05
4	Laxmapuram	1.72	2.25
5	Nidhanpalle	0.98	1.21
6	Bogaram	1.03	1.27
7	Thummalagudem	1.15	2.53
8	Yellaniki	2.28	2.75
9	Siripuram	2.07	2.12
10	Dubbaka	2.52	2.56
11	Rontakolla	3.86	3.94
12	Munipampula	2.35	2.33
13	Palliwada	0.92	2.58
14	Nagulanthagudem	1.29	3.12
15	Bachuppala	1.37	1.43
16	Suraram	2.43	2.48
17	Thurkapalle	2.76	2.73
18	Venkatapuram	0.53	0.99
19	Kunkudupamula	1.27	1.36
20	Peddabavigudem	2.09	2.52
21	Yennaram	1.98	1.99
22	Kallonikunta	2.04	2.15
23	Kakkireni	0.94	1.29
24	Pilligudem	2.82	2.84
25	Uttatoor	1.54	1.67
26	Iskilla	0.97	1.23
27	Lacchigudem	2.08	2.58
28	Janampalle	2.04	3.12
29	Sanjeevalah nagar	0.85	1.39
30	Kommaigudem	2.23	2.36
	Range	0.53-3.86	0.99-3.94
	Mean	1.71	2.08

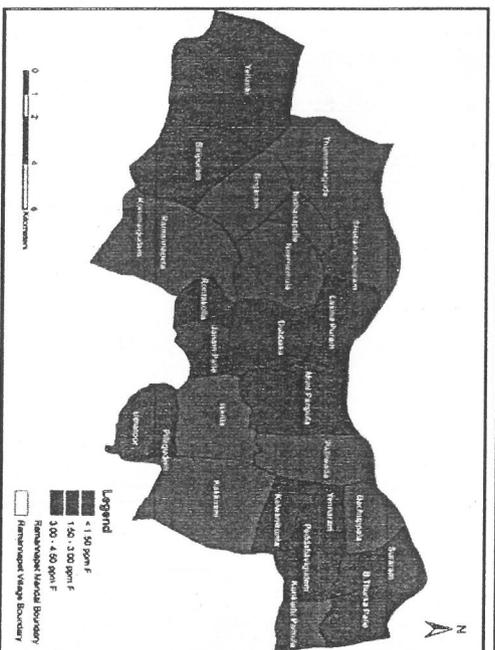


Fig.2: Ground water fluoride status map of Ramannapet mandal (Kharif, 2012)

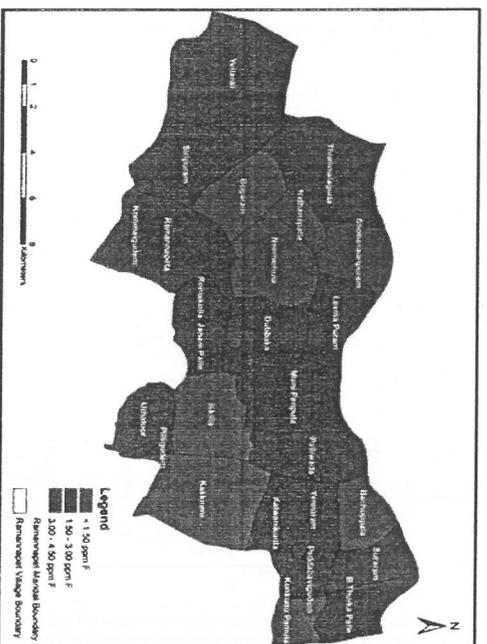


Fig.3: Ground water fluoride status map of Ramannapet mandal (Rabi, 2012-13)

As per drinking water standards of ICMR [4], the highest desirable concentration of F is 1.0 ppm in tropical countries and that of maximum permissible level is 1.50 ppm. Out of 30 samples, 53% of the ground water samples in kharif and 67% of the ground water samples in rabi have F content greater than that of maximum permissible limit of 1.50 ppm fluoride. On an average, maximum concentration of fluoride was noticed in 16 and 20 villages during *kharif* and *rabi*, respectively. Therefore drinking water is sufficient to produce severe form of dental fluorosis and mild form of skeletal fluorosis consumed for a long period. The rocks of this area possess fluoride content higher than the world average. Weathering of rocks and leaching of fluoride bearing minerals from the basement granitic rocks are the major reasons which contribute to elevated concentration of fluoride in ground water. The other important natural phenomenon that contributes to high fluoride is evaporation [5]. Similar results reported by Reddy *et al.* [6] and Kishore and Hanumantharao [7] in Nalgonda district. According to FAO [8], the normal and moderately suitable range of fluorides concentration in irrigable water is from <math>< 19 \text{ ppm}</math> (1.0 me L^{-1}) and 19 to 171 ppm ($1.0\text{-}15 \text{ me L}^{-1}$), respectively. Safe limit of 10 mg F L⁻¹of

irrigation water has been proposed for all type of crop plants by Leone *et al.* [9]. The present investigation showed that none of the water samples were found to cross this limits and hence suitable for irrigation purpose. However continuous application of irrigation waters having toxic concentration of fluoride is likely to affect adversely the crop growth.

Especially higher F concentrations were observed in bore well water samples (>1.5ppm) and the F concentration in dug well water samples found to be within permissible limit of 1.5 ppm. The concentration in general, increases with the depth of bore wells and this indicates the possible geogenic nature of fluoride.

SEASONAL VARIATIONS OF FLUORIDE

When compared to two seasons, the concentration of fluoride in groundwater during *kharif* was lower than the *rabi*. Seasonal distribution is found significantly and the variation of fluoride is dependent on many factors. Generally, a high rate of evapo-transpiration and over-exploitation of groundwater resources for agricultural and drinking water purposes during *rabi* season causes a low freshwater exchange and results in precipitation of salts, including F rich salts, temporarily in the top layers of the soil. During *kharif* season, the infiltrating waters leach these soils and replenishment of the groundwater by rainfall indicated a clean recharge from external sources. Hence, the concentration of fluoride is observed to be greater in the *rabi* season groundwater than in *kharif* season. As a result, 67% (20 samples) of the total groundwater samples from the *rabi* season are above the permissible limit of fluoride (1.50 ppm), compared to 53% (16 samples) of those from the *kharif* season.

Seasonal distribution of fluoride is also dependent on amount of soluble and insoluble fluoride in source rocks, the duration of contact

of water with rocks and soil temperature, rainfall and oxidation- reduction process [10 & 11].

