IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Quality Manual of District Water Testing Laboratory (DWTL) Osmanabad, Maharashtra, India

Megha Shinde (Daga)[1], S.B. Gaikwad[2], Vijay Gendle[3,]

[1]Assistant Geologist, GSDA, Osmanabad, Maharashtra,
[2]Senior Geologist, GSDA, Osmanabad, Maharashtra,
[3]Chemist, GSDA, Osmanabad, Maharashtra, email

Abstract

ISO/IEC 17025 accreditation can help Groundwater Surveys and Development Agency move toward national recognition, consistent operations, and a competitive advantage. The Office of Senior Geologist, GSDA, Osmanabad, Laboratory Quality Manual (here after referred to as QM) has been prepared for the District Water Testing Laboratory (DWTL, Osmanabad) to meet the requirements for laboratory accreditation of the International Organization for Standardization/International Electro-technical Commission (ISO/IEC 17025) and National Accreditation body for Testing an Calibration Laboratories (NABL). It has been formatted using clause numbers from ISO/IEC 17025 to provide ease in review. DWTL, Osmanabad offers testing of water samples for chemical and bacteriological parameters.

(Keywords- Groundwater Surveys and development agency, Maharashtra government, Laboratory, water testing, accreditation, chemical, bacteriological, manual, management, policy)

1. INTRODUCTION

2. Controlled Distribution of the Quality Manual

The Quality Manager District Water Testing Laboratory (DWTL, Osmanabad) is responsible for maintaining the official master copy of the Quality Manual. The Quality Manual consists of G.S.D.A Laboratory Manual of Quality Policies and ISO 17025 G.S.D.A. Laboratory Procedures. Annual review is coordinated by the Office of Senior Geologist (GSDA, Osmanabad).

3. Quality Policy Statement

District Water Testing Laboratory (DWTL, Osmanabad) is committed to laboratory accreditation according to the requirements of ISO/IEC 17025 and requirements of National Accreditation Body for Testing an Calibration Laboratories (NABL). This commitment is evidenced by the approval signatures for this manual.

3.1 Quality Policy

District Water Testing Laboratory, G.S.D.A., Osmanabad ensure reliability, consistency and traceability in testing of all sources of water for drinking purpose using standard techniques of analysis. The laboratory is committed to achieve, precise and accurate test results by using appropriate equipments in good laboratory practices through adopting and complying of National & International standards. Imparting training for all personnel concerned with laboratory activities. We strive to continually improve the effectiveness of the management system and customer satisfaction by meeting customer requirements. The objective of this quality system is to provide a framework for meeting customer needs, establish processes for consistently providing quality service, allow management to review performance, and establish a method for improvement. All personnel concerned with testing activities within the laboratory will familiarize themselves with the quality manual and supporting documentation and implement the policies and procedures in their work. We are committed to compliance with ISO/IEC 17025:2017 and to continually improving the effectiveness of the management system.

3.2 Quality Objectives

District Laboratory, G.S.D.A., Osmanabad is committed to achieve excellence in testing of Water samples as per the uniform drinking water quality monitoring protocol, 2013 there under along with implementation of Quality management system ISO/IEC 17025:2017 norms.

a) To ensure accurate testing facility, this will give results of high degree of precision to disseminate water quality to ensure safety of consumer.

b) To utilized water test for results in that will ensured safety of consumer.

c) To obtain precise & accurate results by using appropriate equipments in good laboratory practices through adopting and complying of National & International standards.

d) To maintain transparency in the implementation of the Quality System of District Water Testing Laboratory, G.S.D.A, Osmanabad & give Satisfactory services to the Customers.

4. GENERAL REQUIREMENTS

4.1. Impartiality

4.1.1. Laboratory activities are undertaken impartially and they are structured and managed, so as to safeguard impartiality. To ensure impartiality, the testing personnel and administration personnel are separate. The organization structure is given in Annexure-1, which ensures that impartiality related to work is carried–out by the laboratory. The Quality Manager ensures impartiality by the laboratory during the laboratory subcontractors' and employees' relation with customers during execution of the work.

4.1.2. Laboratory management is committed to sustaining impartiality of all personnel by enforcing existing Govt. of Maharashtra policies and requirements on ethics that were implemented to ensure impartiality in the agency's work. All staff member abide by rules mentioned in Maharashtra Civil Service Rule (Conduct) 1979 amended 2017. Laboratory personnel are required to submit confidential asset and liabilities discloser form.

4.1.3. DWTL, Osmanabad is government laboratory, dealing in the water testing. DWTL, Osmanabad is responsible for the impartiality of its activities and the matter related to commercial, financial or other pressures

to compromise impartiality is handled by the personnel other than the testing personnel. DWTL, Osmanabad does not allow commercial, financial, political or other pressures to compromise impartiality.

4.1.4. Our laboratory identifies risks to its impartiality on an on-going basis from customers, employees and suppliers. This includes those risks that arise from its activities, or from its relationships, or from the relationships from its personnel. (DWTL/SOP/4.1.4)

4.1.5. If a risk to impartiality is identified, DWTL, Osmanabad will take appropriate action to eliminate or minimize such risk by deploying separate personnel, by providing separate or dedicated resources etc. Senior Geologist initiates the immediate actions to overcome and take action to maintain impartiality.

