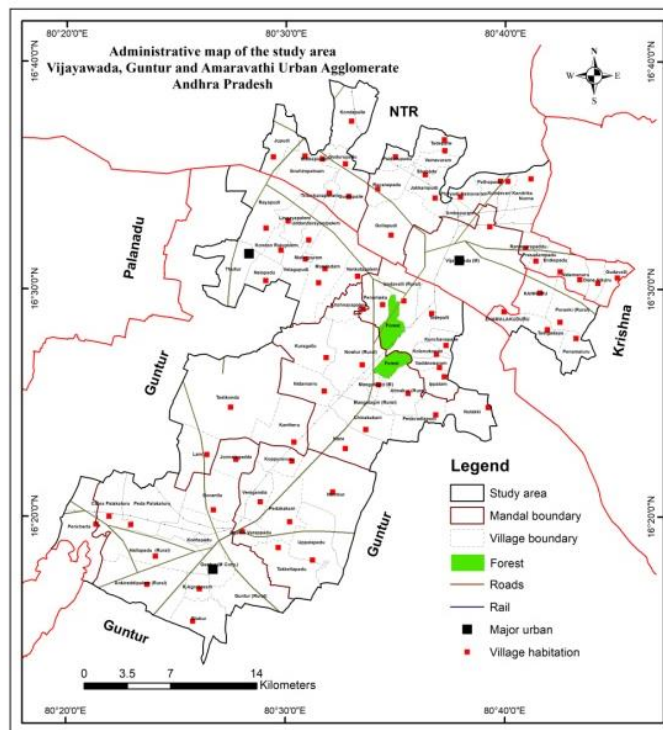




**GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT &
GANGA REJUVENATION
CENTRAL GROUND WATER BOARD**

**INCEPTION REPORT ON
DETAILED STUDY ON AQUIFER MAPPING AND MANAGEMENT
IN PARTS OF VIJAYAWADA, GUNTUR AND AMARAVATHI
URBAN AGGLOMERATE & IT'S SURROUNDING AREAS,
ANDHARA PRADESH UNDER NAQUIM 2.0**



**CENTRAL GROUND WATER BOARD
SOUTHERN REGION
HYDERABAD
May 2023**

INCEPTION REPORT ON DETAILED STUDY ON AQUIFER MAPPING AND MANAGEMENT IN PARTS OF VIJAYAWADA, GUNTUR AND AMARAVATHI URBAN AGGLOMERATE & IT'S SURROUNDING AREAS, ANDHARA PRADESH UNDER NAQUIM 2.0

1. Introduction

The Aquifer Mapping and Management programme (NAQUIM) was launched in India by CGWB in the year 2012 with the objectives of delineating aquifers, characterizing aquifers and preparing aquifer management plans. National level mapping of Aquifers on 1:50,000 scale was considered sufficient for planning requirements up to block level 1:50,000 scale.

Some of the important uses of Aquifer mapping at 1:50,000 scale include identification of suitable areas for ground water based supply to large urban agglomerations, determine sustainability of groundwater development, identification of aquifers capable of providing water supply during protracted drought periods, prioritization of aquifers for managed aquifer recharge, identification of aquifers and determination of their suitability for various purposes in regions where new urban centres or industrial hubs are likely to come up in future, planning of integrated ground water recharge schemes, issuing advisories to the state agencies on repercussions of continued development of groundwater in select areas, recommendations to state agencies in respect of areas that have prospects for ground water development etc. The entire targeted area has been covered by 2022-23.

The NAQUIM outputs have been useful for sustainable ground water management in numerous ways as enumerated above, large scale implementation of its recommendations at ground level by the user agencies has been lacking. As per the feedback received from the agencies using the NAQUIM outputs, major limitations of the ongoing studies include i) non-availability of printed maps at usable scales and ii) lack of sitespecific recommendations for implementation at Panchayat or village level. Keeping the above limitations in mind and considering the future requirements, broad objectives of NAQUIM 2.0 is proposed.

2. Priority types

NAQUIM 2.0 is designed to provide detailed information to support groundwater management decisions at ground level. Since the issues are different in different areas, the studies under NAQUIM 2.0 are proposed as issue specific and will be undertaken in prioritized focus areas. Broadly, 11 priority areas viz., (i) Water Stressed Areas, (ii) Urban Agglomerate, (iii) Coastal Areas, (iv) Industrial Clusters and Mining Areas, (v) Areas with Springs as the principal source, (vi) Areas with Deeper Aquifers, (vii) Ground Water Contamination, (viii) Autoflow zones, (ix) Canal Command Areas, (x) Areas with poor ground water quality and (xi) Other specific Issues are

identified in the country based on ground water related issues. Out of the above 11 priority areas, the current study area is chosen under 'Urban Agglomerate' category.

3. Study area

(a) Geographical area: The study area falling in and around Vijayawada, Guntur and Amaravathi urban agglomerate covered a geographical area of 879 sq.km lies between North latitudes 16° 13'30" to 16° 39' 13" and East longitudes 80° 19' 19" to 80° 45'54" falling in SOI toposheets 65 D/6, D/7, D/8, D/10, D/11 and D/14 on 1:50,000 scale. The area covered about 81 villages including Vijayawada and Guntur urban areas distributed in 11 mandals and are falling in 3 districts. The details of the administrative boundary distributed in the study area is given in below table.

Sl.No	District	Mandals	Villages
1	Guntur	Guntur, Mangalagiri, Medikonduru, Pedakakani, Tadepalle, Tadikonda and Thullur (Total – 7 mandals)	Ankireddipalem (Rural), China Palakaluru, Etukur, Gorantla, Guntur (M Corp.), Guntur (Rural), Jonnalagadda, Koritapadu, Nallapadu (Rural), Pedal Palakaluru, R.Agraharam, Atmakur (Rural), Chinakakani, Kaza, Krishnayapalem, Kuragallu, Mangalagiri (M), Mangalagiri (Rural), Nidamaruru, Nowlur (Rural), Nutakki, Pedavadlapudi, Pericherla, Agatha Varappadu, Koppuravuru, Nambur, Pedakakani, Takkellapadu, Uppalapadu, Venigandla, Ippatam, Kolanukonda, Kunchanapalle, Penumaka, Tadepalli, Undavalli (Rural), Vaddeswaram, Kantheru, Lam, Tadikonda, Kondan Rajupalem, Lingayapalem, Malkapuram, Mandadam, Nelapadu, Rayapudi, Thullur, Uddandarayunipalem, Velagapudi and Venkatapalem (Total – 50 villages, 620 sq.km, 71%)
2	Krishna	Penamaluru (Total – 1 mandal)	Enamalakuduru, Kannuru, Penamaluru, Poranki (Rural) and Tadigadapa (Total – 5 villages, 37 sq.km, 4%)
3	NTR	Ibrahimpattanam, Vijayawada (Rural) and Vijayawada (Urban) (Total – 3 mandals)	Gudurupadu, Guntupalle, Ibrahimpattanam, Jupudi, Kondapalle, Malkapuram, Trilochanapuram, Ambapuram, Done Atkuru, Enikepadu, Gollapudi, Gudavalli, Jakkampudi, Kundavari Kandrika, Nidamanuru, Nunna, Paidurupadu, Pathapadu, Phiryadi Nainavaram, Prasadampadu, Ramavarapaddu, Rayanapadu, Shabada, Tadepalle, Vemavaram and Vijayawada (M) (Total – 26 villages, 222 sq.km, 25%)

(b) Rainfall: The average annual rainfall of the study area is 864 mm, which ranges from nil rainfall in January to 160 mm in August. August month is the wettest month of the year. The mean

seasonal rainfall distribution is 547 mm from southwest monsoon (June-September), 235 mm from northeast monsoon (Oct-Dec), 8 mm rainfall in Winter (Jan-Feb) and 74 mm in summer (March – May). The season-wise percentage distribution of rainfall is 63% from southwest monsoon, 27 % from northeast monsoon, 9 % in winter and 1 % in summer.

- (c) Elevation: As per the DEM data, the elevation varies from 8 to 298 m amsl. The higher elevations are noticed towards south-west, central and north-eastern in parts of study area distributed in Guntur, Mangalagiri, Medikonduru and Tadepalle, Ibrahimpatnam, Vijayawada (Rural) and Vijayawada (Urban) mandals.
- (d) Drainage Pattern: The major river that drains through the study area is Krishna River. In general, the drainage pattern is parallel to sub-parallel and dendritic type. All the streams are seasonal in nature. The Krishna River is perennial, whereas most of the other streams are intermittent to ephemeral in nature.
- (e) Geomorphology: Geomorphologically, the study area is classified into three units based on relief, slope and soil. The two groups are (i) Hilly region and (ii) The pediplain region.
- (f) Geology: The area is underlain by various geological formations of different age groups ranging from Archaean to Recent. The Archaean rocks comprising the gneisses, Khondalites, Charnockites and basic dolerite dykes form are predominant.
- (g) Hydrogeology: The crystalline formations are the predominant water bearing formations with lack of primary porosity. Secondary porosity was developed through fractured joints, faults, etc and subsequent development of weathering lead to soil and weathered zone resultant to favourable locations for hydrogeology. The literature review in parts of Guntur district observed that the depth of weathering ranges from about 8 to 15m bgl followed by fractures to depth of >100 m bgl. The depth to water level ranges from <1 to 12 m bgl. The weathered zone has been tapped extensively by the dug wells and sustain four to six hours of pumping with yield up to 200m³/day, and capable of irrigating about 0.8 to 3.0 hectares. Central Ground Water Board has carried out Ground Water Exploration in Guntur district. The results show that depth of drilling ranges from 45 to 200 m bgl in hard rock areas and 25 to 430 mbgl in soft rock areas. The potential fractures were encountered between 40 and 120 m bgl. Existence of deep fractures upto 173 m bgl was also encountered. The cumulative yield of dug wells varies from 0.12 to 15 lps. The yield of bore wells in general varies between 1 to 5 lps.