CONCLUSION

High concentration of fluoride in groundwater of up to 3.94 ppm was measured. About 60% of wells had fluoride concentration above the permissible limit of 1.5 ppm set by Indian drinking water standard. The use of groundwater for drinking purpose from these wells has to be restricted. Suitable measures such as defluorinating the ground water before use and recharging the ground water by rainwater harvesting for irrigation purpose need to be practiced to improve the groundwater quality in this area.

ACKNOWLEDGEMENT

The authors are grateful to Professor Jayashankar Telangana State Agricultural University for providing financial assistance during my post-graduation under Dept. of Soil Science & Agricultural Chemistry, College of Agriculture, Rajendranagar, Hyderabad during the study.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no competing interests.

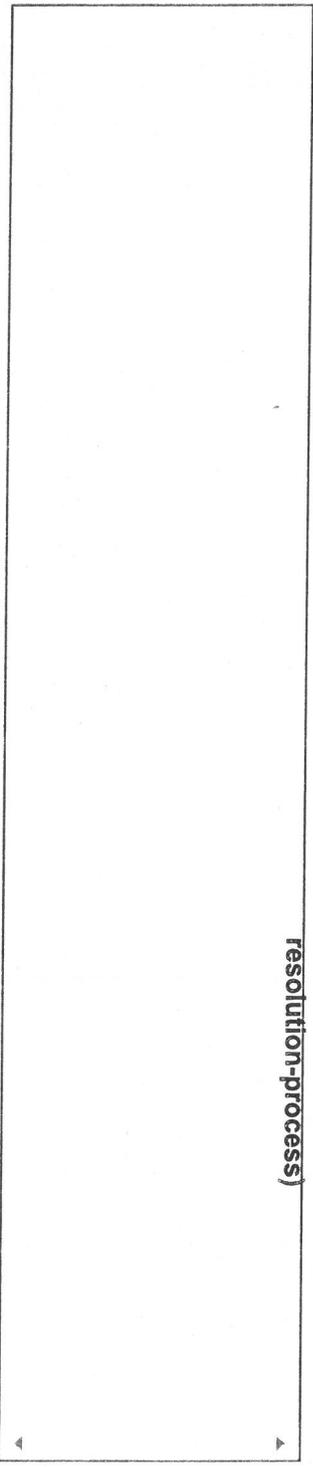
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NATION (/NATION), CURRENT AFFAIRS (/NATION/CURRENT-AFFAIRS)

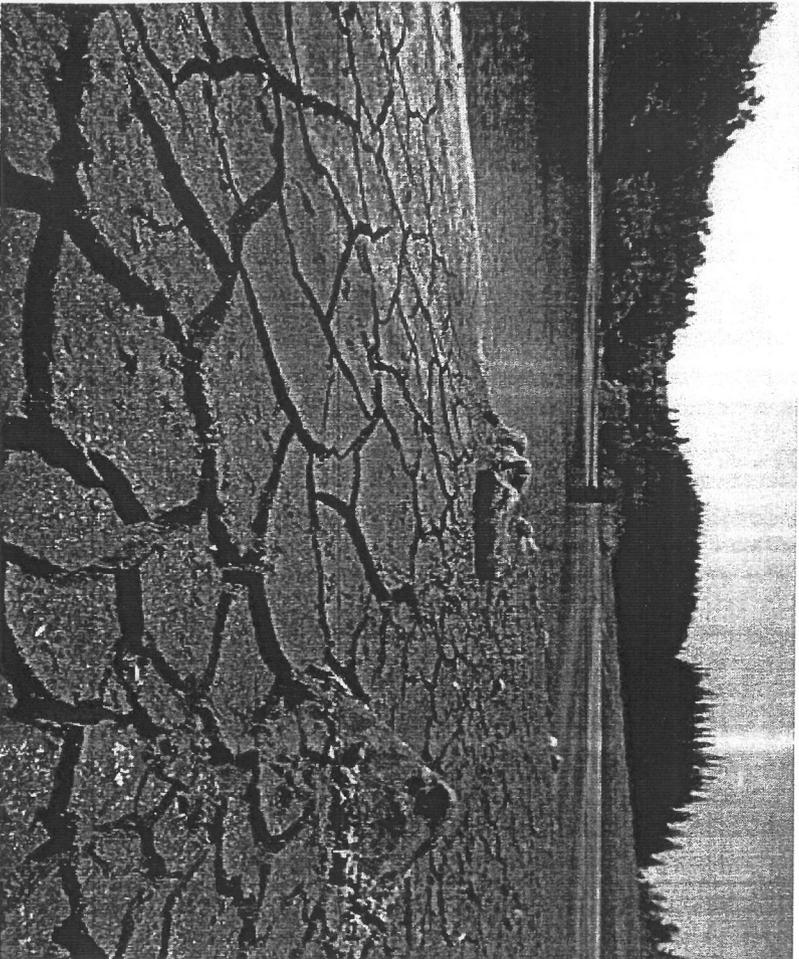
Drought causing distress migration from Telangana

DECCAN CHRONICLE

Published Aug 7, 2015, 6:51 am IST
Updated Mar 28, 2019, 7:08 am IST



Mahabubnagar is followed by Medak at eight lakh, Nizamabad at seven lakh and Adilabad at five lakh



Picture for representational purpose



Hyderabad: The ongoing drought is fuelling distress migration from districts in Telangana, a trend that was witnessed in the early 2000s. [e-Paper \(http://epaper.deccanchronicle.com/states.aspx\)](http://epaper.deccanchronicle.com/states.aspx) Sunday Chronicle (/sunday-chronicle)



The severe drought conditions for the s have led to crop failure, mounting debts, chronic unemployment and failure of the NREGA scheme, especially in the districts of Mahabubnagar, Medak, Nalgonda and Adilabad, forcing large-scale exodus of farmers and others.

Auto Refresh
| Corporate Insolvency Resolution Process (/corporate-insolvency-resolution-process)

The state government now fears that the crime rate will increase as earlier experiences suggest that whenever there have been droughts, the crime rate in the state has gone up, especially in rural and interior areas.



As per official estimates, Mahabubnagar tops the list with over 10 lakh rural population migrating to Hyderabad and Ranga Reddy districts in search of livelihood, mostly as daily-wage labourers, watchmen in colonies, apartments, shops etc. besides engaging in granite and construction industry on the city's outskirts.

Mahabubnagar is followed by Medak at eight lakh, Nizamabad at seven lakh and Adilabad at five lakh. "The severe drought conditions will hit not only the agriculture sector but would also lead to several social problems. There will be large-scale migration of people from rural areas to urban areas. There were instances earlier of increased crime rates where drought migrants had settled because of poverty and unemployment. The roads and highways surrounding vilages and interior areas witness a high number of theft cases with travellers on roads being attacked for money and other valuable items," said an official of the Agriculture department, which prepared a report on adverse impacts of drought.