Reference documents	
DWTL/SOP/4.0	SOP for Impartiality & Confidentiality
DWTL/SOP/4.1.4	SOP for preventing involvement in outside activity.

4.2. Confidentiality

4.2.1. DWTL, Osmanabad ensures the protection of its customer's confidential information and proprietary rights, including the protecting the electronic storage and transmission of results. The laboratory is responsible through legally enforceable commitments, for the management of all information obtained or created during the performance of laboratory activities. DWTL, Osmanabad informs the customer in advance, of the information it intends to place in the public domain. Except for information that the customer makes publicly available, or when agreed between the laboratory and the customer, all other information is considered proprietary information and shall be regarded as confidential.

4.2.2. When the laboratory is required by law or authorized by contractual arrangement to release confidential information, the customer concerned is notified of the information provided (unless prohibited by law).(DWTL/SOP/4.2.2)

4.2.3. Information about the customer obtained from sources other than the customer is confidential between the customer and our laboratory. The provider of this information is confidential to the laboratory and is not shared with the customer, unless agreed by the source.

4.2.4. Personnel, including any management members, contractors, personnel of external bodies, or individuals acting on the laboratory's behalf, keep confidential all information obtained or created during the performance of laboratory activities, except as required by law. All staff members abide by rules mentioned in Maharashtra Civil Service Rule (Conduct) 1979 amended 2017.

Reference documents	
DWTL/SOP/4.0	SOP for Impartiality & Confidentiality
DWTL/SOP/4.2.2	SOP for control of customer confidential and proprietary documents/data procedure

5. Structural requirements

5.1. District Water Testing Laboratory (DWTL, Osmanabad) is a part of the Office of Senior Geologist, Groundwater Surveys & Development Agency, Osmanabad which comes under water supply & sanitation department (WSSD) govt. of Maharashtra. This laboratory is required to follow all govt. of Maharashtra rules. DWTL, Osmanabad is responsible for all activities within their operations.

5.2. District Water Testing Laboratory, Osmanabad is headed by Senior Geologist, Groundwater Surveys & Development Agency, Osmanabad . The Senior Geologist has the overall responsibility of the laboratory for the implementation of quality management system. The laboratory has managerial staff with the authority to discharge their duties as reflected in their duties and responsibilities. This authority includes the implementation, maintenance, and improvement of the management system.

5.3. Laboratory activities encompass all processes from the review of vendors for external products and services to sample, equipment, supply, and data handling and reporting with in the laboratory. DWTL, Osmanabad has documented training, proficiency, and method validation and verification programs in place. To ensure consistency in these processes controlled, approved documents are maintained to provide guidance in all processes and records retained to recreate processes, if needed. These also provide the basis to evaluate risks and improvements where gaps are identified through non conformance's, complaints, and annual management review of the inputs and outputs of operations.

5.4. DWTL, Osmanabad is committed to laboratory accreditation according to the requirements of ISO/IEC 17025:2017. This commitment is evident by the approval signatures by Senior Geologist for this quality manual.The intent of GSDA is to operate testing laboratories according to the following requirements:

a) GSDA policies and procedures;

b) ISO/IEC 17025:2017;

c) customer contracts (work plan);

d) G.S.D.A compliance programs and assignments;

e) National and State laws and regulations, and

f) National Accreditation Board for Testing & Calibration Laboratories (NABL) Accreditation Criteria.

5.5 District Water Testing Laboratory (DWTL, Osmanabad)

a) is a part of the Office of Senior Geologist, G.S.D.A, Osmanabad. The organization and the relationship among the laboratory staff is reflected in the laboratory's organizational chart. The Organizational Chart of the laboratory is enclosed as Annexure 01. The management structure chart is enclosed as Annexure 02.

b) Written instructions / information stating responsibilities and activities have been provided to staff member. Therefore the management chart given in Annexure 02 also reflects the interrelationship of the laboratory staff in DWTL, Osmanabad. The laboratory has managerial staff with the authority to discharge their duties as reflected in their duties and responsibilities. This authority includes the implementation, maintenance, and improvement of the management system.

c) The laboratory management system is outlined in the following documents:

1) Quality manual,

2) Written procedures

3) References, and

4) Forms and records.

This management system is established to address the requirements in ISO/IEC 17025:2017. The quality policy and quality objectives for DWTL, Osmanabad are stated at the starting of the document. The documents listed above are accessible to all personnel and are included in the laboratory's training program.

5.6. District Water Testing Laboratory (DWTL, Osmanabad) has personnel (Quality Manager and Technical Manager) who irrespective of other responsibilities, have the authority and resources, to discharge their duties as reflected in their duties and responsibilities, which include

a) Implementation, maintenance and improvement of management system as per ISO/IEC 17025:2017;

b) Identification of departures from the management system or from procedures for performing laboratory activities;

c) To initiate actions to prevent or minimize such departures;

d) Report to the management about the performance of the management system and the improvement required;

e) Ensuring effectiveness of laboratory activity.

