



DHV CONSULTANTS &
DELFT HYDRAULICS with
HALCROW, TAHAL, CES,
ORG & JPS

VOLUME 1
HYDROLOGICAL INFORMATION SYSTEM

FIELD MANUAL – PART I

JOB DESCRIPTION

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JOB DESCRIPTION

In this Chapter an overview is given of job descriptions of HIS staff functions. The coding used for the functions is listed in Table 1.

S.No.	Category/HIS Function	Code
	General	
1.	General	
1.1	Data Centre manager/ Head of the Hydrological Info System	S12
2.	Data Storage Centre	
2.1	Database administrator	I2
2.2	Information techn. and database expert	I1
2.3	Secretary	-
	Surface Water	
3.	State Data Processing Centre	
3.1	State DPC manager	S11
3.2	Hydrologist	S10
3.3	Water quality expert	Q8
3.4	Information techn. and database expert	I1
3.5	DPC assistant	S4
3.6	Secretary	-
4.	Divisional Data Processing Centre	
4.1	Divisional DPC manager	S9
4.2	Assistant hydrologist	S5
4.3	Trainer (Ass. hydrologist)	S8
4.4	Hydrological equipment manager	S7
4.5	DPC assistant	S4
4.6	Secretary	-
5.	Sub-divisional Data Processing Centre	
5.1	Sub-divisional DPC manager	S6
5.2	Assistant hydrologist	S5
5.3	DPC assistant	S4
6.	Field Station	
6.1	Observer/Head of station	S3
6.2	Gauge reader	S2
6.3	Helper	S1
	Meteorology	
7.	Full Climatic Station	
7.1	Senior observer	M2
8.	Rainfall station (rainfall)	
8.1	Observer	M1
	Water Quality	
12.	Water quality laboratory	
12.1	Laboratory supervisor	Q6
12.2	Head of the laboratory	Q5
12.3	Trainer (Chemist)	Q4
12.4	Chemist	Q3
12.5	Assistant chemist	Q2

*Table 1
Staffing for HIS functions
and coding as used in job
descriptions*

The following coding is used:

1. for Surface Water: S1..S12
2. for Meteorology: M1..M2
3. for Water Quality: Q1..Q8
4. for Information
Technology: I1..I2

1 SURFACE WATER

1.1 HELPER (S-1)

HIS function	Helper
Job category / level	Khalasi / Work Sarkar
Job responsibilities / purpose	To assist the Station-in-Charge in the velocity measurements, maintenance and operation of the gauging station and meteorological station.
Educational entry requirements	Eighth grade standard
Induction training / experience	<ul style="list-style-type: none"> - Field Hydrometry, and - Placement of Instruments
Tasks	<ol style="list-style-type: none"> 1. To clear silt, sediment and weeds in the river channel adjacent to the gauges to maintain continuity of water level from the river to the gauges. 2. To check the operation of the Automatic Water Level Recorder (chart), remove and annotate chart and replace. 3. To desilt stilling wells. 4. To assist with levelling surveys. 5. To assist with current meter gauging by wading, cableway, bridge or boat. 6. To check the current meter. 7. To assist in float observations. 8. To take cross-sections of the river. 9. To take water samples for water quality and suspended sediment concentration analysis and to take bed material samples.
Reporting / Interactions	To Station-in-Charge
Work load	100%

1.2 GAUGE READER (S-2)

HIS function	Gauge reader
Job category / level	Gauge reader
Job responsibilities / purpose	To take observations of water level, rainfall, and temperature and take water samples at designated intervals and to assist the Station-in-Charge in the velocity measurements, maintenance and operation of the gauging station and meteorological station.
Educational entry requirements	Eighth grade standard.
Induction training / experience	<ul style="list-style-type: none"> - Field Hydrometry, and - Placement of Instruments.
	<ol style="list-style-type: none"> 1. To observe and record water level on a staff gauge at designated intervals over a specified period. 2. To note and record the occurrence of exceptional water levels within or outside the designated period. 3. To keep gauge records secure and dry and to present them to senior officers on request. 4. To check the operation of the Automatic Water Level Recorder (chart), remove and annotate chart and replace. 5. To desilt stilling wells. 6. To carry out levelling surveys. 7. To carry out current meter gauging by wading, cableway, bridge or boat. 8. To check the current meter. 9. To take float observations. 10. To take cross-sections of the river. 11. To take water samples for quality and suspended sediment testing, and to take bed material samples. 12. To make rainfall and temperature observations (including changing charts) at specified times and to specified standards.
Reporting / Interactions	To Station-in-Charge
Work load	100%