 **e-Paper** (<http://lepaper.deccanchronicle.com/states.aspx>) | **Sunday Chronicle** (/sunday-chronicle)
Citing instances, he said that the districts of Adilabad, Nizamabad, Medak and Warangal had recorded 60 **Chronicle** (/rates) between 2000 and 2004 due to consecutive droughts, with most being road-side thefts near Khanapur, Basar, Ramayampet, Dichpally etc.

Auto Refresh
Corporate Insolvency Resolution Process (/corporate-insolvency-

The other social problem being witnessed on account of drought is **resolution-process**)

increasing school dropouts in government schools in rural areas due to the families migrating to urban areas.

"It's difficult to earn even `100 per day in villages in drought conditions. But in Hyderabad, we can earn up to Rs 500 per day as daily-wage labourers easily and working as watchmen, security guards etc.," said Shivanna, a small farmer from Mahabubnagar district.



 **Tags:** [telangana \(/content/tags/telangana\)](/content/tags/telangana), [nrega \(/content/tags/nrega\)](/content/tags/nrega), [drought \(/content/tags/drought\)](/content/tags/drought)

Location: [Telangana \(/location/india/telangana\)](/location/india/telangana)



PALAMURU-RANGAREDDY LIFT IRRIGATION SCHEME

SCHEMATIC DIAGRAM

K.P.LAKSHMIDEVIPALLI RESERVOIR	
FRL	670.00 M
CAPACITY	2.80 TMC
SUBMERGENCE AREA	1500 Ac
BUND LENGTH(Km)	6.050/6.050(Net)
TUNNEL DIA	8.0 M
DISCHARGE	165 Cumecs
AYACUT	413,000 Ac
SMC (+646.84)	34,200 Ac
E.M.C (+646.60)	2,00,800 Ac
N.M.C (+647.33)	1,78,000 Ac

UDANDAPUR RESERVOIR	
FRL	629.000 M
CAPACITY	16.03 TMC
SUBMERGENCE AREA	4827 Ac
BUND LENGTH (Km)	15.875/15.875(Net)
TWIN TUNNEL DIA	8.50 M
DISCHARGE	377.00 Cumecs
AYACUT	5,02,000 Ac
1 R.M.C (+599.500)	9,000 Ac
2 R.M.C (+596.78)	1,42,000 Ac
SOUTH M.C (+588.25)	30,000 Ac
LEFT M.C (+596.800)	1,20,000 Ac
MADDUR M.C (+589.937)	1,74,000 Ac
HANWADA M.C (+591.210)	27,000 Ac

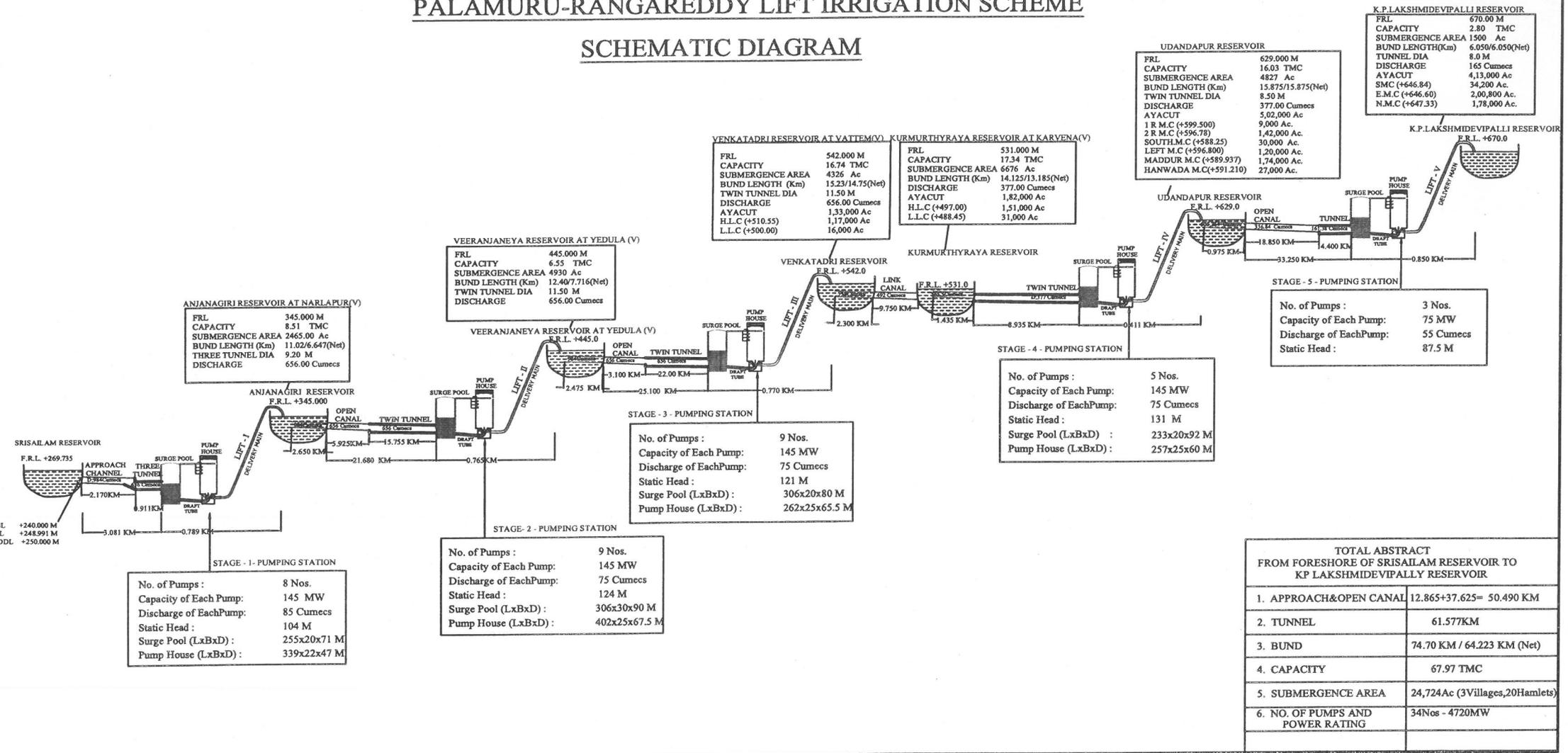
VENKATADRI RESERVOIR AT VATTEM(V)	
FRL	542.000 M
CAPACITY	16.74 TMC
SUBMERGENCE AREA	4326 Ac
BUND LENGTH (Km)	15.23/14.75(Net)
TWIN TUNNEL DIA	11.50 M
DISCHARGE	656.00 Cumecs
AYACUT	1,33,000 Ac
H.L.C (+510.55)	1,17,000 Ac
L.L.C (+500.00)	16,000 Ac