Roles and responsibilities of all personnel is given in document (DWTL/RR/01)

5.7. District Water Testing Laboratory (DWTL, Osmanabad) ensures that:

a) Effective communication from management occurs through the use of but not limited to memos, newsletters, electronic presentations, emails, or verbally to laboratory personnel regarding the effectiveness of the management system and importance of meeting customer, statutory, and regulatory requirements.

b) The management system process and procedures as defined in this manual maintain the integrity of the management system when changes such as a change in the structure of the organization or management, or a change is a policy or procedure are made.

6. Resource requirements

6.1. General

DWTL, Osmanabad has the personnel, facility, equipment, systems and support service necessary to manage and perform its laboratory activity.

6.2. Personnel

6.2.1. All personnel of the laboratory, either internal or external, that could influence the laboratory activities act impartially, are competent and work in accordance with the laboratory's management system. These positions include, but are not limited to: analysts, supervisors and managers, laboratory support staff, sample custodians,

and administrative management staff.

6.2.2. Laboratory management documents the competency requirement for each function of the laboratory influencing the result of laboratory activity. Competence is based on education, qualification, training, technical knowledge, experience, and demonstrated skills.

6.2.3. Laboratory management ensures that laboratory personnel have the required competency to perform their duties for which they are responsible and to evaluate

the significance of deviations.

6.2.4. Laboratory management communicates to the personnel their duties, responsibilities and authorities in the job description (DWTL/RR/01)

6.2.5. DWTL, Osmanabad has a documented procedure for the personnel and training (DWTL/SOP/6.2.5) and (DWTL/SOP/6.2.5 A) & retain records for,

a) Determining the competence requirements;

b) Selection of personnel;

c) Training of personnel;

d) Supervision of personnel;

e) Authorization of personnel;

f) Monitoring of competence of personnel.

6.2.6. The laboratory management authorizes identified personnel to;

a) Method ~~development~~ of ~~modification &~~ verification is applicable.

(technical manager) is authorized.

b) Technical Manager is analysis of result, Lab do not issue statement of conformity or opinions and interpretations;

c) Report, review and authorization of results.

Reference documents	
DWTL/SOP/6.2.5	SOP for identifying training needs and providing training of personnel.
DWTL/SOP/6.2.5 A	SOP for evaluation of training.

6.3 Facilities and environmental conditions

6.3.1. The laboratory environmental conditions facilitate the correct performance of analytical testing. Test methods used by the laboratory include instructions addressing applicable environmental conditions. Examples of environmental influences are energy sources, lighting, biological sterility, dust, humidity, and temperature. The laboratory monitors critical environmental conditions to ensure that results and the quality of the measurement are not adversely affected or
invalidated.

6.3.2. The technical requirements for accommodation and environmental conditions that can affect the results of test are documented in the procedure (DWTL/SOP/6.3.2.)

6.3.3. Environmental conditions requiring monitoring and control include, but are not limited to room temperature and humidity. DWTL, Osmanabad monitors controls & records environmental conditions in accordance with relevant specification, method or procedures (DWTL/SOP/6.3.2) or where they influence the validity of test result.

6.3.4. Measures to control facilities are implemented, monitored and reviewed and these include, but not limited to:

6.3.4.1. Access to and use of areas affecting laboratory activities;

6.3.4.2. Prevention of contamination, interference or adverse influence on laboratory activities; Laboratory areas are maintained clean and orderly to prevent contamination of samples and to facilitate the efficiency of laboratory operations. Procedure (DWTL/SOP/6.3.4) specifies minimum housekeeping measures.

6.3.4.3. Effective separation between areas with incompatible laboratory activities; Separate areas are maintained for incompatible activities. Measures taken to prevent cross-contamination include, but are not limited to:

1. Chemistry laboratories are separated from microbiology.
2. Sample receiving, and storage are conducted in designated areas;
3. Separate storage for standards and reference materials and cultures, and
4. Microbiology media preparation and sterilization are separated from work areas.

6.3.5. DWTL, Osmanabad does not perform laboratory activities at sites outside its permanent control. Hence this clause does not apply.

Reference documents	
DWTL/SOP/6.3.2	SOP for environment monitoring.
DWTL/SOP/6.3.4	SOP for housekeeping.

6.4 Equipment

6.4.1. The laboratory has sample preparation, measurement and test equipment for the correct performance of the tests and calibrations. The laboratory also has ancillary equipment for processing samples and for processing data.

6.4.2. If for any reason equipment leaves the direct control of the laboratory the laboratory ensures the equipment requirements are met before using the equipment.

6.4.3. The laboratory has a procedure (DWTL/SOP/6.4.3), for the safe handling, transport,storage, use and planned maintenance of measuring equipment to ensure proper functioning and to prevent contamination or deterioration.

6.4.4. The equipment performance is verified, and verification records are maintained. Equipment is to meet the laboratory's testing parameters and conform to standard specifications before being placed or returned into service. Procedures for equipment verification are provided in (DWTL/SOP/6.4.3)

6.4.5. All the equipment used in DWTL, Osmanabad for measurement are capable of achieving the measurement accuracy or measurement uncertainty required to provide a valid result. The uncertainty contributions are addressed (DWTL/SOP/7.6.)