1.3 OBSERVER / HEAD OF STATION (S-3)

HIS function	Observer / Head of Station
Job category / level	Junior Engineer / Research Assistant / Senior Observer / Supervisor / Sectional officer
Job responsibilities / purpose	To maintain a single primary gauging station or a specified network of streamflow gauging stations and rainfall/climate stations, and to ensure that reliable and accurate data are collected, recorded and transmitted.
Educational entry requirements	Diploma in Civil Engineering / Degree in Science.
Induction training / experience	Sufficient job experience and training in Principles of Hydrometry and Field Hydrometry and Instrumentation
Tasks	<ol style="list-style-type: none"> 1. To check gauge observations of the Hydrological Observer, to compile records and transmit them to the Sub-Divisional Officer at frequencies specified in the Manual. 2. To record in a Field Record Book any observed changes affecting station performance as part of field checking. 3. To check the operation of the Automatic Water Level Recorder (chart, logger, pressure transducer etc.), remove and note time and level details on chart and replace; download and reset logger. 4. To install and arrange basic repairs and maintenance to staff gauges, AWLRs, rainfall and climate equipment and arrange replacement of consumables, demarcate discharge measuring cross-sections. 5. To supervise de-silting of stilling wells. 6. To carry out levelling surveys; compute and plot cross-sections and longitudinal river sections. 7. To carry out / supervise current meter gauging by wading, cableway, bridge, boat and flow measurements by floats. 8. To carry out vertical velocity distribution experiments. 9. To regularly compute and record on forms and registers discharge and associated measures from current metering and other measurements and return completed records to the Sub Divisional Officer. 10. To carry out basic field maintenance of current meters including ratings, counters, rods, winches, cables and fish weights, bridge and boat outfits, boat anchorage, life-buoys, boat accessories, pumps etc. 11. To prepare graphical stage discharge and other relationships to understand the characteristics of the river reach and any changes. 12. To carry out sampling and testing of water for suspended sediment and water quality. 13. To supervise S-1 and S-2 staff at the station or in the specified network.
Reporting / Interactions	To Manager Sub-divisional DPC.
Work load	100%

1.4 DATA ENTRY OPERATOR (S-4)

HIS function	Data Entry Operator
Job category / level	Technical Assistant
Job responsibilities / purpose	To receive data sent from the field, compile and maintain hard-copy records and to enter data to computer data files and provide general assistance.
Educational entry requirements	Industrial Training Institute Certificate or equivalent in data entry operations.
Induction training / experience	<ul style="list-style-type: none"> - Previous secretarial, and/or word processing and/or data entry experience. - Basic computer skills - DOS, Windows, word processing, spreadsheet and database software. Numeric keypad data entry. Preliminary idea of hydrometric and meteorological observations and of surface water data entry.
Tasks	<ol style="list-style-type: none"> 1. To receive data from the field, to register its receipt and to report non-receipt to Assistant hydrologist/ Sub-divisional DPC manager. Data handled will include all types of hydrometric and meteorological data inter alia: staff gauge observations and water level charts, current meter gauging observations, daily rainfall, recording rainfall charts, sediment data, bed material data. Digital data from loggers may also be received on floppy disks. 2. To file observed data in a standard retrievable manner. 3. To enter data through DES/SW in computer files applying available data entry checks. 4. To help dispatching data to Divisional DPC at prescribed intervals. 5. To compile reports on site visits made by Assistant Hydrologist and Sub-divisional DPC manager and any other report to be made with respect to observation stations and data processing operations carried out at the Sub-divisional DPC.
Reporting / Interactions	To Assistant hydrologist/Sub-divisional DPC manager
Work load	100%

1.5 ASSISTANT HYDROLOGIST (S-5)

HIS function	Assistant Hydrologist
Job category / level	Junior Engineer/Assistant Engineer
Job responsibilities / purpose	Supervise hydrological observations and civil works at stations and carry out primary and/or secondary data validation. Ensure timely dispatch of data to divisional DPC and feed back to field staff.
Educational entry requirements	Diploma /B.E./ A.M.I.E (Civil Engineering)
Induction training / experience	The officer should have some previous experience in the field operation and management of the hydrometric network. Training in Principles of Hydrology and Hydrological Data Management
Tasks	<ol style="list-style-type: none"> 1. Prepare plans and other drawings related to observation stations 2. Plan, design and supervise civil works at observation stations. 3. Supervise survey works at observation stations 4. Supervise hydrological observations (particularly stage-discharge observations). 5. Assemble data from Field and Section offices, including water level and current metering data, survey data, field record data, sediment and water quality data, and rainfall and climatological data. To register receipt and respond to non-receipt. 6. Supervise all data entry operations at Sub-divisional DPC. 7. Compare data from manuscript and computer files. 8. Organise data received form Sub-Divisional DPCs (applicable for Assistant Hydrologist at Divisional DPC). 9. Carry out data validation for all types of data as appropriate. 10. Suggest values for correction or completion of data along with necessary justification. 11. Carry out processing of current metering data to derive stage discharge relationships with their periods of application, extrapolation of ratings. 12. Update current metering data and to analyse for changes in rating. 13. Apply rating equations for converting stage to discharges. 14. Transfer all incremental data sets (observed and processed) to higher levels i.e., Divisional DPC/ State DPC. 15. Ensure necessary feed back to field staff in light of data validation at Sub-divisional DPC and feed back from other higher offices. 16. Ensure smooth operation and maintenance of observation stations by arranging for timely calibrations, repairs of equipment and structures.
Reporting / Interactions	To Sub-divisional DPC manager.
Work load	100%