KURMURTHYRAYA RESERVOIR AT KARVENA(V)	
FRL	531.000 M
CAPACITY	17.34 TMC
SUBMERGENCE AREA	6676 Ac
BUND LENGTH (Km)	14.125/13.185(Net)
DISCHARGE	377.00 Cumecs
AYACUT	1,82,000 Ac
H.L.C (+497.00)	1,51,000 Ac
L.L.C (+488.45)	31,000 Ac

VEERANJANEYA RESERVOIR AT YEDULA (V)	
FRL	445.000 M
CAPACITY	6.55 TMC
SUBMERGENCE AREA	4930 Ac
BUND LENGTH (Km)	12.40/7.716(Net)
TWIN TUNNEL DIA	11.50 M
DISCHARGE	656.00 Cumecs

ANJANAGIRI RESERVOIR AT NARLAPUR(V)	
FRL	345.000 M
CAPACITY	8.51 TMC
SUBMERGENCE AREA	2465.00 Ac
BUND LENGTH (Km)	11.02/6.647(Net)
THREE TUNNEL DIA	9.20 M
DISCHARGE	656.00 Cumecs

SRSAILAM RESERVOIR	
F.R.L.	+269.735
C.B.L.	+240.000 M
F.S.L.	+248.991 M
M.D.D.L.	+250.000 M



No. of Pumps :	8 Nos.
Capacity of Each Pump:	145 MW
Discharge of Each Pump:	85 Cumecs
Static Head :	104 M
Surge Pool (LxBxD) :	255x20x71 M
Pump House (LxBxD) :	339x22x47 M

No. of Pumps :	9 Nos.
Capacity of Each Pump:	145 MW
Discharge of Each Pump:	75 Cumecs
Static Head :	124 M
Surge Pool (LxBxD) :	306x30x90 M
Pump House (LxBxD) :	402x25x67.5 M

No. of Pumps :	9 Nos.
Capacity of Each Pump:	145 MW
Discharge of Each Pump:	75 Cumecs
Static Head :	121 M
Surge Pool (LxBxD) :	306x20x80 M
Pump House (LxBxD) :	262x25x65.5 M

No. of Pumps :	5 Nos.
Capacity of Each Pump:	145 MW
Discharge of Each Pump:	75 Cumecs
Static Head :	131 M
Surge Pool (LxBxD) :	233x20x92 M
Pump House (LxBxD) :	257x25x60 M

No. of Pumps :	3 Nos.
Capacity of Each Pump:	75 MW
Discharge of Each Pump:	55 Cumecs
Static Head :	87.5 M

TOTAL ABSTRACT	
FROM FORESHORE OF SRSAILAM RESERVOIR TO KP LAKSHMIDEVIPALLY RESERVOIR	
1. APPROACH & OPEN CANAL	12.865+37.625= 50.490 KM
2. TUNNEL	61.577KM
3. BUND	74.70 KM / 64.223 KM (Net)
4. CAPACITY	67.97 TMC
5. SUBMERGENCE AREA	24,724 Ac (3 Villages, 20 Hamlets)
6. NO. OF PUMPS AND POWER RATING	34 Nos - 4720 MW

-41-

ANNEXURE-R5

No.- J-12011/31/2017-IA-1 (R)
Ministry of Environment, Forests and Climate Change
Government of India
[IA-1 Division]

Indira Paryavaran Bhawan
3rd Floor, Vayu Wing
Jor Bagh Road
New Delhi-110003
Dated: 11th October 2017

To
Shri V. Lingaraju
Chief Engineer
Irrigation and CAD Department
Government of Telangana,
5th Floor, Jalsoudha Building, Erramanzil,
Hyderabad - 500082

Subject: **Palamaru Rangareddy Lift Irrigation Scheme in Mahubunagar,
Rangareddy & Nalgonda Districts of Telangana by Irrigation
and CAD Department, Government of Telangana - TOR - regd.**

Sir,

This has reference to your letter No. CE/PRLIS/DCE/O.T-
1/T.S1/2215 dated 28.8.2017 on the above-mentioned subject.

2. The above proposal was appraised by the Expert Appraisal Committee (EAC) for River Valley & Hydroelectric Power Projects (RV & HEP) in its 8th meeting held on 22.9.2017. The comments and observations of EAC may be seen in the Minutes of the meeting that are available on the Ministry's website.
3. It was noted that the scheme in its first phase envisages lifting of 90 TMC of flood water in 60 days during the flood season from the fore shore of the Srisailem reservoir on Krishna river at Yellur (V), Kollapur (M) in Mahabunagar (D) through 5 separate stages to provide drinking water facilities to enroute 1428 villages in 74 mandals of Mahabunagar, Rangareddy and Nalgonda Districts, Hyderabad City and also envisages to provide water for industrial use in Mahabunagar, Rangareddy and Nalgonda Districts. The Cultural Command Area (CCA) is 4,97,976 ha. The total land requirement for the project is 15,790 ha. There is no displacement as no habitation is coming under submergence.
4. In 2nd phase, canal network will be developed from the reservoirs to create irrigation to up land areas of Mahabunagar, Rangareddy and Nalgonda districts for an ayacut of 4.97,976 ha. Later on, this stored water shall be used for irrigation purposes in various districts through a network

of canals. In addition to the drinking water facility, it is proposed to irrigate in 4,97,976 ha of CCA in the districts of Mahabubnagar, Rangareddy and Nalgonda. A total of 15,790 ha land will be acquired for construction various canals network, reservoir, temporary labourers colonies, etc. No forestland is involved in the proposed project.

5. The proposed project is located at a distance of 11.95 km from the core of Amrabad Tiger Reserve, 2.56 km from the buffer and 1.56 from the proposed Eco-Sensitive Zone (ESSZ) of Amrabad Tiger Reserve. The total cost of the project is about Rs. 35,200 Crores and likely to be completed in 30 months.