6.4.6. The laboratory equipment is calibrated before being placed into service, as scheduled and following repairs. Calibration schedule is established for all equipments, where these properties have a significant effect on the results. DWTL, Osmanabad calibrates its equipment when

6.4.6.1. The measurement accuracy or measurement uncertainty affects the validity of the reported result, or;

6.4.6.2. Calibration of the equipment is required to establish the metrological traceability of the reported result. Procedures for equipment calibration are provided in (DWTL/SOP/6.4) and (DWTL/SOP/6.5.)

6.4.7. Laboratory equipment that has a significant effect on the results has a calibration program, as defined in (DWTL/SOP/6.4) Equipment and (DWTL/SOP/6.5)Measurement Traceability. The calibration program is reviewed and adjusted as necessary in order to maintain confidence in the status of calibration.

6.4.8. Equipment under the control of the laboratory and requiring calibration is labeled or coded to indicate the calibration status, including the date when last calibrated andthe date due for calibration. Alternatively, equipment calibration status may be identified in an associated record to indicate the status of calibration.

6.4.9. Equipment that has been subjected to overloading or mishandling, gives suspect results, or has been shown to be defective or outside specified limits, is taken out ofservice. It is isolated to prevent its use or clearly labeled or marked as being "Out of Service" to prevent its use until it has been repaired and shown by calibration or test to perform correctly within defined acceptance criteria. DWTL, Osmanabad examines the effect of the defect or departure from specified limits on previous tests according to section 7.10 Non-conforming work. Related procedure is described in (DWTL/SOP/7.10)

6.4.10. Intermediate checks are performed to maintain confidence in the performance of the equipment as per the procedure in section 7.7. Records of such intermediate checks are maintained.

6.4.11. When calibration and reference material data include reference values or correction factors, DWTL, Osmanabad ensures the reference values and correction factors are updated and implemented, as appropriate, to meet specified requirements.

6.4.12. DWTL, Osmanabad takes practicable measures to prevent unintended adjustments of equipment from invalidating results, Entry of unauthorized person is prohibited in analytical room.

6.4.13. Records are maintained for equipment and its software that can influence laboratory activity according to procedure (DWTL/SOP/6.4). The records include at least the following items:

a) The identity of the item of equipment, software and firmware;

b) The manufacturer's name, model, type identification, and serial number or other unique identification;

c) Date of procurement , date of installation;

d) Performance checks that equipment conforms to testing parameters and acceptance criteria;

e) Location of the equipment;

f) Manufacturer's instructions;

g) Dates, results and copies of reports and certificates of calibrations, adjustments, acceptance criteria, and the due date of next calibration;

h) Documentation of reference material, results, acceptance criteria, relevant dates and the period of validity;

i) Maintenance plan and maintenance carried out to date; and

j) Any damage, malfunction, modification or repair to the equipment.

Reference documents	
DWTL/SOP/6.4	SOP for equipment
DWTL/SOP/7.6	SOP for Measurement Uncertainty.
DWTL/SOP/6.5	SOP for measurement traceability.
DWTL/SOP/6.4.3	SOP FOR Handling , transport, use & Maintenance of Equipments

6.5 Metrological traceability

6.5.1. DWTL, Osmanabad establishes and maintains metrological traceability of its measurement results by means of a documented unbroken chain of calibration of its available instruments, each contributing to the measurement uncertainty, linking them to an appropriate reference. All equipment used for testing are calibrated before being put into service. DWTL, Osmanabad has an established calibration program (CAL/FR/01 to 07) and procedure (DWTL/SOP/6.4) for the calibration of equipments and implements it.

6.5.2. DWTL, Osmanabad ensures that measurement results are traceable to the International System of Units (SI) through the following;

a) Calibrations of equipment are done by agencies providing evidence of measurement traceability of its own measurement standards and measuring instrument to the SI units;

b) Certified values of certified reference materials provided by a competent producer with stated metrological traceability to the SI; and

c) Direct realization of SI units ensured by comparison with national & international standards.

6.5.3. When traceability for testing and calibration activities to SI units is not possible, the laboratory ensures metrological traceability to appropriate reference using,

a) Certified reference material having certified values procured from competent producers;

b) Results of intermediate checks, carried out to maintain the confidence in the calibration status of reference standard and reference material in accordance with the defined procedure.

Traceability alternatives to SI units are described in the procedure in DWTL/SOP/6.5.

Use of CRM/SRM is given in procedure DWTL/SOP/01.

Reference documents	
CAL/FR/01 to 07	Calibration schedule
DWTL,/SOP/6.4	SOP for equipment
DWTL/SOP/6.5	SOP for measurement traceability.
DWTL/SOP/01	SOP for scheduled use of CRM

6.6 Externally provided products and services

6.6.1. The laboratory ensures that only suitable externally provided products and service are used, when such products and services:

a) are intended for incorporation into the laboratory's own activities, for example, equipments, reference standards, consumable materials, auxiliary equipment;

b) Are provided, in part or in full, directly to the customer by the laboratory, as received from the external provider;

c) Are used to support the operation of the laboratory, for example, calibration service, facility & equipment services, proficiency testing services and assessment & auditing services.