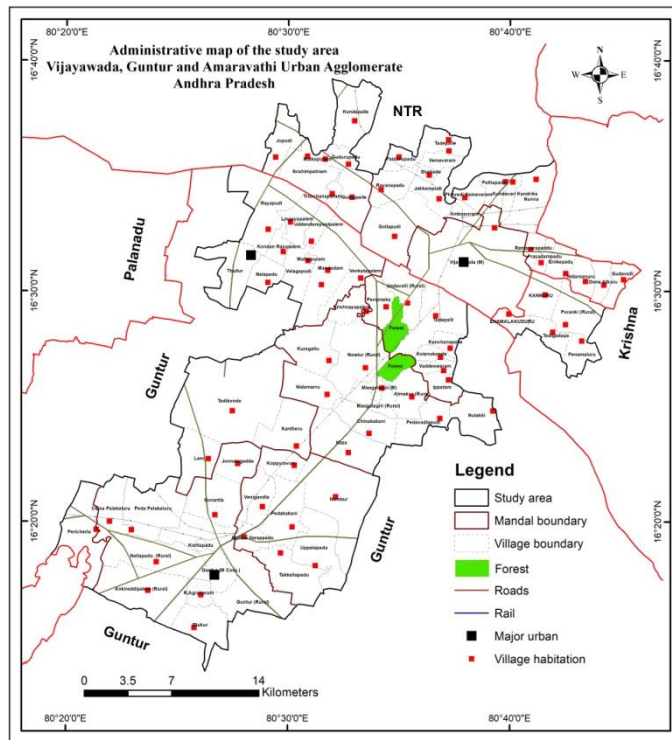


Fig. 1: Administrative map of the study area

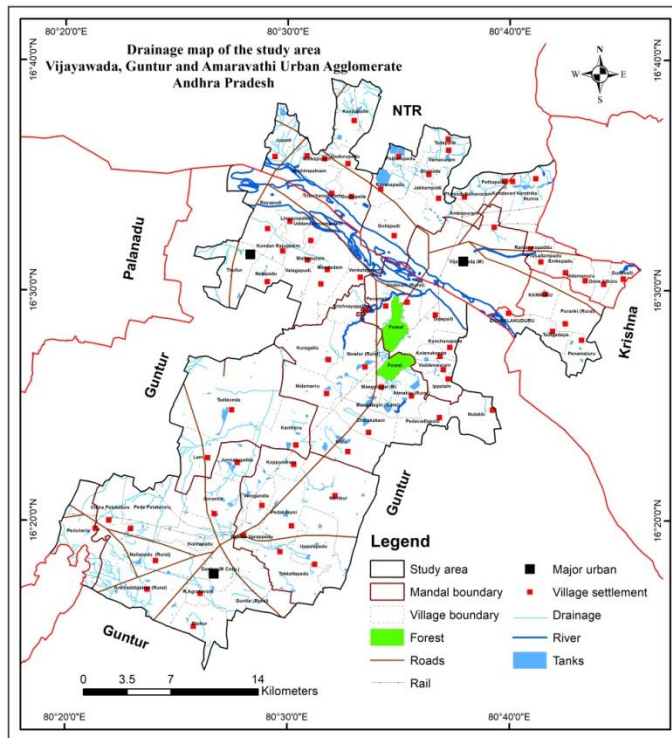


Fig. 2: Drainage map of the study area

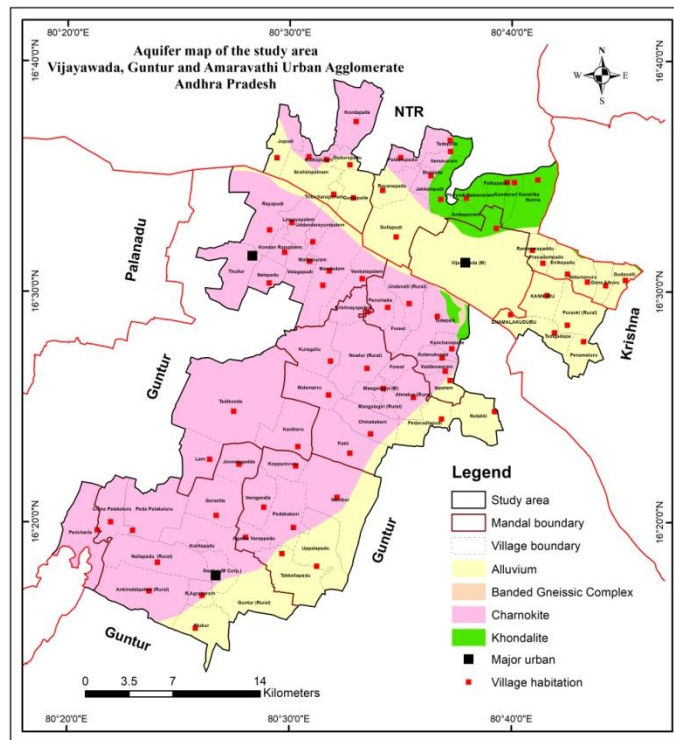


Fig. 3: Aquifer map of the study area

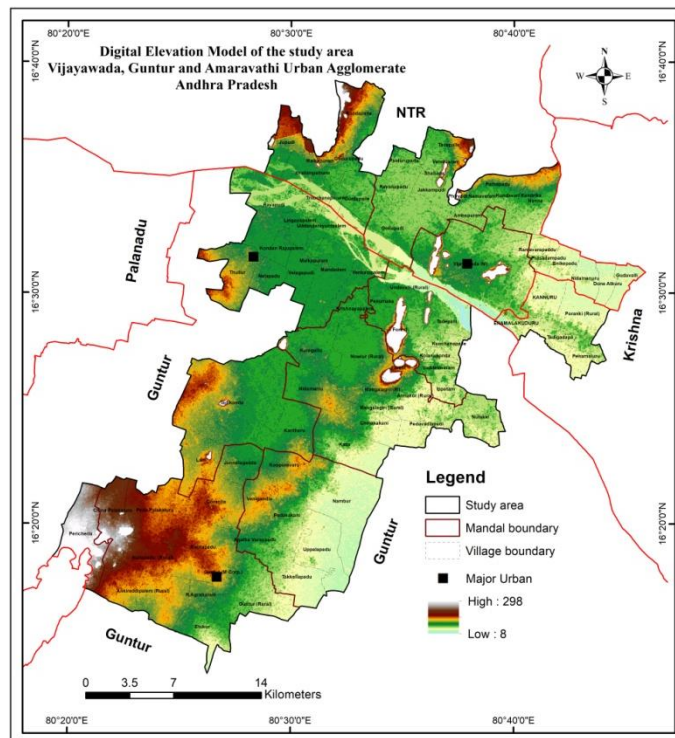


Fig. 4: Drainage map of the study area

4. Previous Studies- NAQUIM reports, District Brochure, Resource Assessment Report, Reappraisal Report, Systematic Survey Report, Published papers, New paper articles etc.

- District Ground Water Brochure, Krishna District, Andhra Pradesh, 2007-08
- Geophysical investigation for groundwater in upland areas of Krishna District, 2000
- Groundwater Management Studies in parts of Krishna District, Andhra Pradesh, 2002-03
- Geophysical investigations for structural studies related to groundwater exploration in parts of Guntur District, Andhra Pradesh, 2011
- Groundwater Management Studies in part of Guntur District, Andhra Pradesh, 2005-06
- Groundwater Management Studies in North Western parts of Guntur District, Andhra Pradesh, 2004-05
- District Groundwater Brochure, Guntur District, Andhra Pradesh 2018
- Hydrogeological framework and development prospects of Guntur District, Andhra Pradesh, 2003-04
- Agriculture Pollution of Groundwater in Mada-Kondaviti basin Guntur District Andhra Pradesh, 2003
- Groundwater Management Studies in parts of Guntur District, Andhra Pradesh, 2004-05
- Geophysical surveys for selection of drilling sites in parts of Guntur District, Andhra Pradesh, 2016-17

5. Objectives of the present study

- i) Providing high resolution ground water level, ground water quality etc.
- ii) Specific recommendations for implementation at Panchayat/village level on Recharge structures and Roof Top Rain Water Harvesting and amount water calculated in the cost benefit ratio basis.
- iii) Resolving issue-based scientific inputs for ground water management at Panchayat/village level with reference to drinking water demand.
- iv) providing maps to the users at usable scales
- v) A study on water demand and supply over the years on surface/ground water
- vi) Salinity demarcation map with reference to depth of occurrence
- vii) Feasible sites recommendation for exploration with details depth, discharge and duration of pumping.
- viii) Projecting the demand for drinking water usage from Ground Water for next 10 years.
- ix) Projecting the demand for irrigation water surface and ground water for next 10 years.