6. Based on recommendations of the EAC, the Ministry of Environment, Forest & Climate Change, hereby accords a fresh clearance for pre-construction activities at the proposed site as per the provisions of the Environmental Impact Assessment Notification, 2006 and subsequent amendment, 2009 along with the following Terms of Reference (ToR) for the preparation of EIA/ EMP report:

- a) The EIA/EMP report should contain the information in accordance with provisions & stipulations as given in the **Annexure-1**.
- b) The consultant engaged for preparation of EIA/EMP report has to be registered with Quality Council of India (QCI/ NABET under the scheme of Accreditation & Registration of MoEF. This is a pre-requisite.
- c) Consultant shall include a "Certificate" in EIA/EMP report regarding portion of EIA/EMP prepared by them and data provided by other organisation(s)/ laboratories including status of approval of such laboratories.
- d) The draft EIAA/EMP report prepared as per **Annexure-I** should be submitted to the State Pollution Control Board Committee concerned for conducting Public Consultation as per the provisions stipulated in EIA Notification of 2006. Public Hearing, which is a component of Public Consultation, shall be held district wise at the site or in its close proximity as prescribed in Appendix (IV) of EIA Notification, 2006. The draft EIA/EMP report is to be submitted to SPCB etc. sufficiently before the expiry of the ToR validity so that necessary amendments in EIA/EMP can be undertaken based on public hearing and the same is submitted to MoEF&CC before expiry of validity.
- e) The PP has disclosed during the TOR presentation that Monsoon season data has been collected in 2017 for this project and requested the EAC to accept the same for use in the EIA/EMP report. The committee accepts that the Monsoon data collected can be included in the EIA/EMP report.
- f) All issues discussed in the Public Hearing / Consultations should be addressed and incorporated in the EIA/EMP report. Final EIA/EMP report should be submitted to the Ministry for Environmental



②

Clearance only after incorporating these issues before the expiry of validity of ToR.

- g) The ToR will remain valid for a period of 4 years from the date of issue of this letter for submission of EIA/EMP report along with public consultation. The ToR will stand lapsed on completion of 4 years in case final EIA/EMP is not submitted and the validity is not extended.
- h) In case of any change in the scope of the project such as capacity enhancement, change in submergence, etc., fresh scoping clearance has to be obtained by the project proponent.
- i) The PP should submit a copy of TEC of the DPR along with EIA/EMP report.
- j) Information pertaining to Corporate Environmental Responsibility and Environmental Policy shall be provided in the EIA/EMP Report as per this Ministry's OM No. J-11013/25/2014-IA-1 dated 11.08.2014 (Reference as **Annexure-II**)
- k) The EIA/ EMP report must contain an Index showing details of compliance of all TOR conditions. the Index will comprise of page no. etc., vide which compliance of a specific ToR is available. It may be noted that without this index, EIA/ EMP report will not be accepted.
- l) In case the validity is to be extended, necessary application is to be submitted to Regulatory Authority before expiry of validity period together with an updated Form-I based on proper justification.

This has approval of the Competent Authority.

Yours faithfully,

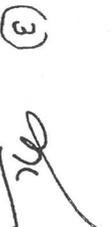


(Dr. S. Kerketta)

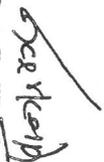
Director

Copy to:

1. The Secretary, Ministry of Water Resources, Shram Shakti Bhawan, Rafi Marg, New Delhi - 1.
2. The Principal Secretary (Irrigation), Government of Telangana, Secretariat, Hyderabad - 500 001.
3. The Secretary, Department of Environment & Forest, Government of Telangana, Secretariat Hyderabad - 500 022.
4. The Chief Engineer, Project Appraisal Directorate, Central Water Commission, Sewa Bhawan, R. K. Puram, New Delhi - 110 066.
5. The Addl. PCCF (C), Ministry of Environment, Forest and Climate Change, Regional Office (SEZ), 1st and 2nd Floor, Handloom Expert Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai - 600 034.

(3) 

6. The Member Secretary, Telangana State Pollution Control Board,
Paryavaran Bhawan, Industrial Estate, Sanath Nagar, Hyderabad.
7. Guard File.


(Dr. S. Kerketta)
Director

Annexure-I

TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR 'A' CATEGORY RIVER VALLEY PROJECTS AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT

(1) Scope of EIA Studies

The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analyzed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.

(2) Details of the Project and Site

- General introduction about the proposed project.
- Details of project and site giving L.-sections of all U/S and D/S projects of River with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed unrestricted release from the site of diversion into the main river.
- A map of boundary of the project site giving details of protected areas in the vicinity of project location.
- Location details on a map of the project area with contours indicating main project features. The project layout shall be superimposed on a contour map of ground elevation showing main project features (viz, location of dam, Head works, main canal, branch canals, quarrying etc.) shall be depicted in a scaled map.
- Layout details and map of the project along with contours with project components clearly marked with proper scale maps of at least a 1:50,000 scale and printed at least on A3 scale for clarity.
- Existence of National Park, Sanctuary, Biosphere Reserve etc. in the study area, if any, should be detailed and presented on a map with distinct distances from the project components.
- Drainage pattern and map of the river catchment up to the proposed project site.
- Delineation of critically degraded areas in the directly draining catchment on the basis of silt Yield Index as per the methodology of All India Soil and Land Use Survey of India.
- Soil characteristics and map of the project area.
- Geological and seismo-tectonic details and maps of the area surrounding the proposed project site showing location of dam site and canal site.
- Remote Sensing studies, interpretation of satellite imagery, topographic sheets along with ground verification shall be used to develop the land use/land cover pattern of the study using overlaying mapping techniques viz. Geographic Information System (GIS), False Color composite (FCC) generated from satellite data of project area.
- Land details including forests, private and other land.

(5)

- Demarcation of snow fed and rain fed areas for a realistic estimate of the water availability.

(3) Description of Environment and Baseline Data

To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socio-economic status etc. should be collected with 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline data should be collected for 3 seasons (Pre-Monsoon, Monsoon and Post Monsoon seasons). Flora/fauna in the catchment area and command area should be documented. The study area should comprise of the following:

- Catchment area up-to the darn site.
- Submergence Area
- Project area or the direct impact area should comprise of area falling within 10 km radius from periphery of reservoir, land coming under submergence and area downstream of dam

(4) Details of the Methodology

- The methodology followed for collection of base line data along with details of number of samples and their locations in the map should be included.
- Study area should be demarcated properly on the appropriate scale map.
- Sampling sites should be depicted on map for each parameter with proper legends.
- For forest classification, Champion and Seth (1968) classification should be followed.