6.6.2. DWTL, Osmanabad has a procedure (DWTL/SOP/6.6.1) for purchasing of externally provided products and services and retains records for

a) Defining, reviewing and approving the laboratory's requirements for externally provided products and services; (DWTL/REC/23)

b) Defining the criteria for evaluation, selection, monitoring of performance and reevaluation of the external providers (DWTL/SOP/6.6.2.b);

c) Ensuring that externally provided products and services conform to the laboratory's established requirements, or when applicable, to the relevant requirements of this document, before they are used or directly provided to the customer

(DWTL/SOP/6.6.2b)

d) Taking any actions arising from evaluations, monitoring of performance and re-evaluations of the external providers.

6.6.3. DWTL, Osmanabad shall ensures that all purchased products and services fulfill the requirements. The DWTL, Osmanabad makes the following clear to the provider:

a) The product and services to be provided;

b) The acceptance criteria;

c) Competency, including any required qualification of personnel.

d) Activities that the laboratory intends to perform in the provider's facilities.

Reference documents	
DWTL/SOP/6.6.1	SOP for purchase, reception and storage of reagents and laboratory consumable material.
DWTL/SOP/6.6.2.b	SOP for externally provided products and services.
DWTL/REC/23	Record of vendor evaluation/Inspection of supplies.
ST/SOP/01	SOP for purchase of chemical, glassware and accessories
ST/SOP/03	SOP for purchase of equipment
ST/SOP/04	SOP for issue of equipment

7. Process requirements

7.1. Review of request tenders and contracts

7.1.1. The Contract Review Procedure (DWTL/SOP/7.1) outlines the processes for review of requests, tenders, or contracts. This procedure ensures that:

a) The requirements, including the methods to be used, are adequately defined, documented, and understood and are referred in sample test request slip

(DWTL/PRO/01);

b) The DWTL, Osmanabad has the capability and resources to meet the requirements,

c) Where external providers are providing in the measure failure in our lab and keeping urgency in the mind. We may subcontracting the analyser as per described procedure necessary, the requirements of clause 6.6.2 are satisfied.

DWTL, Osmanabad informs the customer of the activities to be performed by external provider and gains the customers approval. The procedure for subcontracting is described in (DWTL/SOP/7.1.1)

d) the appropriate test and/or calibration method is selected and capable of meeting the customer's requirements, which are based in Indian/ International standards.

7.1.2. DWTL, Osmanabad informs the customer when the method requested by the customer is determined to be inappropriate or obsolete. This is done as part of contract review addressed in section 7.7.1

7.1.3. DWTL, Osmanabad does not give statement of conformity to a specification or standard for the test (e.g. pass/fail) hence decision rule is not defined. This is communicated to and agreed with the customer.

7.1.4. Any differences between the request or tender and the contract are resolved before any work commences. It is made sure that each contract must be acceptable to both the laboratory and the customer. It is ensured that the deviations requested by the customer must not jeopardize the integrity of the laboratory or the results.

7.1.5. DWTL, Osmanabad interacts with the customer to determine whether the requested changes are acceptable and do not impact the integrity of the laboratory or the validity of the results. Records of contract changes are maintained.

7.1.6. If a contract needs to be amended after work has commenced, the same contract review process is repeated and any amendments are communicated to all affected personnel named in the contract.

7.1.7. The laboratory affords the requesting customer cooperation to clarify the customer's request and monitoring the laboratory's performance.

The opportunity for the customer to witness laboratory activity is given upon request, providing the laboratory is able to maintain confidentiality to other customers during such cases.

7.1.8. Records of reviews, including any significant changes, are maintained. This includes pertinent discussions with a customer relating to the customer's requirements or the results of the work.

Reference documents	
DWTL/SOP/7.1	Procedure for Review of requests, tenders and contracts
DWTL/SOP/7.1.1	SOP for subcontracting of testing.

7.2 Selection, verification and validation of methods

7.2.1. Selection & verification of methods

7.2.1.1. DWTL, Osmanabad uses appropriate methods and procedures for all tests and/or calibrations within its scope including handling, storage, and preparation of items to be tested. The estimation of the uncertainty of measurement is addressed in subsection 7.6 and section 7.7 Ensuring the Validity of Results of this manual describes the quality control processes, including the application of statistical techniques, for supporting test and calibration data.

7.2.1.2. Laboratory methods and supporting documents are controlled according section 8.3 Control of Management System Documents and are readily available.

7.2.1.3. All instructions, standards, manuals, and reference data relevant to the work of the laboratory are maintained current and are made readily available to personnel. DWTL, Osmanabad uses Indian/ International standards or other recognized specifications that contain sufficient and concise information on how to perform laboratory activity.

7.2.1.4. When the customer does not specify the method to be used, a standard method is preferred for use. Methods published as international, District, or national standards are used. The customer is informed about the method chosen.