6. Existing data availability- EW/OW, VES/TEM, WL (NHS and Aquifer Mapping), WQ, Infiltration Test, Pumping Tests

Existing data locations under different themes

Theme	Existing	Annexure
VES	8	Annexure - I
EW	6	Annexure - II

Theme	Existing	Annexure
OW	1	Annexure - II
PZ	4	Annexure - II
WL (NHS Dug Wells)	9	Annexure – III
WQ	8	Annexure - IV
Infiltration Test	Nil	-
Pumping Test	Nil	-
WL (State Govt.)	16	
WQ (State Govt. -APCRDA)	32	-

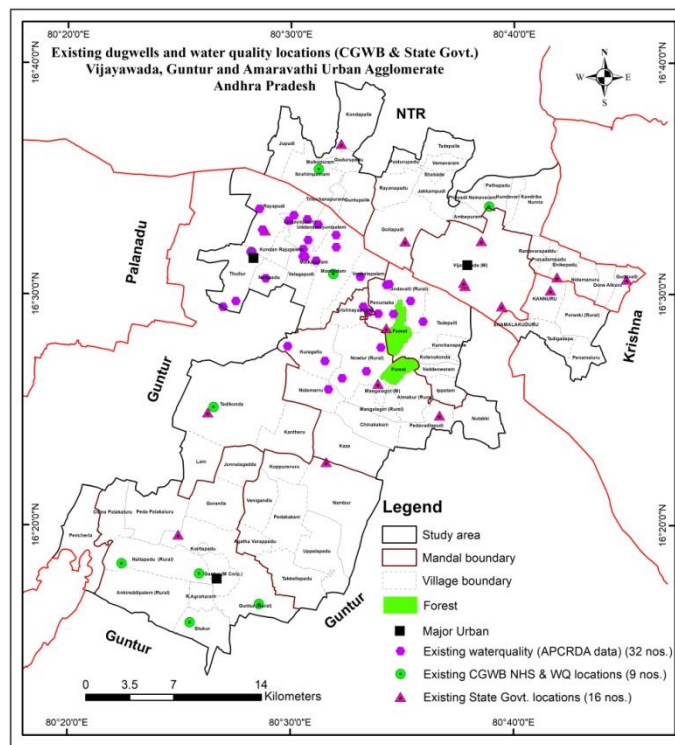


Fig. 5: Existing locations of dug well and water quality

7. Data gap analysis

Proposed number of locations under different themes

Theme	Proposed	Annexures
VES	101	Annexure – V
EW/OW/PZ	14	Annexure – VI
Pz construction (Industrial cluster)	7	Annexure – VI

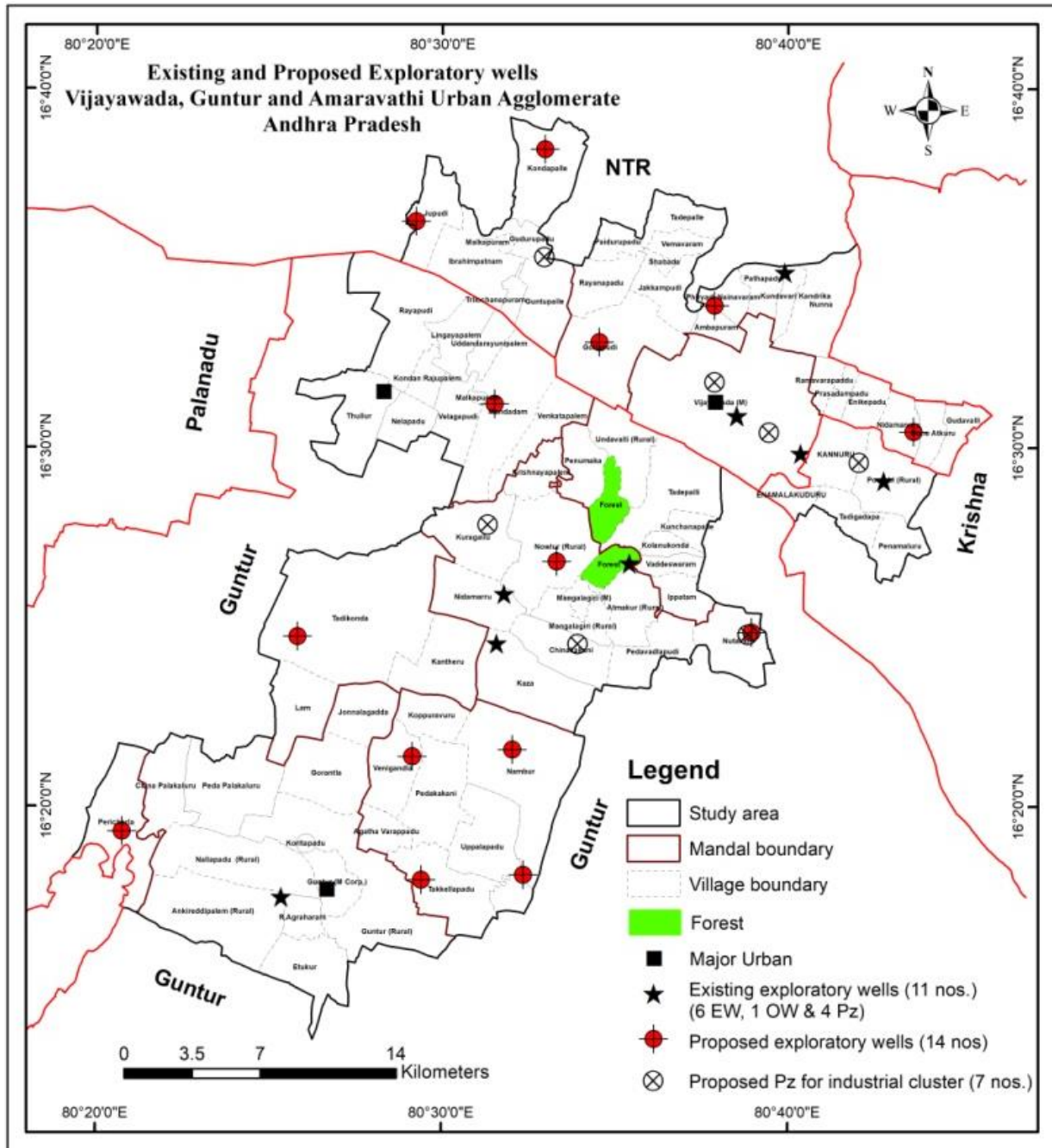


Fig. 5: Existing and proposed locations for exploratory wells

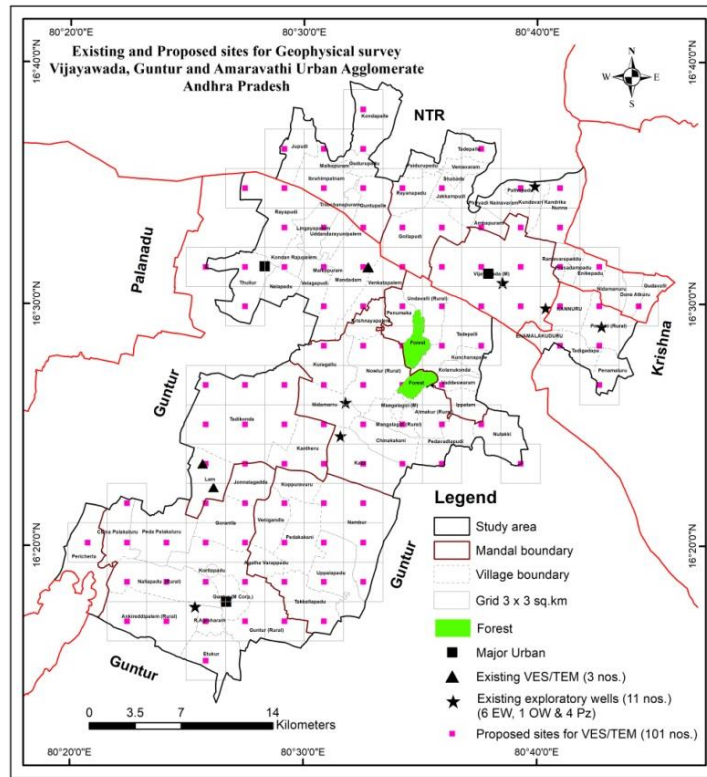


Fig. 6: Existing and proposed locations for geophysical survey

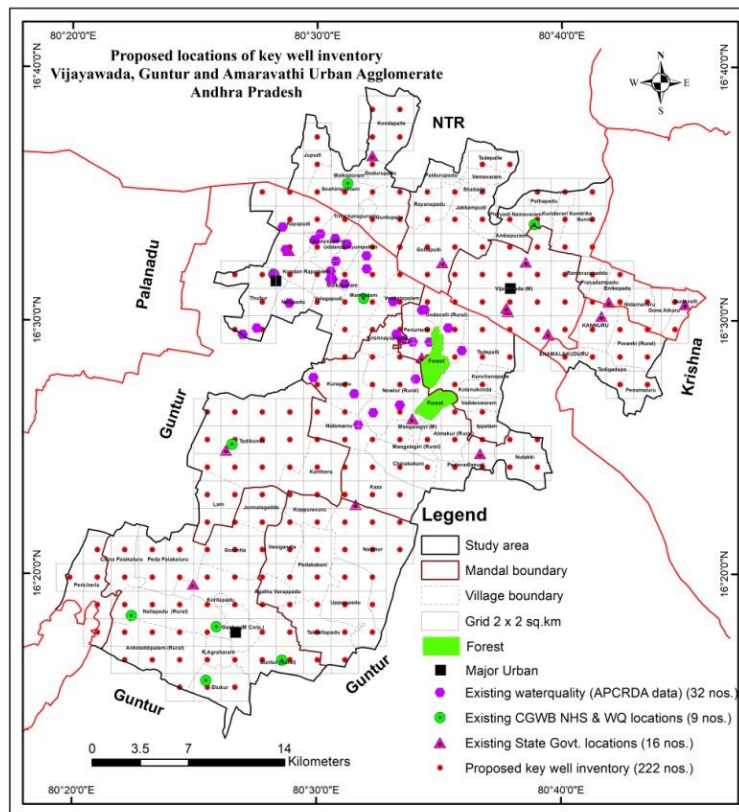


Fig. 6: Existing and proposed locations for key well monitoring

8. New Data generation plan- Activity wise monthly targets for new data generation. Plan for integration with other ongoing activities

- Key well establishment
- Collection of information from local agencies or well owners about well depth, slotted zone/fracture zone, discharge , static water level and random draw down data, Irrigation Practices, cropping pattern and related information.
- Water level measurement
- Water sample collection
- Infiltration, Slug test, Pumping test
- Discussions with farmers and other users at ground level.
- Instantaneous discharge measurements along with data on pump working hour for estimating unit draft.