1.6 MANAGER SUB-DIVISIONAL DPC (S-6)

HIS function	Manager Sub-divisional DPC
Job category / level	Assistant Engineer/S.D.O
Job responsibilities / purpose	To inspect hydrological observations and civil works at stations and ensure smooth functioning of Sub-divisional DPC.
Educational entry requirements	Diploma in Civil Engineering/B.E. (Civil Engineering)/ A.M.I.E (Civil)
Induction training / experience	<ul style="list-style-type: none"> - The officer should have some previous experience management of the hydrometric network - Principles of Hydrology - Hydrological data management
Tasks	<ol style="list-style-type: none"> 1. Plan, design and inspect civil works at observation stations 2. Inspect survey works at observation stations 3. Inspect hydrological observations (particularly stage-discharge observations). 4. Inspect, supervise and guide all data entry, validation and processing activities for all types of data at Sub-divisional DPCs. 5. Ensure smooth functioning of Sub-divisional DPC and all observational stations under its control with respect to their operation and maintenance and flow of data in HIS. 6. Ensure data is received from all observation stations under the Sub-division every month and readied for transfer to Divisional DPC by the 10th of the next month as 'field data'. 7. Ensure organisation of data files according to structure assumed in HYMOS Primary Module. 8. Ensure minimum validation of data types are laid down so that they are uniformly followed in the SDDPC. 9. Ensure that a percentage of validation is done by the manager himself. 10. Ensure systematic retention and updates of data files according to the protocols prepared by the Divisional DPC. 11. Ensure that network stations of other agencies like IMD, CWC in their area are identified and data from relevant stations known as 'temporary data' obtained through DSC/SDPC/DDPC.
Reporting / Interactions	To Manager Divisional DPC
Work load	100%

1.7 MANAGER HYDROLOGICAL EQUIPMENT (S-7)

HIS function	Manager Hydrological Equipment
Job category / level	Junior Engineer/Assistant Engineer
Job responsibilities / purpose	To service and maintain instruments and equipment in condition fit for use and to arrange for repair, calibration and test faulty equipment at all stations in the network within the jurisdiction.
Educational entry requirements	Diploma in Mechanical Engineering, Electrical Engineering or Electronics.
Induction training / experience	<ul style="list-style-type: none"> - Principles of Hydrometry - Field Hydrometry and Instrumentation.
Tasks	<ol style="list-style-type: none"> 1. To maintain an inventory of equipment held at the office, at stations and at station site stores and to maintain adequate stocks of consumable items (e.g. charts, pens, rain gauge measuring jars etc.). 2. To prepare working kits of equipment for inspecting teams and to make them available as required. 3. To repair faulty equipment or to return to manufacturer for repair or replacement. 4. To perform random checks and test new and repaired instruments before installation. 5. To make periodic inspections of field installations including cableways, winches, AWLRs and sensors. 6. To service and maintain fixed field equipment, including cableways, winches, derricks etc. 7. To ensure maintenance contracts of SDDPC/DDPC hardware are valid and consumables supply is smoothly reaching offices. 8. To provide field demonstrations of instruments and equipment.
Reporting / Interactions	To Divisional DPC manager
Work load	100%

1.8 TRAINER (SW) (S-8)

HIS function	Trainer (SW)
Job category / level	Assistant Engineer
Job responsibilities / purpose	Training surface water observers and supervisors on observational procedures on a regular basis and to act as Assistant hydrologist as per the work load requirement of the Division.
Educational entry requirements	Diploma/B.E. in Civil Engineering
Induction training / experience	Training of trainers (field observations) as provided by CTU.
Tasks	<ol style="list-style-type: none"> 1. Prepare detailed (re-) design of curricula and training materials, as required for local circumstances. 2. Plan the yearly training schedule in consultation with State Training Co-ordinators. 3. Ensure proper trainee nominations and selection. 4. Organise training resources (venue, materials, guest trainers, etc.). 5. Conduct (in association with other trainers from the state, if required) the training on field observations. 6. Evaluate training. 7. Report on training deliveries and development. 8. Tasks 1-13 of S5 as and when assigned.
Reporting / Interactions	<ul style="list-style-type: none"> - Close co-operation with the State Training Co-ordinator - Guidance from CTU where the ToT are organised - Reporting to Manager Divisional DPC
Work load	Initially, full time