The laboratory informs the customer when the method proposed by the customer is considered to be the incorrect choice or the incorrect revision for the intended purpose. This is done as part of contract review addressed in Section 7.1 Review of Requests, Tenders and Contracts.

7.2.1.5. DWTL, Osmanabad verifies that it can perform methods before introduction by ensuring it can achieve the required performance. Records of verification are maintained. Verification process is repeated if the method is revised by the issuing body. Standard methods are verified according to the procedure, DWTL/SOP/7.2.2 Method Validation.

7.2.1.6. DWTL, Osmanabad uses only standard method, and does not develop methods for its own use

7.2.1.7. DWTL, Osmanabad does not allow deviations from test methods.

7.2.2. Validation of methods

7.2.2.1. The DWTL, Osmanabad validates non-standard methods; laboratory developed methods, and modified standard methods including use outside the intended scope or otherwise modified. Validation is conducted to confirm that the methods are fit for the intended use, relevant to the customer's needs and consistent with specified requirements. The validation is as extensive as is necessary to meet the needs of the given application or field of application.

7.2.2.2. When changes are made to validated methods, the influence of such changes is documented and, if appropriate, a new validation is carried out.

7.2.2.3. The validation process addresses the needs of the given application or field of application. The validation results include a statement as to whether the method is fit for the intended use. The needs of the customer define the intended use of the method. The performance characteristics and data quality objectives include but are not limited to:

a) accuracy,

b) precision,

c) specificity,

d) detection limit,

e) limit of quantization,

f) linearity,

g) range, and

h) ruggedness or robustness.

If all the data quality objectives are met as indicated by the data collected, the method is considered as validated.

7.2.2.4. The following records are maintained for each validation:

a) the validation procedure used

b) specification of the requirements;

c) determination of the performance characteristics of the method;

d) results obtained;

e) statement on validity of the method, detailing its fitness for the intended use.

7.2.2. The lab is not performing any validation of non standard methods, hence this clause 7.2.2 is not applicable.

Reference documents	
DWTL/SOP/7.2.2	SOP for method validation
DWTL/SOP/7.2.2.A	SOP for calibration of analytical balance
DWTL/SOP/7.2.2.B	SOP for working of Citizen CX-265 analytical balance
DWTL/SOP/7.2.2.C	SOP for Calibration of UV-VIS Spectrophotometer
DWTL/SOP/7.2.2.D	SOP for use of UV-VIS Spectrophotometer
DWTL/SOP/7.2.2.E	SOP for Calibration of pH meter
DWTL/SOP/7.2.2.F	SOP for use of pH meter.
DWTL/SOP/7.2.2.G	SOP for Calibration of Electrical Conductivity Meter
DWTL/SOP/7.2.2.H	SOP for use of Electrical Conductivity Meter
DWTL/SOP/7.2.2.I	SOP for use of hot plate.
DWTL/SOP/7.2.2.J	SOP for use of CITIZEN Rough Balance.

7.3 Sampling

DWTL, Osmanabad does not routinely perform sampling in the sense of collecting a representative sample from a product lot to represent the whole. Sample Collection Conducted by the Customer: Most test samples are obtained and sent to the laboratory by zilla parishad staff and district offices of Groundwater Surveys and Development Agency.

Occasionally, laboratory personnel are consulted about sampling parameters such as sample type or size or guidance for a sampling or analytical need. DWTL, Osmanabad, however, exert no direct control over such sampling and do not have responsibility for sampling. Sampling data (i.e. date and time of sampling, description, environmental conditions, collector identification, etc.) required as part of testing is included in the test request form.

Sampling conducted by DWTL, Osmanabad involves for the most part those analyses that call for a portion or aliquot of the total sample received by the laboratory to be analyzed. Generally, this calls for mixing or preparing of samples to assure homogeneity before portions are taken for analysis. Sample preparation and sub-sampling protocols are found in the analytical methods.

The laboratory is not performing any sampling activity, hence this clause 7.3 is not applicable

7.4 Handling of test or calibration items

7.4.1. The laboratory procedure in (DWTL/SOP/7.4.1) describes the transportation, receipt,handling, protection, storage, retention and disposal of samples. This procedure addresses the laboratory activities conducted to protect sample integrity, interest of the laboratory & of the customer. The laboratory has

arrangements, and takes precautions to avoid deterioration, contamination, loss to the sample during handling,storage and preparation for testing. Handling instructions provided with the sample are followed. All employees are made aware regarding the requirements of handling of test items and any special care, if any.

7.4.2. The laboratory has a system for uniquely identifying samples. The sample number is used to track its progress from the time of receipt in the laboratory until the analysis is completed and the sample is disposed. The sample number is also used to provide traceability between the sample and the data. The numbering system also provides traceability during transfer of samples within the laboratory and between G.S.D.AmDistrict laboratories in the case of administratively transferred samples. The identification procedure is described in (DWTL/SOP/7.4.2.a) to(DWTL/SOP/7.4.2.e)

7.4.3. Upon receipt of the sample, abnormalities or departures from normal or specified conditions, for example contract specifications or analysis requested are recorded according to the SOP (DWTL/SOP/4.4.1.)When samples received do not meet established acceptance criteria in SO (DWTL/SOP/4.4.2), laboratory personnel consult the customer for further instructions before proceeding. Communication with the customer is documented. When the customer acknowledges a deviation from specified conditions, DWTL, Osmanabad includes a disclaimer in the report indicating the results that may be affected by the deviations.