9. Month-wise activity plan – field visits, visits to local offices, training, report writing, sharing with the concerned departments, entering data in WIMS, Progress Reporting in MIS, uploading reports and media in publications warehouse

- Key well establishment
- Collection of information from local agencies or well owners about well depth, slotted zone/fracture zone, discharge , static water level and random draw down data, Irrigation Practices, cropping pattern and related information.
- Water level measurement
- Water sample collection
- Infiltration, Slug test, Pumping test
- Discussions with farmers and other users at ground level.
- Instantaneous discharge measurements along with data on pumping hours for estimating unit draft.
- Entering of data in WIMS
- Drafting of report
- Issuance of report
- Presentation of outcome of report to District Administration
- Sharing of report with concerned departments

10. Composition of the team

The NAQUIM 2.0 studies are envisaged to be multidisciplinary. Thus, it is proposed to have a team of experts for carrying out the activities proposed. Each team taking up the studies will have the following composition.

Sl.No.	Role	Name of Officers
1	Team Lead	Dr.M.Sudheer Kumar, Sc-D (Hydrogeology)

2	Expert 1 (Hydrogeology)	Dr.S.S.Vittala, Sc-B (Hydrogeology)
3	Expert 2 (Hydrogeology)	Dr.D.Ananth Rao, Asst. Hydrogeology
4	Expert (Geophysics)	Sh.P.Raghavendra, Sc-B (Geophysics)
5	Expert (Hydrochemistry)	Sh.Y.Satya Kumar, Sc-B (Chem)

11. Team-member-wise responsibilities and monthly targets for entering in the MIS

(a) Team-member wise responsibilities:

Roles	Responsibility
Team Lead	<ul style="list-style-type: none"> - Planning, Supervision and Execution of the Project - Work distribution and monitoring of activities of other team members - Preparation of the inception report. - Timely delivery of the envisaged outputs - Finalisation of the management plan - Presentations at different forums, sharing of the outputs. - Preparation of the draft report as per the approved Quality Standards and its Final Submission.
Expert (Hydrogeology)-1	<ul style="list-style-type: none"> - Field Data Collection (Exploration, Pz construction, Water Level, Water Quality, Pumping Tests, Infiltration tests, demand/supply data, sample surveys and others) - Sample collection for quality studies - Secondary Data collection - Entering data in database (WIMS)
Expert (Hydrogeology)-2	<ul style="list-style-type: none"> - Integration of data, preparation of thematic maps, preparation cross sections etc. - Consultation with allied experts like agriculture, irrigation, agro-economics etc. - Preparation of Management Plan - Assisting the Team Lead in preparing maps and reports
Expert (Geophysics)	<ul style="list-style-type: none"> - Field Geophysical Surveys - Interpretation of field data - Entering data in database (WIMS) - Integration with existing geophysical and lithology data - Preparation of inferred lithologs - Suggesting potential sites for construction of water wells/artificial recharge - Preparation of Tables, graphs and maps for reports - Assisting the Team Lead in preparing the Report
Expert (Hydro chemistry)	<ul style="list-style-type: none"> - Sample collection for quality studies - Analysis of samples. - Integration with existing data - Validation and interpretation of data - Entering data in database (WIMS) - Preparation of Tables, graphs and maps for reports - Assisting the Team Lead in preparing the reports

(b) 5ykMonth-wise targets to be achieved:

Period	Assignments to be carried out	Team Member
1 st to 3 rd week of April	<ul style="list-style-type: none"> ➤ Base map Preparation ➤ Preparation of the Inception Report 	Team Lead

Period	Assignments to be carried out	Team Member
4 th week of April 2 nd week of June (20-25 days fieldwork)	<ul style="list-style-type: none"> ➤ Field Data Collection (Pre-Monsoon) ➤ Sample Surveys and User Feedback 	Expert 1 (Hydrogeology) Expert 2 (Hydrogeology) Expert (Geophysics) Expert (Hydrochemistry)
15 th June to 15 October	<ul style="list-style-type: none"> ➤ Data Analysis and Interpretation ➤ Workshops and mid-term review by NLEC 	Expert 1 (Hydrogeology) Expert 2 (Hydrogeology) Expert (Geophysics) Expert (Hydrochemistry)
15 th October to 15 th December (20 to 25 days field work)	<ul style="list-style-type: none"> ➤ Field Data Collection (Post Monsson) ➤ Sample Surveys and User Feedback 	Expert 1 (Hydrogeology) Expert 2 (Hydrogeology) Expert (Geophysics) Expert (Hydrochemistry)
15 th December to 15 th January	<ul style="list-style-type: none"> ➤ Data Analysis and Draft Report Preparation ➤ Other ongoing field activities 	Expert 1 (Hydrogeology) Expert 2 (Hydrogeology) Expert (Geophysics) Expert (Hydrochemistry)
15 th January to 15 th February (20 to 25 days 2fieldwork)	<ul style="list-style-type: none"> ➤ Field truthing of Management plan & RWH & AR Plan ➤ Final Stage field visit for various field data collection & generation based on the requirement (data gap filling) as observed during draft report preparation 	Team Lead Expert 1 (Hydrogeology) Expert 2 (Hydrogeology)
15 th February to 15 th March	<ul style="list-style-type: none"> ➤ Modification of draft report with additional information collected by the above mentioned field checks ➤ Scrutiny and Finalisation of the Report 	Team Lead Expert 1 (Hydrogeology) Expert 2 (Hydrogeology) Expert (Geophysics) Expert (Hydrochemistry)
15 th to 31 st March	<ul style="list-style-type: none"> ➤ Sharing of the reports with CHQ, SGWCC and DM/DC 	Team Lead Expert 1 (Hydrogeology) Expert 2 (Hydrogeology) Expert (Geophysics) Expert (Hydrochemistry)

Existing locations of VES:

Sl.No.	District	Mandal	Village	Latitude	Longitude	Type of Survey	AAP
1	Guntur	Tadikonda	Lam	16.3736	80.4356	VES	2020-21
2	Guntur	Tadikonda	Lam	16.3898	80.4278	TEM	2020-21
3	Guntur	Thullur	Mandadam	16.5253	80.546	TEM	2020-21
4	Guntur	Thullur	Mandadam	16.5255	80.546	TEM	2020-21
5	Guntur	Thullur	Mandadam	16.5255	80.5458	TEM	2020-21
6	Guntur	Thullur	Mandadam	16.5252	80.5458	TEM	2020-21
7	Guntur	Thullur	Mandadam	16.5252	80.5457	TEM	2020-21
8	Guntur	Thullur	Mandadam	16.5252	80.5455	TEM	2020-21

Existing locations of EW, OW & PZ:

Sl.No.	District_New	Mandal	Location	WELL_TYPE	Latitude	Longitude	Discharg_ips
1	Guntur	Amaravathi	Amaravathi	EW	16.4089	80.5264	1.2
2	Guntur	Guntur	Guntur	EW	16.2911	80.4228	0.32
3	Guntur	Mangalagiri	Nidamaru	EW	16.4319	80.53	0.13
4	Guntur	Mangalagiri	Mangalagiri-I	PZ	16.4461	80.5903	0.3
5	Guntur	Mangalagiri	Mangalagiri-II	PZ	16.4461	80.5903	0.3
6	Guntur	Mangalagiri	Mangalagiri-III	PZ	16.4461	80.5903	0.3
7	NTR	Penamaluru	Poranki	EW	16.4844	80.7128	0
8	NTR	Vijayawada	LIDCAP Autonagar	PZ	16.4972	80.6728	11.12
9	NTR	Vijayawada(R)	Patapadu	EW	16.5813	80.6651	-
10	NTR	Vijayawada(R)	Sitarampuram	EW	16.5146	80.6421	-
11	NTR	Vijayawada(R)	Sitarampuram	OW	16.5147	80.6419	-

Existing dug well water level data monitored during Jan 2023

Sl.No.	District	Mandal	Village	Latitude	Longitude	SWL (mbgl) (Jan 2023)
1	Guntur	Guntur	Etukuru	16.2632	80.4247	1.93
2	Guntur	Guntur	Guntur	16.2985	80.4317	2.4
3	Guntur	Guntur	Nallapadu	16.3057	80.3739	2.26
4	Guntur	Tadikonda	Tadikonda	16.4185	80.4423	2.55
5	Guntur	Tenali	Sekuru	16.2765	80.4765	1.35
6	Guntur	Thullur	Mandhadam	16.5145	80.5316	2.89
7	Guntur	Thullur	Thullur	16.5304	80.4704	2.61
8	NTR	Ibrahimpattanam	Ibrahimpattanam	16.5902	80.5208	1
9	NTR	Vijayawada (Rural)	A Konduru-New	16.5632	80.648	5.62

Existing pre-monsoon water quality data (NHS 2022):

Sl.No.	Lab ID	District_New	Location	Latitude	Longitude	pH (mg/l)	EC in µS/cm (mg/l)	NO ₃ (mg/l)	F (mg/l)	TDS (mg/l)	Uranium (ppb)
1	3949	Guntur	Guntur	16.299	80.432	7.34	5930	2	0.56	3635	40.45
2	3986	Guntur	Tadikonda	16.416	80.452	7.85	1070	0.22	0.30	581	1.84
3	3990	Guntur	Thullur	16.530	80.470	7.99	2640	11	0.04	1506	11.91
4	3997	Guntur	Nallapadu	16.306	80.374	7.60	1830	152	0.95	1111	10.02
5	4006	Guntur	Pedda Kakani	16.339	80.492	7.66	2050	36	0.36	1331	11.11
6	4017	Guntur	Etukuru	16.263	80.425	8.30	1990	29	0.21	1221	4.28
7	4022	Guntur	Mandhadam	16.515	80.532	7.71	4130	218	0.25	2437	23.54
8	4029	NTR	Ibrahimpattanam	16.5892	80.5219	8.4	1760	18.3	0.72	1065	5.4