(5) Methodology for collection of Biodiversity Data

- The number of sampling locations should be adequate to get a reasonable idea of the diversity and other attributes of flora and fauna. The guiding principles should be the size of the study area (larger area should have larger number of sampling locations) and inherent diversity at the location, as known from secondary sources (e.g. eastern Himalayan and low altitude sites should have a larger number of sampling locations owing to higher diversity).
- The entire area should be divided in grids of 5km X 5km preferably on a GIS domain. There after 25% of the grids should be randomly selected for sampling of which half should be in the directly affected area (grids including project components such as reservoir, clam, powerhouse, tunnel, canal etc.) and the remaining in the rest of the area (areas of influence in 10 km radius from project components). At such chosen location, the size and number of sampling units (e.g. quadrats in case of flora/transsects in case of fauna) must be decided by species area curves and the details of the same (graphs and cumulative number of species in a tabulated form) should be provided in the EIA report. Some of the grids on the edges may not be completely overlapping with the study area boundaries. However these should be counted and considered for selecting 25% of the grids. The number of grids to be surveyed may come out as a

- decimal number (i.e. it has an integral and a fractional part) which should be rounded to the next whole number.
- The conventional sampling is likely to miss the presence of rare, endangered and threatened (R.E.T.) species since they often occur in low densities and in case of faunal species are usually secretive in behavior. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state *can* be referred to. Once a listing of possible R.E.T. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of R.E.T. species should be provided in the EIA reports.
- The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1.972 and those listed in the red data books (BSI, ZSI and IUCN).

(6) Components of the EIA Study

Various aspects to be studied and provided in the EIA/EMP report are as follows:

A. Physical and Chemical Environment

- (i) Geographical, Geological & Geophysical Aspects and Seismo-Tectonics:**
- Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
 - Tectonics, seismicity and history of past earthquakes in the area. A site specific study of the earthquake parameters will be done. The results of the site specific earthquake design shall be sent for approval of the NCSDP (National committee of Seismic Design Parameters, Central water commission, New Delhi. for large dams.
 - Landslide zone or area prone to landslide existing in the study area should be examined.
 - Presence of important economic mineral deposit, if any.
 - Justification for location & execution of the project in relation to structural components (darn height).
 - Impact of project on geological environment.

(ii) Meteorology, Air and Noise:

- Meteorology (viz. Temperature, Relative humidity, wind speed/ direction etc.) to be collected from nearest IMD station.

(7)



- Ambient Air Quality with parameters viz. suspended particulate matter (SPM), respirable suspended particulate matter (RSPM) i.e. suspended particulate matter <10 microns, sulphur dioxide (SO₂) and oxide of Nitrogen (NO_x) in the study area at 6 locations.
- Existing noise levels and traffic density in the study area at 6 locations.

(iii) Soil Characteristics

- Soil classification, physical parameters (viz., texture, porosity, bulk density and water holding capacity) and chemical parameters (viz. pH, electrical conductivity, magnesium, calcium, total alkalinity, chlorides, sodium, potassium, organic carbon, available potassium, available phosphorus, SAR, nitrogen and salinity, etc.) (6 locations).

(iv) Remote sensing and GIS Studies

- Generation of thematic maps viz., slope map, drainage map, soil map, land use and land cover map, etc. Based on these, thematic maps, an erosion intensity map should be prepared.
- New configuration map to be given in the EIA Report.

(v) Water Quality

- History of the ground water table fluctuation in the study area.
- Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO₂, PO₄, Cl, SO₄, Na, K, -Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total conform) and (iv) Heavy Metals (Pb, As, Fig, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
- Delineation of sub and micro-watersheds, their locations and extent based on the All India Soil and Land Use Survey of India (AISLUS), Department of Agriculture, Government of India. Erosion levels in each micro-watershed and prioritization of micro-watershed through silt yield index (SYI) method of AISLUS

B. Water Environment and Hydrology

- Hydro-Meteorology of the project viz. precipitation (snowfall, rainfall), temperature, relative humidity, etc. Hydro-meteorological studies in the catchment area should be established along-with real time telemetry and data acquisition system for inflows monitoring.
- Run off, discharge, water availability for the project, etc.
- Basin characteristics.
- Catastrophic events like cloud bursts and flash floods, if any, should be documented.
- For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum 1 year actual silt flow rate to be expressed in ha-in km² year⁻¹.
- Sedimentation data available with CWC may be used to find out the loss in storage over the years.
- Set-up G&D monitoring station in the catchment area for collecting data during the investigation.
- Flow series, 10 daily with 90%, 75%, and 50% dependable years discharges.

ok

- A table of 10 daily water discharge in 75% dependable year showing the intercentred discharge at the barrage, diversion for irrigation, environmental and other flow releases downstream of the barrage shall be included in the EIA report.
- Environmental flow release would be 20% of average of four consecutive months of 90% dependable year in lean season, 25% in non-monsoon & non-lean season and 30% in monsoon to be followed corresponding to 90%dependable year. A site specific study on minimum environment flow should be carried out
- Hydrological studies/data as approved by CWC shall be utilized in the preparation of ETA/EMP report. Actual hydrological annual yield may also be given in the report.
- A minimum of 1 km distance from the tip of the reservoir to the tail race tunnel should be maintained between upstream and downstream projects.

C Biological Environment

Besides primary studies, review of secondary data/literature published for project area on flora & fauna including RET species shall be reported in EIA/EMP report

(i) Flora

- Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
- Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteridophytes, Bryophytes (all groups). All species list should be provided.
- General vegetation profile and floral diversity covering all groups of flora including *lichens* and orchids. A species wise list may be provided.
- Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index (WI), Shannon Weiner index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrates, size of quadrates etc. to be reported within the study area in different ecosystems.
- Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
- Economically important species like medicinal plants, timber, fuel wood etc.
- Details of endemic species found in the project area.
- Flora under RET categories should be documented using International Union for the Conservation of Nature and Natural Resources (IUCN) criteria and Botanical Survey of India's Red Data list along-with economic significance.
- Species diversity curve for RET species should be given.
- Cropping pattern and Horticultural Practices in the study area.
- Biodiversity study shall be carried out by associating a reputed organization as per the list of such institutes is available on Moef & CC website.

(ii) Fauna:

- Fauna study and inventurisation should be carried out for all groups of animals in the study area. Their present status along with Schedule of the species.
- Information (authenticated) on Avi-fauna and wildlife in the study area.
- Status of avifauna their resident/ migratory/ passage migrants etc.
- Documentation of butterflies, if any, found in the area.

- Details of endemic species found in the project area.
- RET species-voucher specimens should be collected along-with GPS readings to facilitate rehabilitation. RET faunal species to be classified as per IUCN Red Data list and as per different schedule of Indian Wildlife (Protection) Act, 1972.
- Existence of barriers and corridors, if any, for wild animals.
- Compensatory afforestation to compensate the green belt area that will be removed, if any, as part of the proposed project development and loss of biodiversity.
- Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.