1.9 MANAGER DIVISIONAL DATA PROCESSING CENTRE (S-9)

HIS function	Manager Divisional Data Processing Centre
Job category / level	Executive Engineer
Job responsibilities / purpose	To inspect hydrological observations, civil works at stations, Sub-divisional DPCs and ensure smooth functioning of Divisional DPC.
Educational entry requirements	Diploma in Civil Engineering/B.E. (Civil Engineering)/ A.M.I.E (Civil)
Induction training / experience	<ul style="list-style-type: none"> - The officer should have some previous experience in the field - operation and management of the hydrometric network - Principles of Hydrology - Hydrological data management
Tasks	<ol style="list-style-type: none"> 1. Inspect civil works and hydrological and meteorological observation stations. 2. Inspect, supervise and guide all data entry, validation and processing activities for all types of data at Divisional DPCs. 3. Supervision of protocols for data files at Sub-divisional and Divisional DPC's 4. Ensure smooth functioning of Divisional DPC and Sub-divisional DPCs, observational stations under its control with respect to their operation and maintenance and flow of data in HIS. 5. Ensure that for each subdivision stations/data type and minimum validation are laid down. 6. Ensure that validation checks in part at least are exercised by the SDDPC managers 7. Ensure that HYMOS validation takes care of existing facilities/water use structures and minimum validation is laid down customised to each basin station/data type.
Reporting / Interactions	To Manager State DPC
Work load	100%

1.10 HYDROLOGIST (S-10)

HIS function	Hydrologist
Job category / level	Assistant Engineer / Assistant Executive engineer
Job responsibilities / purpose	To carry out comprehensive data validation, processing, analysis and reporting and hold technical consultations with the staff from various divisions and other agencies for the purpose of data validation and finalise data sets in time.
Educational entry requirements	B.E./ A.M.I.E (in Civil Engineering)
Induction training / experience	<ul style="list-style-type: none"> - Principles of Hydrology - Hydrological data processing
Tasks	<ol style="list-style-type: none"> 1. Supervise any data entry operations required at State DPC. 2. To organise data received from various Divisional DPCs in temporary databases. 3. To undertake digitisation required for use at DPCs. 4. To study and review reports on validation, correction and completion of data by Sub-Divisional / Divisional DPCs. 5. To retrieve observed data sets of central agencies from data storage centres for the purpose of data validation. 6. To consult staff of Divisional DPCs / Sub-divisional DPCs for ensuring necessary feed back about field conditions. 7. To carry out comprehensive data validation, correction and completion and prepare report thereon. 8. To consult hydrologists of other agencies operative in the region for finalising processed data sets. 9. To give feed back to the Divisional DPCs at regular intervals on the basis of findings of comprehensive data validation 10. To compile data in the form desired for data dissemination, reporting and storage and bring out water yearbooks and special reports each year. 11. To transfer observed and processed data sets to the Data Storage Centre. 12. To take regular back ups of temporary databases. 13. To visit observational stations, if necessary, for better appreciation of the hydrological regime of an area or reach.
Reporting / Interactions	To Manager State DPC
Work load	100%

1.11 MANAGER STATE DATA PROCESSING CENTRE (S-11)

HIS function	Manager State Data Processing Centre
Job category / level	Executive Engineer
Job responsibilities / purpose	To ensure smooth functioning of State DPC with respect to finalisation of observed and processed data sets, preparation of year books and communication of data to and from State DPC.
Educational entry requirements	B.E. (Civil Engineering) / A.M.I.E (Civil)
Induction training / experience	<ul style="list-style-type: none"> - Principles of Hydrology - Hydrological data management
Tasks	<ol style="list-style-type: none"> 1. Organise, supervise and guide data validation and processing activities for all types of data at the State DPC. 2. Organise consultations with hydrologists of other agencies operative in the region for the purpose of data validation 3. Ensure finalisation of processed data sets within stipulated time limits. 4. Ensure publication of water yearbooks and special reports at regular basis. 5. Ensure smooth functioning of State DPC and flow of data to and from State DPC. 6. Participate in meetings of HDUGs and prepare necessary documents if assigned to. 7. Processing centre manager has to lay down clearly data to be received from each division, both 'field data' and 'processed data' 8. Processing centre manager has to lay down for each set of basin stations/data types minimum hydrologic validations, considering existing water use structure etc., present.
Reporting / Interactions	To Manager Data Centre / Head of HIS
Work load	100%