Proposed locations (3x3 sq.km) for collecting field data through VES/TEM

Sl.No.	District	Mandal	Village	Latitude	Longitude	Topo_Grid
1	Guntur	Guntur	Ankireddipalem (Rural)	16.281151	80.37416	65D/7-B3
2	Guntur	Guntur	Ankireddipalem (Rural)	16.281216	80.402255	65D/7-B3
3	Guntur	Guntur	China Palakaluru	16.335422	80.374023	65D/7-B2
4	Guntur	Guntur	China Palakaluru	16.362557	80.373954	65D/7-B2
5	Guntur	Guntur	Etukur	16.254141	80.43041	65D/7-C3
6	Guntur	Guntur	Gorantla	16.335604	80.45833	65D/7-C2
7	Guntur	Guntur	Gorantla	16.362682	80.430166	65D/7-C2
8	Guntur	Guntur	Gorantla	16.362739	80.458272	65D/7-C2
9	Guntur	Guntur	Guntur (Rural)	16.335547	80.430227	65D/7-C2
10	Guntur	Guntur	Guntur (Rural)	16.281334	80.458444	65D/7-C3
11	Guntur	Guntur	Guntur (Rural)	16.281387	80.486538	65D/7-C3
12	Guntur	Guntur	Guntur (Rural)	16.308469	80.458387	65D/7-C3
13	Guntur	Guntur	Jonnalagadda	16.389874	80.458215	65D/7-C2
14	Guntur	Guntur	Nallapadu (Rural)	16.308286	80.374092	65D/7-B3
15	Guntur	Guntur	Nallapadu (Rural)	16.308351	80.40219	65D/7-B3
16	Guntur	Guntur	Nallapadu (Rural)	16.308412	80.430288	65D/7-C3
17	Guntur	Guntur	Peda Palakaluru	16.335486	80.402125	65D/7-B2
18	Guntur	Guntur	R.Agraharam	16.281277	80.430349	65D/7-C3
19	Guntur	Mangalagiri	Atmakur (Rural)	16.417239	80.598727	65D/11-B1
20	Guntur	Mangalagiri	Chinakakani	16.417158	80.542499	65D/11-A1
21	Guntur	Mangalagiri	Forest	16.444335	80.570571	65D/11-A1
22	Guntur	Mangalagiri	Kaza	16.390023	80.542545	65D/11-A2
23	Guntur	Mangalagiri	Kaza	16.390065	80.570655	65D/11-A2
24	Guntur	Mangalagiri	Kuragallu	16.444247	80.514336	65D/11-A1
25	Guntur	Mangalagiri	Kuragallu	16.471381	80.514286	65D/11-A1
26	Guntur	Mangalagiri	Mangalagiri (Rural)	16.4172	80.570613	65D/11-A1
27	Guntur	Mangalagiri	Nowlur (Rural)	16.444293	80.542453	65D/11-A1
28	Guntur	Mangalagiri	Nowlur (Rural)	16.471428	80.542408	65D/11-A1
29	Guntur	Mangalagiri	Nutakki	16.417274	80.626841	65D/11-B1
30	Guntur	Mangalagiri	Nutakki	16.39017	80.654985	65D/11-B2
31	Guntur	Mangalagiri	Pedavadlapudi	16.390104	80.598765	65D/11-B2
32	Guntur	Medikonduru	Pericherla	16.335353	80.345921	65D/7-B2
33	Guntur	Pedakakani	Nambur	16.335753	80.542636	65D/11-A2
34	Guntur	Pedakakani	Nambur	16.362842	80.514484	65D/11-A2
35	Guntur	Pedakakani	Nambur	16.362888	80.542591	65D/11-A2
36	Guntur	Pedakakani	Nambur	16.308618	80.542682	65D/11-A3
37	Guntur	Pedakakani	Pedakakani	16.335657	80.486432	65D/7-C2
38	Guntur	Pedakakani	Takkellapadu	16.308522	80.486485	65D/7-C3
39	Guntur	Pedakakani	Takkellapadu	16.281437	80.514633	65D/11-A3

Sl.No.	District	Mandal	Village	Latitude	Longitude	Topo_Grid
40	Guntur	Pedakakani	Uppalapadu	16.335707	80.514534	65D/11-A2
41	Guntur	Pedakakani	Uppalapadu	16.308572	80.514583	65D/11-A3
42	Guntur	Pedakakani	Venigandla	16.362793	80.486378	65D/7-C2
43	Guntur	Tadepalle	Forest	16.47147	80.570529	65D/11-A1
44	Guntur	Tadepalle	Penumaka	16.498604	80.570488	65D/11-A1
45	Guntur	Tadepalle	Tadepalli	16.471508	80.598651	65D/11-B1
46	Guntur	Tadepalle	Tadepalli	16.471543	80.626773	65D/11-B1
47	Guntur	Tadepalle	Undavalli (Rural)	16.498643	80.598613	65D/11-B1
48	Guntur	Tadepalle	Vaddeswaram	16.444374	80.598689	65D/11-B1
49	Guntur	Tadikonda	Kantheru	16.389927	80.486325	65D/7-C2
50	Guntur	Tadikonda	Kantheru	16.417112	80.514385	65D/11-A1
51	Guntur	Tadikonda	Kantheru	16.389977	80.514435	65D/11-A2
52	Guntur	Tadikonda	Lam	16.389817	80.430105	65D/7-C2
53	Guntur	Tadikonda	Tadikonda	16.416952	80.430044	65D/7-C1
54	Guntur	Tadikonda	Tadikonda	16.417009	80.458158	65D/7-C1
55	Guntur	Tadikonda	Tadikonda	16.417062	80.486272	65D/7-C1
56	Guntur	Tadikonda	Tadikonda	16.444087	80.429983	65D/7-C1
57	Guntur	Tadikonda	Tadikonda	16.444144	80.458101	65D/7-C1
58	Guntur	Tadikonda	Tadikonda	16.444197	80.486218	65D/7-C1
59	Guntur	Thullur	Kondan Rajupalem	16.525601	80.486058	65D/6-C3
60	Guntur	Thullur	Lingayapalem	16.552785	80.514138	65D/10-A3
61	Guntur	Thullur	Malkapuram	16.525651	80.514187	65D/10-A3
62	Guntur	Thullur	Mandadam	16.525696	80.542316	65D/10-A3
63	Guntur	Thullur	Mandadam	16.498516	80.514237	65D/11-A1
64	Guntur	Thullur	Rayapudi	16.552735	80.486004	65D/6-C3
65	Guntur	Thullur	Rayapudi	16.579816	80.457814	65D/6-C3
66	Guntur	Thullur	Rayapudi	16.579869	80.485951	65D/6-C3
67	Guntur	Thullur	Thullur	16.52549	80.429799	65D/6-C3
68	Guntur	Thullur	Thullur	16.525547	80.457929	65D/6-C3
69	Guntur	Thullur	Thullur	16.498413	80.457986	65D/7-C1
70	Guntur	Thullur	Venkatapalem	16.498562	80.542362	65D/11-A1
71	Krishna	Penamaluru	KANNURU	16.498736	80.682989	65D/11-C1
72	Krishna	Penamaluru	Penamaluru	16.44449	80.71116	65D/11-C1
73	Krishna	Penamaluru	Poranki (Rural)	16.471625	80.711137	65D/11-C1
74	Krishna	Penamaluru	Poranki (Rural)	16.498759	80.711115	65D/11-C1
75	Krishna	Penamaluru	Tadigadapa	16.471601	80.683016	65D/11-C1
76	NTR	Ibrahimpattanam	Guntupalle	16.552831	80.542271	65D/10-A3
77	NTR	Ibrahimpattanam	Guntupalle	16.579965	80.542225	65D/10-A3
78	NTR	Ibrahimpattanam	Ibrahimpattanam	16.607053	80.514038	65D/10-A2
79	NTR	Ibrahimpattanam	Ibrahimpattanam	16.579919	80.514088	65D/10-A3
80	NTR	Ibrahimpattanam	Jupudi	16.607003	80.485897	65D/6-C2
81	NTR	Ibrahimpattanam	Kondapalle	16.607099	80.542179	65D/10-A2

Sl.No.	District	Mandal	Village	Latitude	Longitude	Topo_Grid
82	NTR	Ibrahimpattanam	Kondapalle	16.634233	80.542134	65D/10-A2
83	NTR	Vijayawada (rural)	Ambapuram	16.552946	80.62667	65D/10-B3
84	NTR	Vijayawada (rural)	Done Atkuru	16.498779	80.73924	65D/11-C1
85	NTR	Vijayawada (rural)	Enikepadu	16.525894	80.711092	65D/10-C3
86	NTR	Vijayawada (rural)	Gollapudi	16.525739	80.570446	65D/10-A3
87	NTR	Vijayawada (rural)	Gollapudi	16.552873	80.570404	65D/10-A3
88	NTR	Vijayawada (rural)	Gollapudi	16.552912	80.598537	65D/10-B3
89	NTR	Vijayawada (rural)	Jakkampudi	16.580046	80.598499	65D/10-B3
90	NTR	Vijayawada (rural)	Nunna	16.553005	80.682937	65D/10-C3
91	NTR	Vijayawada (rural)	Nunna	16.580139	80.68291	65D/10-C3
92	NTR	Vijayawada (rural)	Pathapadu	16.580112	80.654773	65D/10-B3
93	NTR	Vijayawada (rural)	Ramavarapaddu	16.52587	80.682963	65D/10-C3
94	NTR	Vijayawada (rural)	Rayanapadu	16.580007	80.570362	65D/10-A3
95	NTR	Vijayawada (rural)	Tadepalle	16.607215	80.626602	65D/10-B2
96	NTR	Vijayawada (urban)	Vijayawada (M)	16.525777	80.598575	65D/10-B3
97	NTR	Vijayawada (urban)	Vijayawada (M)	16.525812	80.626704	65D/10-B3
98	NTR	Vijayawada (urban)	Vijayawada (M)	16.525843	80.654834	65D/10-B3
99	NTR	Vijayawada (urban)	Vijayawada (M)	16.552977	80.654803	65D/10-B3
100	NTR	Vijayawada (urban)	Vijayawada (M)	16.498677	80.626739	65D/11-B1
101	NTR	Vijayawada (urban)	Vijayawada (M)	16.498709	80.654864	65D/11-B1