D Aquatic Ecology

- Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplankton, benthos etc.
- Fish and fisheries, their migration and breeding grounds.
- Fish diversity composition and maximum length & weight of the measured populations to be studied for estimation of environmental flow.
- Conservation status of aquatic fauna.
- Sampling for aquatic ecology and fisheries must be conducted during the seasons – Pre-monsoon (summer), monsoon and winter. Sizes (length & weight) of important fish species need to be collected and breeding and feeding grounds should be identified along the project site or in vicinity.

E Socio-Economic

- Collection of baseline data on human settlements, health status of the community and existing infrastructure facilities for social welfare including sources of livelihood, job opportunities and safety' and security of workers and surroundings population.
- Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
- Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
- The socio-economic survey/ profile within 10 km of the study area for demographic profile; Economic Structure; Developmental Profile; Agricultural Practices; Infrastructure, education facilities; health and sanitation facilities; available communication network etc.
- Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
- Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
- Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
- List of all the Project Affected Families with their name, age, educational qualification, family size, sex, religion, caste, sources of income, land & house holdings, other properties, occupation, source of income, house/land to be acquired for the project and house/land left with the family, any other property, possession of cattle, type of house etc.
- In addition to socio-economic aspects of the study area, a separate chapter on socio-cultural aspects based upon study on Ethnography of the area should be provided.

(7) Impact Prediction and Mitigation Measures

The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described,

- (i) **Air Environment**
 - Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.
 - Effect on soil, material, vegetation and human health.
 - Impact of emissions from DG set used for power during the construction, if any, on air environment.
 - Pollution due to fuel combustion in equipment and vehicles
 - Fugitive emissions from various source
- (ii) **Water Environment**
 - Changes in surface and ground water quality
 - Steps to develop pisci-culture and recreational facilities
 - Changes in hydraulic regime and downstream flow.
 - Water pollution due to disposal of sewage
 - Water pollution from labour colonies/ camps and washing equipment.
- (iii) **Land Environment**
 - Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting_ for commissioning of HRT, TRT and some other structures.
 - Changes in land use / land cover and drainage pattern
 - Immigration of labour population
 - Quarrying operation and muck disposal
 - Changes in land quality including effects of waste disposal
 - River bank and their stability
 - Impact clue to submergence.
- (iv) **Biological Environment**
 - Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
 - Pressure on existing natural resources
 - Deforestation and disturbance to wildlife, habitat fragmentation and wild animals' migratory corridors
 - Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
 - Impact on fish migration and habitat degradation due to decreased flow of water
 - Impact on breeding and nesting grounds of animals and fish.
- (v) **Socio-economic aspects**
 - Impact on local community including demographic profile.
 - Impact on socio-economic status
 - Impact on economic status.
 - Impact on human health due to water / vector borne disease

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- Impact on increase traffic
- Impact on Holy Places and Tourism
- Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studied. Proper record shall be maintained of the baseline information in the post project period.
- Positive and negative impacts likely to be accrued due to the project are listed.

(8) Environmental Management Plans

- **Catchment Area Treatment (CAT)** Plan should be prepared micro-watershed wise. Identification of free draining/ directly draining catchment based upon Remote Sensing and Geographical Information System (GIS) methodology and Sediment Yield Index (SYI) method of SLUSOI coupled with ground survey. Areas or watersheds falling under 'very severe' and 'severe' erosion categories are required to be treated. Both biological as well as engineering measures should be proposed in consultation with State Forest Department. Year-wise schedule of work and monetary allocation should be provided. Mitigation measures to check shifting cultivation in the catchment area with provision for alternative and better agricultural practices should be included.
- **Command Area Development (CAD) Plan** giving details of implementation schedule with a sample CAD plan.
- **Compensatory Afforestation** shall be prepared by the State Forest Department in lieu of the forest land proposed to be diverted for construction of the project as per the Forest (Conservation) Act, 1980. Choice of plants for afforestation should include native and RET species, if any.
- **Biodiversity and Wildlife Conservation and Management Plan** for the conservation and preservation of rare, endangered or endemic floral/ faunal species or some National Park/Sanctuary/ Biosphere Reserve or other protected area is going to get affected directly or indirectly by construction of the project, then suitable conservation measures should be prepared in consultation with the State Forest Department.
- **Resettlement and Rehabilitation (R&R) Plan** need to be prepared with consultation of the project affected families and the State Government: Detailed budgetary estimates are to be provided. Resettlements site should be identified. The plan will also incorporate community development strategies. *Land acquisition for the project whose land is to be acquired should be suitably compensated in accordance with the law of the land and prevailing guidelines. R&R Plan is to be formulated as per new Act, 2013 which came into force w.e.f. 1.1.2014.*
- **Green Belt Development Plan** along the periphery of the reservoir, approach roads around the colonies and other project components, local plant species must be suggested with physical and financial details. Local plant species suitable for greenbelt should be selected.
- **Fisheries Conservation and Management Plan** – Fish fauna inhabiting the affected stretch of river, a specific fisheries management plan should be prepared for river and reservoir. If any migratory fish species is getting affected then the migratory routes, time/season of upstream and downstream migration, spawning grounds etc will be discussed in details.

- **Reservoir Rim Treatment Plan** for stabilization of land slide/ land slip zones, if any, around the reservoir periphery is to be prepared based on detailed survey of geology of the reservoir rim area. Suitable engineering and biological measures for treatment of identified slip zones to be suggested with physical and financial schedule.
- **Muck Disposal Plan** suitable sites for dumping of excavated materials should be identified in consultation with State Pollution Control Board and State Forest Department. All muck disposal sites should be minimum 30 m away from the HF section/cross section of muck disposal sites should also be given. The L - The plan shall have physical and financial details of the measures proposed.
- **Plan for Restoration of quarry sites** and landscaping of colony areas, working areas, roads etc. Details of the coarse/fine aggregate/clay etc. required for construction of the project and the rock/clay quarries/river shoal sites identified for the project should be discussed along-with the engineering and Biological measures proposed for their restoration with physical and financial details.
- **Study of Design Earthquake Parameters:** A site specific study of earthquake parameters should be done. Results of the site specific earthquake design parameters should be approved by National Committee of Seismic Design Parameters, Central Water commission (NCSDDP), New Delhi.
- **Dam Break Analysis and Disaster Management Plan** The outputs of dam break model should be illustrated with appropriate graphs and maps clearly bringing out the impact of Dam Break scenario. The action plan will include Emergency Action and Management plan including measures like preventive action notification, warning procedure and action plan for co-ordination with various authorities.
- **Water, Air and Noise Management Plans** to be implemented during construction and post-construction periods.
- Mitigation measures due to blasting on the structures in the vicinity
- **Groundwater management plan**
- **Public Health Delivery Plan** including the provisions of drinking water supply for local community.
- **Sanitation and Solid waste management plan** for domestic waste from colonies and labour camps etc.
- **Local Area Development Plan** to be formulated in consultation with the Revenue Officials and Village Panchayats. Local skill development schemes should be given. Details of various activities undertaken along with its financial outlay should be provided.
- Environmental safeguards during construction activities including Road Construction.
- **Energy Conservation Measures**
- **Environmental Monitoring Programme** with physical & financial details covering all the aspects of EMP. A summary of cost estimates for all the plans, cost of implementing all the Environmental Management Plans.