1.12 MANAGER STATE DATA CENTRE / HEAD OF HIS (S-12)

HIS function	Manager State Data Centre / Head of HIS
Job category / level	Superintending Engineer
Job responsibilities / purpose	To ensure smooth functioning of the State Hydrological Information System and State Data Storage Centre.
Educational entry requirements	B.E. (Civil Engineering) / A.M.I.E (Civil)
Induction training / experience	<ul style="list-style-type: none"> - Principles of Hydrology - Hydrological data management
Tasks	<ol style="list-style-type: none"> 1. To ensure smooth operation of the Data Storage Centre. 2. To ensure smooth operation of the Hydrological Information System. 3. To act as liaison between DSC and the data providers (State and Central Organisations) for 'temporary data' 4. In the various areas of subdivision, divisions, there are locations operated by other agencies viz. IMD, CWC etc. Relevant packages of data relevant to the particular division should be channelised to that division. 5. To ensure efficient and timely data flows between owner and local DPCs and administration of these flows. 6. Storage centre managers has to lay down clearly data to be received from each division, both 'field data, and 'processed data' 7. To ensure proper storage of data and administration of data received from owner DPC and local DPC 8. Data Storage Centre has also to lay down for each set of station/ data types in a basin, a minimum validation, considering existing water use structures etc. present. 9. To act as liaison between DSC and the Hydrological Data Users and provide support in the sue of the Catalogue. 10. To provide adequate formatting procedures on the data for easy import and export of data. 11. To authenticate allotment of data access privileges in accordance with State regulations. 12. To initiate the preparation and the distribution of the Catalogue of the HIS-database. 13. To ensure adequate updating of the meta-database of the Centre and the entire HIS, according to the standards adopted in the HIS. 14. To ensure access to the Catalogue via internet and Intranet and on CD according to the standards adopted in the HIS. 15. To ensure proper monitoring of import and export of data to and from the DSC 16. To ensure adequate facilities to allow storage of new types of data.

HIS function	Manager State Data Centre / Head of HIS
	17. To ensure proper maintenance of the database and Catalogue. 18. To ensure adequate back up of all data stored in the database. 19. To ensure proper updating of the MIS. 20. To act as liaison between hardware and software service organisations. 21. To ensure the preparation of reports on data availability, data supply, and data access and data retrieval according to the standards adopted in the HIS.
Reporting / Interactions	To Chief Engineer Hydrology
Work load	100%

2 HYDRO-METEOROLOGY

2.1 HYDROMETEOROLOGICAL OBSERVER (M-1)

HIS function	Hydrometeorological Observer
Job category / level	State Field Observer / Khalasi / Work Sarkar
Job responsibilities / purpose	<ul style="list-style-type: none"> - to take field observations at fixed time. - to make entry of data in the prescribed form. - to despatch the data to the controlling office daily.
Educational entry requirements	High School (Matric)
Induction training/experience	Basic Observers Course
Tasks	<p>At stations with SRG only:</p> <ol style="list-style-type: none"> 1. Measure rainfall at 0830 hrs IST daily. 2. Enter the rainfall data in the prescribed form and also in the register. 3. Despatch the rainfall data to controlling office as per prescribed procedure. <p>At stations with both SRG & ARG, besides above tasks in respect of SRG:</p> <ol style="list-style-type: none"> 4. Remove the previous day chart and put the fresh chart on the clockdrum of the ARG at 0830 hrs IST. 5. To give time marks on the chart. 6. Tabulate hourly rainfall values from the autographic chart as per proforma supplied. 7. Compare daily rainfall values of SRG & ARG. 8. Calculate monthly total of rainfall. 9. Despatch periodic returns to controlling office (sub-division) as prescribed. 10. Keep the instruments clean and in working condition. 11. Keep the observatory enclosure locked, clean and fencing intact. 12. Keep the exposure conditions good by clearing wild growths.
Reporting / Interactions	To report to controlling office (Sub-division) immediately if instrument becomes out of order or measure glass is broken.
Work load	<ul style="list-style-type: none"> - 10% for SRG - 25% for SRG and ARG

2.2 SENIOR HYDROMETEOROLOGICAL OBSERVER (M-2)

HIS function	Senior Hydrometeorological Observer
Job category / level	Senior Observer
Job responsibilities / purpose	<ol style="list-style-type: none"> 1. Take field observations at Full Climate Station (FCS) at fixed times. 2. Make entries of data in the prescribed form. 3. Remove the previous day charts and put charts on autographic instruments. 4. Process the data and despatch to controlling office.
Educational entry requirements	B.Sc. / Diploma in Engineering / Senior Secondary School with Science.
Induction training/experience	Senior Observer Course
Tasks	<ol style="list-style-type: none"> 1. Record wind direction and wind speed. 2. Record rainfall (SRG). 3. Read dry and wet bulbs, read max. and min. temperatures and set max. and min. thermometers and compare daily temperatures with dry bulb temperature. 4. Measure pan evaporation. 5. Read barometer exact at 0830 hrs IST if installed at FCS. 6. Make all observations in the above order 10 minutes before the commencement of fixed hours of observations which are 0830 and 1730 hrs IST. (Start at 0820 and 1720 hrs IST). 7. Make entries of data in the prescribed forms in proper columns. 8. Remove the autographic charts of previous day of ARG, thermograph and hygrograph and fix fresh charts with time mark. 9. Remove the previous autographic chart of sun-shine recorder (after sun set only) and fix the fresh charts with time mark. (During rainy season, the fresh chart is put next day before sunrise). 13. Tabulate / process the data from the autographic charts. 14. Compare eye - reading and autographic data. 15. Despatch returns to controlling office as per prescribed time schedules. 16. Maintain eye - reading and autographic instruments in working conditions. 17. Keep the observatory enclosure locked, clean and fencing intact. 18. Keep exposure conditions good by clearing wild growths.
Reporting/Interactions	To report to Controlling Office about functioning of the observatory.
Work load	50%