Annexure – VI

Proposed locations for exploratory drilling

Sl.No	Village	Mandal	District	Long	Lat	Toposheet
1	Pericherla	Medikonduru	Guntur	80.346	16.3218	65 D/7-B3
2	Venigandla	Pedakakani	Guntur	80.4858	16.3566	65 D/7-C2
3	Tadikonda	Tadikonda	Guntur	80.4304	16.4123	65 D/7-C2
4	Takkellapadu	Pedakakani	Guntur	80.4902	16.2993	65 D/7-C3
5	Namburu- Uppalapadu	Pedakakani	Guntur	80.5393	16.3017	65 D/11-A3
6	Nambur	Pedakakani	Guntur	80.5339	16.3598	65 D/11-A2
7	Nowlur (Rural)	Mangalagiri	Guntur	80.5552	16.4472	65 D/11-A1
8	Nutakki	Mangalagiri	Guntur	80.6491	16.4143	65 D/11-B2
9	Kondapalli	Ibrahimpattanam	Krishna	80.5494	16.6387	65 D/10-A2
10	Gollapudi	Vijayawada Rural	Krishna	80.5757	16.5491	65 D/10-A3
11	Nidamanuru	Vijayawada Rural	Krishna	80.7271	16.5075	65 D/10-C3
12	Mandadam	Thulluru	Guntur	80.5253	16.5204	65 D/10-A3

13	Phiryadi Nainavaram	Vijayawada Rural	Krishna	80.6311	16.5661	65 D/10-B3
14	Jupudi	Ibrahimpattanam	Krishna	80.4873	16.6052	65 D/6-C2

Proposed location for Pz construction in the Industrial cluster

Sl. No.	District	Mandal	Long	Lat	Village Name
1	Guntur	Mangalagiri	80.6474	16.4131	Nutakki
2	Guntur	Mangalagiri	80.5221	16.4641	Kuragallu
3	Krishna	Ibrahimpattanam	80.5493	16.5883	Gudurupadu
4	Krishna	Vijayawada (Urban)	80.6313	16.5303	Vijayawada town
5	Guntur	Mangalagiri	80.5655	16.4087	Chinakakani
6	Krishna	Penamaluru	80.7009	16.493	Kannuru
7	Krishna	Vijayawada (Urban)	80.6575	16.5069	Vijayawada town

Proposed locations (2X2 sq.km) for collecting field data through Well inventory and Water quality sampling

Sl.No.	District	Mandal	Village	Latitude	Longitude	Topo_Grid
1	Guntur	Guntur	Ankireddipalem (Rural)	16.258613	80.406991	65D/7-B3
2	Guntur	Guntur	Ankireddipalem (Rural)	16.276618	80.36949	65D/7-B3
3	Guntur	Guntur	Ankireddipalem (Rural)	16.276661	80.388219	65D/7-B3
4	Guntur	Guntur	Ankireddipalem (Rural)	16.276704	80.406948	65D/7-B3
5	Guntur	Guntur	Ankireddipalem (Rural)	16.294708	80.369443	65D/7-B3
6	Guntur	Guntur	Ankireddipalem (Rural)	16.294752	80.388174	65D/7-B3
7	Guntur	Guntur	Ankireddipalem (Rural)	16.294794	80.406905	65D/7-B3
8	Guntur	Guntur	China Palakaluru	16.348978	80.369304	65D/7-B2
9	Guntur	Guntur	China Palakaluru	16.330888	80.369351	65D/7-B3
10	Guntur	Guntur	Etukur	16.258654	80.425718	65D/7-C3
11	Guntur	Guntur	Etukur	16.258693	80.444446	65D/7-C3
12	Guntur	Guntur	Gorantla	16.349105	80.425513	65D/7-C2
13	Guntur	Guntur	Gorantla	16.349144	80.444249	65D/7-C2
14	Guntur	Guntur	Gorantla	16.349181	80.462985	65D/7-C2
15	Guntur	Guntur	Gorantla	16.367234	80.444209	65D/7-C2
16	Guntur	Guntur	Guntur (M Corp.)	16.294873	80.444367	65D/7-C3
17	Guntur	Guntur	Guntur (Rural)	16.276783	80.444406	65D/7-C3
18	Guntur	Guntur	Guntur (Rural)	16.27682	80.463136	65D/7-C3
19	Guntur	Guntur	Guntur (Rural)	16.276856	80.481865	65D/7-C3
20	Guntur	Guntur	Guntur (Rural)	16.29491	80.463098	65D/7-C3
21	Guntur	Guntur	Guntur (Rural)	16.294946	80.481829	65D/7-C3
22	Guntur	Guntur	Guntur (Rural)	16.312963	80.444328	65D/7-C3
23	Guntur	Guntur	Guntur (Rural)	16.331014	80.425554	65D/7-C3
24	Guntur	Guntur	Guntur (Rural)	16.331053	80.444288	65D/7-C3
25	Guntur	Guntur	Guntur (Rural)	16.27689	80.500594	65D/11-A3
26	Guntur	Guntur	Jonnalagadda	16.367271	80.462947	65D/7-C2
27	Guntur	Guntur	Jonnalagadda	16.385361	80.462909	65D/7-C2
28	Guntur	Guntur	Nallapadu (Rural)	16.312798	80.369397	65D/7-B3
29	Guntur	Guntur	Nallapadu (Rural)	16.312842	80.38813	65D/7-B3
30	Guntur	Guntur	Nallapadu (Rural)	16.312884	80.406862	65D/7-B3
31	Guntur	Guntur	Nallapadu (Rural)	16.294834	80.425636	65D/7-C3
32	Guntur	Guntur	Nallapadu (Rural)	16.312924	80.425595	65D/7-C3
33	Guntur	Guntur	Peda Palakaluru	16.349022	80.388041	65D/7-B2
34	Guntur	Guntur	Peda Palakaluru	16.349064	80.406777	65D/7-B2
35	Guntur	Guntur	Peda Palakaluru	16.330932	80.388085	65D/7-B3
36	Guntur	Guntur	Peda Palakaluru	16.330974	80.406819	65D/7-B3
37	Guntur	Guntur	R.Agraharam	16.276744	80.425677	65D/7-C3
38	Guntur	Mangalagiri	Atmakur (Rural)	16.421755	80.594035	65D/11-B1

Sl.No.	District	Mandal	Village	Latitude	Longitude	Topo_Grid
39	Guntur	Mangalagiri	Atmakur (Rural)	16.439845	80.594009	65D/11-B1
40	Guntur	Mangalagiri	Chinakakani	16.421673	80.537806	65D/11-A1
41	Guntur	Mangalagiri	Chinakakani	16.403612	80.556578	65D/11-A2
42	Guntur	Mangalagiri	Chinakakani	16.403639	80.575319	65D/11-A2
43	Guntur	Mangalagiri	Forest	16.439819	80.575264	65D/11-A1
44	Guntur	Mangalagiri	Kaza	16.385463	80.519128	65D/11-A2
45	Guntur	Mangalagiri	Kaza	16.385493	80.537868	65D/11-A2
46	Guntur	Mangalagiri	Kaza	16.385522	80.556607	65D/11-A2
47	Guntur	Mangalagiri	Kaza	16.403552	80.519096	65D/11-A2
48	Guntur	Mangalagiri	Kaza	16.403583	80.537837	65D/11-A2
49	Guntur	Mangalagiri	Krishnayapalem	16.494061	80.556432	65D/11-A1
50	Guntur	Mangalagiri	Kuragallu	16.45779	80.500251	65D/11-A1
51	Guntur	Mangalagiri	Kuragallu	16.457822	80.518998	65D/11-A1
52	Guntur	Mangalagiri	Mangalagiri (Rural)	16.421702	80.556549	65D/11-A1
53	Guntur	Mangalagiri	Mangalagiri (Rural)	16.421729	80.575292	65D/11-A1
54	Guntur	Mangalagiri	Nidamaru	16.421642	80.519063	65D/11-A1
55	Guntur	Mangalagiri	Nidamaru	16.4397	80.500286	65D/11-A1
56	Guntur	Mangalagiri	Nidamaru	16.439732	80.51903	65D/11-A1
57	Guntur	Mangalagiri	Nowlur (Rural)	16.439763	80.537775	65D/11-A1
58	Guntur	Mangalagiri	Nowlur (Rural)	16.439792	80.55652	65D/11-A1
59	Guntur	Mangalagiri	Nowlur (Rural)	16.457853	80.537744	65D/11-A1
60	Guntur	Mangalagiri	Nowlur (Rural)	16.457882	80.55649	65D/11-A1
61	Guntur	Mangalagiri	Nowlur (Rural)	16.475942	80.537713	65D/11-A1
62	Guntur	Mangalagiri	Nowlur (Rural)	16.475971	80.556461	65D/11-A1
63	Guntur	Mangalagiri	Nutakki	16.421801	80.631521	65D/11-B1
64	Guntur	Mangalagiri	Nutakki	16.421822	80.650264	65D/11-B1
65	Guntur	Mangalagiri	Nutakki	16.403711	80.631543	65D/11-B2
66	Guntur	Mangalagiri	Nutakki	16.403732	80.650284	65D/11-B2
67	Guntur	Mangalagiri	Pedavadlapudi	16.421779	80.612778	65D/11-B1
68	Guntur	Mangalagiri	Pedavadlapudi	16.403665	80.594061	65D/11-B2
69	Guntur	Mangalagiri	Pedavadlapudi	16.403689	80.612802	65D/11-B2
70	Guntur	Medikonduru	Pericherla	16.330795	80.331882	65D/7-A3
71	Guntur	Medikonduru	Pericherla	16.348933	80.350568	65D/7-B2
72	Guntur	Medikonduru	Pericherla	16.294662	80.350712	65D/7-B3
73	Guntur	Medikonduru	Pericherla	16.312752	80.350664	65D/7-B3
74	Guntur	Medikonduru	Pericherla	16.330842	80.350616	65D/7-B3
75	Guntur	Pedakakani	Agatha Varappadu	16.313001	80.46306	65D/7-C3
76	Guntur	Pedakakani	Agatha Varappadu	16.331091	80.463023	65D/7-C3
77	Guntur	Pedakakani	Koppuravuru	16.385396	80.481649	65D/7-C2
78	Guntur	Pedakakani	Koppuravuru	16.36734	80.500423	65D/11-A2
79	Guntur	Pedakakani	Nambur	16.349283	80.519193	65D/11-A2
80	Guntur	Pedakakani	Nambur	16.349313	80.537929	65D/11-A2