(9) In the EMP, please include a sample CAD plan for a distributary outlet command. Such plan is to show the alignment of irrigation and drainage channels. The components of OFD works to be undertaken may be clearly mentioned along with a time schedule for their completion vis-&-vis the progress of irrigation development.

Additional TOR

- i. The scheme in its first phase envisages lifting of 90 TMC of floodwater in 60 days during the flood season from the foreshore of the Srisaigram project on Krishna river at Yellur village through five separate stages, ending at K.P. Laxmidvipally village. Therefore, water availability analysis at Yelluru village (point of drawl) during monsoon season is to be submitted to ascertain sufficiency of water available.
- ii. As the area is on fluoride affected zone, therefore, provisions should also be made to recharge the groundwater through proposed reservoirs to dilute fluoride levels.
- iii. Groundwater be treated for removal of fluoride and then the treated water be supplied to the villagers for drinking purposes.
- iv. Provision of e-flow should be ensured for the sustenance of aquatic life in the downstream river.
- v. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines.
- vi. Though, total power requirement has been provided, but its firm linkage is to be supported with documents.
- vii. Proof of application for diversion of forestland for non-forest purpose will be submitted to the Ministry within one month, if any.
- viii. Information on species composition in particular to fish species from any previous study/literature should be included.
- ix. The clearance from Standing Committee of NBWL under the Wildlife (Protection) Act, 1972 should be obtained, as applicable.
- x. Wildlife Conservation plan be prepared for the area located within the project and implemented by the project proponent in consultation with the State Forest Department. Wildlife Conservation plan also to be prepared for the impacted area due to construction of the project falling outside the project area and implemented by the local state Forest Department.
- xi. Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead proposal for various uses may be proposed in the revised EIA/EMP report.
- xii. Resettlement & Rehabilitation Plan should be implemented as per the prevail guidelines of the Govt. of India.
- xiii. Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, necessary trainings to the youths be provided for their appropriate engagements in the Project

No.J-11013/25/2014-IA.1
Government of India
Ministry of Environment & Forests

Indira ParyavaranBhawan,
JorBagh Road, Ali Ganj,
New Delhi-11003

Dated the 11th August, 2014

OFFICE MEMORANDUM

**Subject: Environment sustainability and CSR related issues-
guidelines**

The Environment Impact Assessment (EIA) Notification 2006, issued under the Environment (Protection) Act 1986, as amended from time to time, prescribes the process for granting prior environment clearance (EC) in respect of certain development projects / activities listed out in the Schedule to the notification.

2. Sustainable development has three components, viz., social, economic and environmental. All the three components are closely inter-related and mutually re-enforcing. Considering this, the general structure of EIA document, under Appendix-III to the notification, prescribes inter-alia public consultation, social impact assessment and R&R action plan besides environment management plan (EMP).
3. It is noticed that while there is clarity on the guidelines on EMP, as regards sustainability related issues, different formulations have been prescribed in the conditions in EC letters for the projects under different sectors listed out in Schedule to the EIA Notification, 2006. Thus, there is a need to issue guidelines on the subject.
4. Section 135 of the Companies Act, 2013 deals with corporate social responsibility and Schedule-VII of the Act lists out the activities which may be included by companies in their CSR Policies. The activities relating to "ensuring environmental sustainability", are listed in this schedule. Further, Ministry of Corporate Affairs has also notified the Companies (Corporate Social Responsibility Policy) Rules, 2014.
5. The concept of CSR as provided for in the Companies Act, 2013 and covered under the Companies (Corporate Social Responsibility Policy) Rules, 2014 comes into effect only in case of companies having operating projects and making net profit as also subject to other stipulations contained in the aforesaid Act and Rules. The environment clearance given to a project may involve a situation where the concerned company is yet to make any net profit and / or is not covered under the purview of the aforesaid Act and Rules. Obviously, in such cases, the provisions of aforesaid Act and Rules will not apply.

6. The matter has been further examined in the Ministry of Environment, Forests & Climate Change (MoEF&CC). It has been decided that in respect of valid concerns expressed during the public consultations, mitigation issues emerging from social impact assessment and R&R Plan, the concerns of proponents, in EIA / EMP report will clearly state the activity, the cost involved (both capital as well as recurring costs), the phasing of these activities along with costs and also as to how such expenditure would be met. The costs and the timelines for various activities as prepared by the project proponent may be looked into by the concerned Expert Appraisal Committee (EAC) for their reasonableness and appropriate recommendations in the matter reflected in the minutes of EAC meeting. In case these activities (or some of these activities) are proposed to be covered by the project proponent under CSR activities, the project proponent should commit providing for the same. In either case, the position regarding the agreed activities, their funding mechanism and the phasing should be clearly reflected in the EC letter.

7. The obligation on part of the project proponents, as mentioned in para5 above, should be stated at the TOR stage itself as one of the TORs for the project.

8. All Sectoral EACs will follow the aforesaid procedure on environment sustainability and CSR related issues while appraising the projects and do away with the existing practices being followed on the subject, if any.

9. These guidelines will apply mutatis mutandis to SEACs/SEIAAs.

10. This issues with the approval of the Component Authority.

[Signature]
(Dr. Satish C.Garkoti)
Scientist 'F'

To

1. All the Officers of IA Division
2. Chairpersons / Member Secretaries of all the SEIAAs / SEACs
3. Chairman, CPCB
4. Chairpersons / Member Secretaries of all SPCBs / UTPCCs

Copy to:

1. PS to MEF
2. PPS to Secretary (EF&CC)
3. PPS to AS(SS)
4. PPS to JS(AT)
5. Website of MoEF&CC
6. Guard File

Shri Satish Garkoti
19/08/14

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