3 WATER QUALITY

3.1 FIELD OBSERVER FOR WATER QUALITY (Q-1)

HIS function	Field observer for Water Quality
Job category / level	Similar to S1/S2/S3/G1
Job responsibilities / purpose	Simple field analysis, sample collection and transportation to the field laboratory.
Educational entry requirements	<ul style="list-style-type: none"> - High school with science subjects (inter science preferred) - Diploma in Engineering - Desirable: experience in chemical analyses, B.Sc.
Induction training/experience	On-the-job training and some experience preferred.
Tasks	<ol style="list-style-type: none"> 1. Prepare sample containers (clean, dry, coded). 2. Prepare glassware (clean, dry). 3. Prepare solutions for preservation. 4. Prepare standard solutions for DO titration. 5. Observe the field situation. 6. Perform site analyses for temperature, colour, pH, DO and EC. 7. Collect water samples according to set procedures for all level laboratories for DO, BOD, bacteriological analysis and other determinations. 8. Preserve samples. 9. Register samples. 10. Transport or arrange transport to all level laboratories.
Reporting / Interactions	<p>Interactions:</p> <ul style="list-style-type: none"> - with assistant chemist: registration (transfer of samples), preparation of - preservation solutions, and - with chemist and senior chemist: report data, field observations. <p>Reporting:</p> <p>To the Head of the laboratory about the field observations and field analyses conducted and the functioning of field equipment.</p>
Work load (per site!)	<ul style="list-style-type: none"> - 10% sampling surface water - 10% analysis and despatch of samples reporting

3.2 ASSISTANT CHEMIST (Q-2)

HIS function	Assistant Chemist
Job category / level	Assistant Chemist
Job responsibilities / purpose	All physical and chemical analyses.
Educational entry requirements	BSc. Chemistry
Professional Induction training / experience	<ul style="list-style-type: none"> - At least three years of experience in a chemical laboratory. - Knowledge of water quality parameters and their determination. - Familiar with computers.
Tasks	<ol style="list-style-type: none"> 1. Replace or assist Field Observer for Water Quality if necessary. 2. Analysis for level II parameters, including: <ul style="list-style-type: none"> - Titration's, - Distillation, - Digestion, - Bacteriological analyses, - Operation of UV-VIS-spectrophotometer, and - Operation of flame photometer, 3. Pre-treatment of samples for analyses on GC and AAS. 4. Assist in analysis on GC and AAS. 5. Enter field data and observations into a computer. 6. Enter analyses results into a computer.
Reporting / Interactions	<p>Interactions:</p> <ul style="list-style-type: none"> - with field observer for WQ: advise on sampling and sample preservation, perform registration of samples when they enter the laboratory - with chemist: assist with GC and AAS analysis - with head of the laboratory: report problems in the overall functioning of the laboratory <p>Reporting:</p> <p>To the Chemist and the Head of the laboratory, according to set procedures in a laboratory logbook/working file/folders and functioning of laboratory equipment.</p>
Work load	<ul style="list-style-type: none"> - 70% (wet) chemical analysis, instrumental analysis and assistance for GC and AAS analysis if used in the laboratory. - 20% data entry - 10% reporting

3.3 CHEMIST (Q-3)

HIS function	Chemist
Job category / level	Chemist / Research Officer
Job responsibilities / purpose	Analysis of required parameters / validation and entry of results into the computer.
Educational entry requirements	MSc. Chemistry
Induction training/experience	At least five years of experience of working in a chemical laboratory, at least two years of experience of working in a water quality laboratory. Desirable: experience in computerised data processing, knowledge of advanced instrumental analyses techniques.
Tasks	<ol style="list-style-type: none"> 1. Analyses listed in the job description of the assistant chemist. 2. Analyses on AAS and GC if used. 3. Delegate workload for assistant chemist and Field Observer for Water Quality. 4. Trouble shooting with regard to equipment or analysis. 5. Method development in consultation with the senior chemist. 6. Setting up newly received instruments. 7. Practice Quality Control.
Reporting / Interactions	<p>Interactions:</p> <ul style="list-style-type: none"> - with assistant chemist: supervise in GC and AAS analysis, solve problems - for the assistant chemist with regard to analysis and equipment - with head of the laboratory: report problems in the overall functioning of the laboratory <p>Reporting:</p> <p>To the Head of the laboratory according to the set procedures in a laboratory logbook/working file/folders and functioning of laboratory equipment and Good Laboratory Practice.</p>
Work load	<ul style="list-style-type: none"> - 60% performing analyses - 20% quality control - 10% trouble shooting and method checking - 10% management of consumables.