7.4.4. When samples have specific environmental conditions, those conditions are maintained, monitored and recorded. Monitoring records are collected according to established procedures. These activities are conducted according to the policies stated

in Section 6.3 Facilities and Environmental Conditions.

Reference documents	
DWTL/SOP/7.4.1	SOP for sample management
DWTL/SOP/7.4.2.a	SOP for receipt of Samples
DWTL/SOP/7.4.2.b	SOP for Physical coding of samples.
DWTL/SOP/7.4.2.c	SOP for analysis of samples.
DWTL/SOP/7.4.2.d	SOP for reporting of samples.
DWTL/SOP/7.4.2.e	SOP for Storage, Preservation & disposal of samples.
DWTL/SOP/7.1	SOP for review of request.

7.5 Technical records

7.5.1. Laboratory reports, depending on the type of analysis, include the original observations, derived data, calculations, standard preparation, instrument printouts, and results. DWTL, Osmanabad retains original records of observation, calculations, derived data, information to establish an audit trail, and the original or copy of each

test report. The records contain sufficient information to establish an audit trail. The records of each test contain sufficient information in order to repeat the test under conditions as close as possible to the original. This information includes factors that affect uncertainty and any environmental conditions that affect the test. The requirements for an audit trail in laboratory records are outlined in (DWTL/SOP/8.4) and the procedure for control of electronic records is detailed in(DWTL/SOP/7.11) The records include identification of personnel responsible for sampling, performing each examination/ test and checking results. Observations, data, and calculations are recorded at the time they are made and are identifiable to the activity performed.

7.5.2. DWTL, Osmanabad ensures that changes to technical records can be tracked to previous versions or to the original observation. Both the original and amended data and files are retained, including the date the record was changed, an indication of what was changed and the person responsible for the alteration.

Reference documents	
DWTL/SOP/8.4	SOP for control of records.

7.6 Evaluation of measurement uncertainty

7.6.1. When estimating the uncertainty of measurement, all important uncertainty components, including those arising from sampling, are recorded in the uncertainty records for each determination and test technology as addressed in the procedure (DWTL/SOP/7.6), Estimation of Uncertainty of Measurement.

7.6.2. DWTL, Osmanabad do not perform calibration activities. At such time that calibration activities are performed, DWTL, Osmanabad address the requirements of ISO/IEC 17025:2017.

7.6.3. The laboratory has a procedure,(DWTL/SOP/7.6), Estimation of Uncertainty of Measurement, to estimate the uncertainty of measurement for testing activities. The application of details in cases where the nature of the test method may preclude rigorous, metrological and statistically valid, calculation of uncertainty of measurement is addressed in the procedure. An attempt is made to identify all the components of uncertainty and make a reasonable estimation of the measurement uncertainty. This estimation is based on knowledge, experience, and validation data of the performance of the method and on the measurement scope.

Reference documents	
DWTL/SOP/7.6	Procedure for evaluation of measurement uncertainty

7.7 Ensuring the validity of results

7.7.1. The laboratory has quality control procedures to validate the results of test undertaken according to (DWTL/SOP/7.7.1) The monitoring data is recorded in such a way that trends may be detected, for example, statistical process control charts. Monitoring activities are planned and reviewed according to (DWTL/SOP/7.7.1.c) Monitoring techniques may include, but are not limited to, the following:

a) Scheduled use of certified reference materials (DWTL/SOP/7.7.1.c);

b) functional check(s) of measuring and testing equipment;

c) use of check or working standards with control charts, where applicable;

d) intermediate checks on measuring equipment;

e) replicate tests or calibrations using the same or different methods;

f) retesting of reference material and retained customer samples (DWTL/SOP/7.7.1.a);

g) correlation of results for different characteristics of an item;

h) review of reported results;

i) scheduled participation in intra-laboratory comparisons or proficiency testing (DWTL/SOP/7.7.1.b);

j) testing of blind sample(s)

7.7.2. DWTL, Osmanabad participates in proficiency testing programs and/or inter laboratory comparisons other than proficiency testing, where available and appropriate.

7.7.3. The laboratory has defined the criteria for quality control data and performs analysis by such means as control charting. When data is found to be outside the established criteria, action is taken in accordance with (DWTL/SOP/4.9) Control of Nonconforming Work.

Reference documents	
DWTL/SOP/7.7.1	SOP for Quality checks
DWTL/SOP/7.7.1.c	SOP for handling, maintenance and intermediate checks of certified reference materials.
DWTL/SOP/7.7.1.a	SOP for retest of retain samples.
DWTL/SOP/7.7.1.b	SOP for participation in proficiency testing.
DWTL/SOP/7.10	SOP for non-conforming testing and/or calibration work.