Sl.No.	District	Mandal	Village	Latitude	Longitude	Topo_Grid
81	Guntur	Pedakakani	Nambur	16.349342	80.556665	65D/11-A2
82	Guntur	Pedakakani	Nambur	16.367373	80.519161	65D/11-A2
83	Guntur	Pedakakani	Nambur	16.367403	80.537898	65D/11-A2
84	Guntur	Pedakakani	Nambur	16.367432	80.556636	65D/11-A2
85	Guntur	Pedakakani	Nambur	16.313133	80.537991	65D/11-A3
86	Guntur	Pedakakani	Nambur	16.331223	80.53796	65D/11-A3
87	Guntur	Pedakakani	Pedakakani	16.331126	80.481757	65D/7-C3
88	Guntur	Pedakakani	Pedakakani	16.34925	80.500457	65D/11-A2
89	Guntur	Pedakakani	Pedakakani	16.33116	80.500491	65D/11-A3
90	Guntur	Pedakakani	Takkellapadu	16.313036	80.481793	65D/7-C3
91	Guntur	Pedakakani	Takkellapadu	16.276922	80.519323	65D/11-A3
92	Guntur	Pedakakani	Takkellapadu	16.29498	80.50056	65D/11-A3
93	Guntur	Pedakakani	Takkellapadu	16.295012	80.519291	65D/11-A3
94	Guntur	Pedakakani	Takkellapadu	16.31307	80.500526	65D/11-A3
95	Guntur	Pedakakani	Uppalapadu	16.295043	80.538022	65D/11-A3
96	Guntur	Pedakakani	Uppalapadu	16.313102	80.519258	65D/11-A3
97	Guntur	Pedakakani	Uppalapadu	16.331193	80.519226	65D/11-A3
98	Guntur	Pedakakani	Venigandla	16.349216	80.481721	65D/7-C2
99	Guntur	Pedakakani	Venigandla	16.367306	80.481685	65D/7-C2
100	Guntur	Tadepalle	Forest	16.457909	80.575237	65D/11-A1
101	Guntur	Tadepalle	Forest	16.475999	80.575209	65D/11-A1
102	Guntur	Tadepalle	Ippatam	16.439869	80.612754	65D/11-B1
103	Guntur	Tadepalle	Kolanukonda	16.457959	80.61273	65D/11-B1
104	Guntur	Tadepalle	Penumaka	16.494089	80.575182	65D/11-A1
105	Guntur	Tadepalle	Tadepalli	16.457935	80.593983	65D/11-B1
106	Guntur	Tadepalle	Tadepalli	16.476049	80.612706	65D/11-B1
107	Guntur	Tadepalle	Tadepalli	16.476071	80.631454	65D/11-B1
108	Guntur	Tadepalle	Tadepalli	16.494138	80.612682	65D/11-B1
109	Guntur	Tadepalle	Undavalli (Rural)	16.512178	80.575155	65D/10-A3
110	Guntur	Tadepalle	Undavalli (Rural)	16.476025	80.593958	65D/11-B1
111	Guntur	Tadepalle	Undavalli (Rural)	16.494114	80.593932	65D/11-B1
112	Guntur	Tadikonda	Kantheru	16.42161	80.50032	65D/11-A1
113	Guntur	Tadikonda	Kantheru	16.38543	80.500388	65D/11-A2
114	Guntur	Tadikonda	Kantheru	16.40352	80.500354	65D/11-A2
115	Guntur	Tadikonda	Lam	16.367195	80.425472	65D/7-C2
116	Guntur	Tadikonda	Lam	16.385285	80.42543	65D/7-C2
117	Guntur	Tadikonda	Lam	16.385323	80.44417	65D/7-C2
118	Guntur	Tadikonda	Tadikonda	16.421464	80.425348	65D/7-C1
119	Guntur	Tadikonda	Tadikonda	16.421503	80.444091	65D/7-C1
120	Guntur	Tadikonda	Tadikonda	16.421541	80.462834	65D/7-C1
121	Guntur	Tadikonda	Tadikonda	16.421576	80.481577	65D/7-C1
122	Guntur	Tadikonda	Tadikonda	16.439554	80.425307	65D/7-C1

Sl.No.	District	Mandal	Village	Latitude	Longitude	Topo_Grid
123	Guntur	Tadikonda	Tadikonda	16.439593	80.444052	65D/7-C1
124	Guntur	Tadikonda	Tadikonda	16.43963	80.462796	65D/7-C1
125	Guntur	Tadikonda	Tadikonda	16.439666	80.481541	65D/7-C1
126	Guntur	Tadikonda	Tadikonda	16.403375	80.425389	65D/7-C2
127	Guntur	Tadikonda	Tadikonda	16.403413	80.44413	65D/7-C2
128	Guntur	Tadikonda	Tadikonda	16.403451	80.462872	65D/7-C2
129	Guntur	Tadikonda	Tadikonda	16.403486	80.481613	65D/7-C2
130	Guntur	Thullur	Lingayapalem	16.548238	80.50008	65D/10-A3
131	Guntur	Thullur	Lingayapalem	16.56636	80.518802	65D/10-A3
132	Guntur	Thullur	Mandadam	16.512091	80.5189	65D/10-A3
133	Guntur	Thullur	Mandadam	16.512122	80.537651	65D/10-A3
134	Guntur	Thullur	Mandadam	16.530181	80.518867	65D/10-A3
135	Guntur	Thullur	Mandadam	16.530212	80.537621	65D/10-A3
136	Guntur	Thullur	Mandadam	16.548301	80.53759	65D/10-A3
137	Guntur	Thullur	Mandadam	16.475912	80.518965	65D/11-A1
138	Guntur	Thullur	Mandadam	16.494002	80.518933	65D/11-A1
139	Guntur	Thullur	Nelapadu	16.512025	80.481397	65D/6-C3
140	Guntur	Thullur	Rayapudi	16.584347	80.462494	65D/6-C2
141	Guntur	Thullur	Rayapudi	16.584383	80.481252	65D/6-C2
142	Guntur	Thullur	Rayapudi	16.530115	80.481361	65D/6-C3
143	Guntur	Thullur	Rayapudi	16.548204	80.481325	65D/6-C3
144	Guntur	Thullur	Rayapudi	16.566294	80.481289	65D/6-C3
145	Guntur	Thullur	Rayapudi	16.566327	80.500045	65D/10-A3
146	Guntur	Thullur	Thullur	16.511989	80.462645	65D/6-C3
147	Guntur	Thullur	Thullur	16.530042	80.443854	65D/6-C3
148	Guntur	Thullur	Thullur	16.530079	80.462607	65D/6-C3
149	Guntur	Thullur	Thullur	16.493862	80.443933	65D/7-C1
150	Guntur	Thullur	Thullur	16.4939	80.462683	65D/7-C1
151	Guntur	Thullur	Uddandarayunipalem	16.54827	80.518835	65D/10-A3
152	Guntur	Thullur	Velagapudi	16.512059	80.500148	65D/10-A3
153	Guntur	Thullur	Velagapudi	16.530148	80.500114	65D/10-A3
154	Guntur	Thullur	Venkatapalem	16.512151	80.556403	65D/10-A3
155	Guntur	Thullur	Venkatapalem	16.530241	80.556374	65D/10-A3
156	Guntur	Thullur	Venkatapalem	16.494032	80.537682	65D/11-A1
157	Krishna	Penamaluru	ENAMALAKUDURU	16.476111	80.66895	65D/11-C1
158	Krishna	Penamaluru	KANNURU	16.512307	80.687664	65D/10-C3
159	Krishna	Penamaluru	KANNURU	16.494218	80.687681	65D/11-C1
160	Krishna	Penamaluru	Penamaluru	16.458068	80.725208	65D/11-C1
161	Krishna	Penamaluru	Poranki (Rural)	16.476144	80.706447	65D/11-C1
162	Krishna	Penamaluru	Poranki (Rural)	16.476158	80.725195	65D/11-C1
163	Krishna	Penamaluru	Poranki (Rural)	16.494233	80.706431	65D/11-C1
164	Krishna	Penamaluru	Poranki (Rural)	16.494248	80.725181	65D/11-C1