3.4 WQ TRAINER (Q-4)

HIS function	WQ trainer
Job category / level	Q-3, Q-5, Q-6 or Q-7
Job responsibilities / purpose	Train field assistants and assistant chemists / researchers on a regular basis
Educational entry requirements	= Q-3
Induction training/experience	Affinity with training, transfer of knowledge and human resource development
Tasks	<ol style="list-style-type: none"> 1. Prepare detailed (re-) design of curricula and training materials, as required for local circumstances 2. Promote training in beneficiary organisations 3. Monitor proper trainee nominations 4. Organise training resources (venue, materials, guest trainers, etc) 5. Implement (the major part of) the training 6. Evaluate training 7. Report on training deliveries and development
Reporting / Interactions	<ul style="list-style-type: none"> - Close co-operation with the State Training Co-ordinator, - Guidance from CTI where ToT was received.
Work load	Initially, full time

3.5 HEAD OF THE LABORATORY (Q-5)

HIS function	Head of the Laboratory
Job category / level	Senior Chemist /Chief Chemist / Senior Research Officer
Job responsibilities / purpose	Quality control and assurance, laboratory management, maintenance of records, functioning and maintenance of instruments.
Educational entry requirements	MSc Chemistry
Induction training/experience	<ul style="list-style-type: none"> - Several years experience in a water chemistry laboratory, knowledge of environmental topics in both surface water and ground water - Desirable: a research degree, knowledge of advanced instrumental analyses of water quality parameters
Tasks	<ol style="list-style-type: none"> 1. Organise work programs for staff 2. Supervise activities of laboratory (quality control) 3. Data analysis 4. Method development 5. Organise training, training need assessment? 6. Substitute assistant chemist and chemist if necessary
Reporting / Interactions	<p>Interactions:</p> <ul style="list-style-type: none"> - with the members of the staff: laboratory techniques, supervision of - special studies - with the director: apply for new projects, write periodical report on - water quality in dialogue with the director. <p>Reporting:</p> <p>To the Director regarding functioning of laboratories and progress of work</p>
Work load	<ul style="list-style-type: none"> - 30% supervision of laboratory, workplans, quality control - 20% reporting, trouble shooting and method development

3.6 LABORATORY SUPERVISOR (Q-6)

HIS function	Laboratory Supervisor
Job category / level	Senior Chemist/ Chief Chemist / Senior Research Officer
Job responsibilities / purpose	Functioning of several regional / divisional / sub –divisional chemistry laboratories / Inter laboratory Quality Control
Educational entry requirements	MSc Chemistry
Induction training/experience	<ul style="list-style-type: none"> - Several years experience in a water chemistry laboratory, knowledge of environmental topics in both surface water and ground water. - Desirable: a research degree, knowledge of advanced instrumental analyses of water quality parameters.
Tasks	<ol style="list-style-type: none"> 1. Supervise activities of laboratories 2. Plan sample distribution over laboratories 3. Identify need for method checking/development 4. Identify training needs and organise training 5. Inter laboratory Quality Control 6. Substitute chemist and head of the laboratory if necessary
Reporting / Interactions	<p>Interactions:</p> <ul style="list-style-type: none"> - with the members of the staff: laboratory techniques, supervision of special studies - with the director: apply for new projects, write periodical report on water quality <p>Reporting:</p> <ul style="list-style-type: none"> - to the Director regarding functioning of laboratories and progress of work - to water quality expert/data processing expert on the AQC performance of all laboratories
Work load	30%-50% supervision of labs, including quality control

3.7 WATER QUALITY EXPERT GROUND WATER (Q-7)

HIS function	Water Quality Expert Ground Water
Job category / level	
Job responsibilities / purpose	Analysis and reporting of all water quality data collected in a state or region / initiate and check with laboratory supervisor or heads of laboratories in case doubt of correctness of data arises from analysis
Educational entry requirements	MSc in relevant field
Induction training/experience	<ul style="list-style-type: none"> - Experienced in computerised analysis and interpretation of water quality both for surface and groundwater. Must have background in (applied) chemistry, environmental engineering or equivalent to ensure a sound knowledge of the fate and origin and of environmentally relevant substances (including trace metals, pesticides). - Desired: experienced in proposing, defining, guiding and reporting research in above-mentioned area. Affiliation with numerical modelling.
Tasks	<ol style="list-style-type: none"> 1. Monitoring the observing of standardised procedures during data collection and chemical analysis 2. Final validation of ground water quality data in close collaboration with the Centre's hydro-geologists and the staff of the processing centres of the Central agencies 3. Feed back to the Water Quality Laboratories on the quality of the data. 4. Final processing of water quality data; guarantee integrated analysis and reporting of water quality. 5. Contribution to reporting and preparation of yearbooks. 6. Provision of assistance to visiting Hydrological data Users in water quality analysis. 7. Initiate special studies and investigations (write project proposals, guide research and write report on findings)
Reporting / Interactions	<ul style="list-style-type: none"> - with the Senior Chemist responsible for the laboratories in the region - with Surface Water Quality Expert for data validation and analysis - with hydro-geologists in the same data centre for integration of quantity and quality - to manager DPC - will report in standardised form on the status and development of water quality in the state/region - investigation/research proposals
Work load	<ul style="list-style-type: none"> - 50% actual validation, analysis and interpretation of water quality data - 20% interaction with colleagues in other data centres - 15% work together with Senior Chemist on improving quality of the data and defining special studies - 15% research and investigations

3.8 WATER QUALITY EXPERT SURFACE WATER (Q-8)

HIS function	Water Quality Expert Surface Water
Job category / level	
Job responsibilities / purpose	Analysis and reporting of all water quality data collected in a state or region. Initiate and check with laboratory supervisor or heads of laboratories in case doubt of correctness of data arises from analysis
Educational entry requirements	M.Sc. in relevant field
Induction training / experience	<p>Experienced in computerised analysis and interpretation of water quality both for surface and groundwater. Must have background in (applied) chemistry, environmental engineering or equivalent to ensure a sound knowledge of the fate and origin and of environmentally relevant substances (including trace metals, pesticides).</p> <p>Desired: experienced in proposing, defining, guiding and reporting research in above-mentioned area. Affiliation with numerical modelling.</p>
Tasks	<ol style="list-style-type: none"> 1. Monitoring the observing of standardised procedures during data collection and chemical analysis 2. Final validation of surface water quality data in close collaboration with the Centre's hydrologists and the staff of the processing centres of the Central agencies 3. Feed back to the Water Quality Laboratories on the quality of the data. 4. Final processing of water quality data; guarantee integrated analysis and reporting of water quality. 5. Contribution to reporting and preparation of yearbooks. 6. Provision of assistance to visiting Hydrological data Users in water quality analysis. 7. Initiate special studies and investigations (write project proposals, guide research and write report on findings)
Reporting / Interactions	<ul style="list-style-type: none"> - with the Senior Chemist responsible for the laboratories in the region - with Ground Water Quality Expert for validation and analysis - with hydrologists in the same data centre for integration of quantity and quality - to manager DPC - will report in standardised form on the status and development of water quality in the state/region - Investigation/research proposals.
Work load	<ul style="list-style-type: none"> - 50% actual validation, analysis and interpretation of water quality data - 20% interaction with colleagues in other data centres - 15% work together with Sr. Chemist on improving quality of the data and defining special studies - 15% research and investigations.

4 INFORMATION TECHNOLOGY

4.1 INFORMATION TECHNOLOGY AND DATA BASE EXPERT (I-1)

HIS function	Information Technology and Data Base Expert
Job category / level	Informatics engineer
Job responsibilities / purpose	Smooth functioning of software, hardware and communication infrastructure in Data Centres
Educational entry requirements	M.Sc. Informatics and database management
Induction training / experience	Experience in Data Base Management
Tasks	<ol style="list-style-type: none"> 1. Control and maintenance of the Centre's computer infrastructure (hardware and software, peripherals, etc.). 2. Overall responsibility for and maintenance of the Centres' databases and dedicated software's. 3. Periodic updating of the database with data transferred from Data Processing/Storage Centres, 4. Support to all computer users in the Centres on information technology matters, 5. Control of activities by service and system maintenance providers, 6. Control of data storage, file back up and archiving, and 7. Control of the Centre's communication systems.
Reporting / Interactions	To Manager State Data Processing/Storage Centre
Work load	100 %

4.2 DATABASE ADMINISTRATOR (I-2)

HIS function	Database Administrator
Job category / level	Informatics engineer
Job responsibilities / purpose	State database management
Educational entry requirements	M.Sc. Informatics
Induction training / experience	Experience in Data Base Management
Tasks	<ol style="list-style-type: none"> 1. Overall responsibility for the operation of the HIS-database. 2. Provision of adequate formatting procedures on the data for easy import and export of data 3. Storage of data received from owner DPC and local DPC and administration of data input streams – ‘field data’, ‘processing’ & ‘temporary data’ as also ‘object data’. 4. Monitor the timely delivery of data. 5. Transfer of data from owner DPC to local DPC & vice versa & keep adequate administration of the data flows – ‘temporary data’. 6. Administration of data retrieval and security checks. 7. Update of data access rights of users. 8. Preparation and maintenance of the Catalogue of the HIS-database. 9. Create access to Catalogue via Internet and Intranet. 10. Create and distribute Catalogue updates on CD. 11. Advise users on data retrieval options and database content. 12. Maintain the integrity of the HIS-database. 13. Monitor the synchronisation with related databases, e.g. between state and region. 14. Adjustment of data to allow entry & retrieval of new types of data 15. Make back-ups and archive data. 16. Control the data communication processes and the applied protocols. 17. Communicate with external service organisations (outsource highly specialised tasks). 18. Keep MIS database up to date. 19. Preparation of reports on data availability, data supply, data access and data retrieval according to the standards (time-wise and content- wise) adopted in the HIS.
Reporting / Interactions	To Manager State Data Storage Centre
Work load	100 %