Sl.No.	District	Mandal	Village	Latitude	Longitude	Topo_Grid
165	Krishna	Penamaluru	Tadigadapa	16.458054	80.706462	65D/11-C1
166	Krishna	Penamaluru	Tadigadapa	16.476128	80.687698	65D/11-C1
167	NTR	Ibrahimpattanam	Gudurupadu	16.602569	80.537497	65D/10-A2
168	NTR	Ibrahimpattanam	Guntupalle	16.584509	80.556286	65D/10-A2
169	NTR	Ibrahimpattanam	Guntupalle	16.566419	80.556315	65D/10-A3
170	NTR	Ibrahimpattanam	Ibrahimpattanam	16.584417	80.500011	65D/10-A2
171	NTR	Ibrahimpattanam	Ibrahimpattanam	16.584449	80.518769	65D/10-A2
172	NTR	Ibrahimpattanam	Ibrahimpattanam	16.602506	80.499977	65D/10-A2
173	NTR	Ibrahimpattanam	Jupudi	16.620596	80.499942	65D/10-A2
174	NTR	Ibrahimpattanam	Kondapalle	16.620659	80.537466	65D/10-A2
175	NTR	Ibrahimpattanam	Kondapalle	16.620687	80.556228	65D/10-A2
176	NTR	Ibrahimpattanam	Kondapalle	16.638748	80.537435	65D/10-A2
177	NTR	Ibrahimpattanam	Kondapalle	16.638777	80.556198	65D/10-A2
178	NTR	Ibrahimpattanam	Trilochanapuram	16.58448	80.537528	65D/10-A2
179	NTR	Ibrahimpattanam	Trilochanapuram	16.566391	80.537559	65D/10-A3
180	NTR	Vijayawada (Rural)	Enikepadu	16.512323	80.706416	65D/10-C3
181	NTR	Vijayawada (Rural)	Enikepadu	16.530413	80.7064	65D/10-C3
182	NTR	Vijayawada (Rural)	Gollapudi	16.530268	80.575127	65D/10-A3
183	NTR	Vijayawada (Rural)	Gollapudi	16.54833	80.556345	65D/10-A3
184	NTR	Vijayawada (Rural)	Gollapudi	16.548357	80.5751	65D/10-A3
185	NTR	Vijayawada (Rural)	Gollapudi	16.548383	80.593855	65D/10-B3
186	NTR	Vijayawada (Rural)	Gollapudi	16.548407	80.61261	65D/10-B3
187	NTR	Vijayawada (Rural)	Gollapudi	16.566472	80.593829	65D/10-B3
188	NTR	Vijayawada (Rural)	Gudavalli	16.51235	80.743919	65D/10-C3
189	NTR	Vijayawada (Rural)	Gudavalli	16.49426	80.743931	65D/11-C1
190	NTR	Vijayawada (Rural)	Jakkampudi	16.584586	80.612562	65D/10-B2
191	NTR	Vijayawada (Rural)	Jakkampudi	16.566496	80.612586	65D/10-B3
192	NTR	Vijayawada (Rural)	Kundavari Kandrika	16.584648	80.668837	65D/10-C2
193	NTR	Vijayawada (Rural)	Kundavari Kandrika	16.566559	80.668856	65D/10-C3
194	NTR	Vijayawada (Rural)	Nidamanuru	16.512337	80.725167	65D/10-C3
195	NTR	Vijayawada (Rural)	Nunna	16.584665	80.687596	65D/10-C2
196	NTR	Vijayawada (Rural)	Nunna	16.548469	80.668875	65D/10-C3
197	NTR	Vijayawada (Rural)	Nunna	16.548486	80.68763	65D/10-C3
198	NTR	Vijayawada (Rural)	Nunna	16.566576	80.687613	65D/10-C3
199	NTR	Vijayawada (Rural)	Pathapadu	16.584629	80.650079	65D/10-B2
200	NTR	Vijayawada (Rural)	Pathapadu	16.56654	80.650099	65D/10-B3
201	NTR	Vijayawada (Rural)	Phiryadi Nainavaram	16.566519	80.631342	65D/10-B3
202	NTR	Vijayawada (Rural)	Ramavarapaddu	16.530397	80.687647	65D/10-C3
203	NTR	Vijayawada (Rural)	Rayanapadu	16.584536	80.575045	65D/10-A2
204	NTR	Vijayawada (Rural)	Rayanapadu	16.566447	80.575072	65D/10-A3
205	NTR	Vijayawada (Rural)	Rayanapadu	16.584562	80.593803	65D/10-B2
206	NTR	Vijayawada (Rural)	Tadepalle	16.602675	80.612538	65D/10-B2

Sl.No.	District	Mandal	Village	Latitude	Longitude	Topo_Grid
207	NTR	Vijayawada (Rural)	Tadepalle	16.602698	80.631298	65D/10-B2
208	NTR	Vijayawada (Urban)	Vijayawada (M)	16.512204	80.593906	65D/10-B3
209	NTR	Vijayawada (Urban)	Vijayawada (M)	16.512228	80.612658	65D/10-B3
210	NTR	Vijayawada (Urban)	Vijayawada (M)	16.51225	80.631409	65D/10-B3
211	NTR	Vijayawada (Urban)	Vijayawada (M)	16.512271	80.650161	65D/10-B3
212	NTR	Vijayawada (Urban)	Vijayawada (M)	16.530293	80.59388	65D/10-B3
213	NTR	Vijayawada (Urban)	Vijayawada (M)	16.530317	80.612634	65D/10-B3
214	NTR	Vijayawada (Urban)	Vijayawada (M)	16.53034	80.631387	65D/10-B3
215	NTR	Vijayawada (Urban)	Vijayawada (M)	16.530361	80.65014	65D/10-B3
216	NTR	Vijayawada (Urban)	Vijayawada (M)	16.548429	80.631365	65D/10-B3
217	NTR	Vijayawada (Urban)	Vijayawada (M)	16.54845	80.65012	65D/10-B3
218	NTR	Vijayawada (Urban)	Vijayawada (M)	16.494161	80.631432	65D/11-B1
219	NTR	Vijayawada (Urban)	Vijayawada (M)	16.494181	80.650182	65D/11-B1
220	NTR	Vijayawada (Urban)	Vijayawada (M)	16.51229	80.668913	65D/10-C3
221	NTR	Vijayawada (Urban)	Vijayawada (M)	16.53038	80.668894	65D/10-C3
222	NTR	Vijayawada (Urban)	Vijayawada (M)	16.4942	80.668931	65D/11-C1

Sr No.	Activity	Officer Deployed	Months (April to March)													
			Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar		
A	HYDROGEOLOGY															
1	Compilation of available data and	Hg1 & Hg2														
2	Preparation of base maps	Hg1														
3	Identification of data gap and planning for data generation	Hg1 & Hg2														
4	Preparation of Inception report	TL														
5	Field work for establishment of key wells, pre-monsoon water level monitoring and groundwater sampling.	Hg1 & Hg2														
6	Field work for additional data and information	TL & Hg1 & Hg2 & Gp														
7	Post-monsoon WL monitoring from key wells and groundwater sampling	Hg1 & Hg2 & Gp														
8	Final Stage field visit for various field data collection & generation based on the requirement (data gap filling) as observed during draft report preparation	TL, Hg1 & Hg2 & Gp & Hc														
B	GW EXPLORATION	GW EXPLORATION														
9	EW Data gap identification	TL & Hg1 & Hg2														
10	Site selection for drilling	TL & Hg1 & Hg2														
11	Attending Drilling, preparation of lithologs, Conducting Pumping test	TL & Hg1 & Hg2														
1	Preparation of Basic Data Report	Hg1 & Hg2														
C	GEOPHYSICAL STUDIES	GEOPHYSICAL STUDIES														
13	Data gap identification for VES/TEM	TL & Hg1														
14	Field work -VES/TEM	Gp														
15	Analysis and interpretation of VES/TEM data	TL & Gp														
C	CHEMICAL ANALYSIS	CHEMICAL ANALYSIS														
16	Analysis of sample collected during pre-monsoon	Hc														
17	Analysis of sample collected during post-monsoon	Hc														
18	Analysis of samples collected during exploration	Hc														
D	FIELD TRUTHING AND PREPARATION OF AQUIFER MAPS, MANAGEMENT PLANS	FIELD TRUTHING AND PREPARATION OF AQUIFER MAPS, MANAGEMENT PLANS														
19	Compilation of data and preparation of GIS based maps and management plans	TL, Hg1 & Hg2 & Gp & Hc														
20	Report Preparation	TL, Hg1 & Hg2 & Gp & Hc														
21	Field Truthing of Management Plan	TL, Hg1 & Hg2 & Gp														
22	Modification of Draft report. Scrutiny and Finalisation of the report	TL, Hg1 & Hg2														
23	Sharing of the reports with CHQ, SGWCC and DM/DC	TL, Hg1 & Hg2 & Gp & Hc														

Composition of Team

S.No.	Name of Officer	Designation	Role
1.	Dr. M. Sudheer Kumar	Sc-D	Team Leader (TL)
2.	Dr. S. S. Vittala	Sc-B	Hydrogeologist-1 (Hg-1)
3.	Dr. D. Anantha Rao	Ahg.	Hydrogeologist-2 (Hg-2)
4.	Sri. Raghavendra	Sc-B	Geophysicist (Gp)
5.	Sri. Y. Satya Kumar	Sc-B	Hydrochemist (Hc)