7.8 Reporting of results

7.8.1. General

Test reporting is addressed in the procedure (DWTL/SOP/7.8) This procedure gives the details for reporting data using consistent reporting formats for laboratory worksheets. Results are reported on analytical worksheets.

7.8.1.1. The results are reviewed and authorized prior to release. Reports are reviewed for accuracy, clarity and objectivity.

7.8.1.2. Reports are reviewed against acceptance criteria that address accuracy, clarity and objectivity and include information agreed with the customer and necessary for the interpretation of the results and information about the method used. Results are reported on analytical worksheets and are retained as technical records.

7.8.1.3. Results are reported to the customer in a consistent reporting format. All the necessary information, not reported, is readily available.

7.8.2. Common requirements for reports (test)

7.8.2.1. The report format is described in (DWTL/SOP/7.8) The test report contains the following information:

a) A title;

b) name and address of DWTL, Osmanabad in detail;

c) the location of performance of the laboratory activity;

d) unique identification of all its components and clear identification of the end, which is identified by the assistant chemist signature;

e) name & contact information of the customer;

f) identification of the method used;

g) a description, unambiguous identification and condition of the sample;

h) date of receipt of sample(s) & date of sampling;

i) the date(s) of performance of test;

j) date of issue of report;

k) reference to the person or agency doing sampling;

l) a statement to the effect that the results relate only to the samples tested;

m) the result with unit of measurement;

n) identification of the person(s) authorizing the report;

o) identification that the results are from external providers.

DWTL, Osmanabad includes, in the report, a statement that the report will not be reproduced except in full, without the written approval of DWTL, Osmanabad Region.

7.8.2.2. DWTL, Osmanabad will be responsible for all the information provided in the report,except that provided by the customer. Data provided by the customer is clearly identified. When information supplied by the customer can affect the validity of the results, a disclaimer statement is included on the report.

7.8.3. Specific requirements for test reports

7.8.3.1. In addition to the requirements listed in 7.8.2, if specifically asked by customer, the test results include the following details:

a) information on specific test conditions, such as environmental conditions;

b) a statement of conformance or non-conformance with specifications, if specifically asked by the customer ;

c) the measurement uncertainty presented in the same unit as the measurand or in a term relative to the measure and when;

i. it is relevant to the validity or application of the test results;

ii. a customer requires it, or;

iii. the measurement uncertainty affects conformity to a specification limit;

d) where appropriate, opinion and interpretations;

e) additional information that may be requested by methods, customers or groups of customers.

7.8.3.2. DWTL, Osmanabad do not routinely conducts sampling in the sense of collecting a representative sample from a product lot to represent the whole.

7.8.4. Specific requirements for calibration certificates

DWTL, Osmanabad conducts in-house calibration activities on measuring and test equipment only and, therefore, do not issue calibration certificates. In-house calibrations are documented by a report, or sticker, or other suitable method.

7.8.5. Reporting sampling- specific requirements

As sampling is not done, hence requirement of this clause is not applicable.

7.8.6. Reporting statement of conformity

7.8.6.1. & 7.8.6.2. DWTL, Osmanabad does not provide any statement of conformity to a specification or standard in its analysis report.

7.8.7. Reporting opinions and interpretations

7.8.7.1. Though DWTL, Osmanabad does not express opinions and interpretations, but in exceptional cases when it is done, the laboratory ensures that only personnel authorized for expression of opinions and interpretation releases the respective statement. The laboratory documents the basis upon which the opinions and interpretations have been made. The interpretation and opinion are drawn based on reference Indian/international standards and customer specification. Such opinion and interpretation are clearly marked in the test report.

7.8.7.2. The opinions and interpretations if expressed in the reports will be based on the results obtained from the tested item and it will be clearly identified as such.

7.8.7.3. If opinions and interpretations are directly communicated to the customer, DWTL,Osmanabad retains a record of the dialogue.

7.8.8. Amendments to reports

7.8.8.1. When DWTL, Osmanabad changes, amends or re-issues an issued report, the change of information and the reason for change is included in the report.

7.8.8.2. Material amendments to analytical findings after issue are made only in the form of an additional document. They are flagged “Corrigendum” and include the change of information and the reason for change. Amendments are to meet the same reporting criteria.

7.8.8.3. When it is necessary to issue a complete new report, it is uniquely identified and contains reference to the original report that it replaces.

Reference documents	
DWTL/SOP/7.8	SOP for reporting of results.

7.9. Complaints

7.9.1. DWTL, Osmanabad has a complaint procedure, (DWTL/SOP/7.9), describing the process for the receipt, evaluation and decision making on complaints received from any party.

7.9.2. The process for handling complaints is documented in DWTL/SOP/7.9 and is available to any interested party. DWTL, Osmanabad confirms whether the complaint relates to laboratory activities that it is responsible for and, if so, and then addresses it.

7.9.3. The process of handling complaints includes;

a) description of the process for receiving, validating, investigating the complaint and deciding appropriate actions to respond to it;

b) tracking and recording complaints, including actions taken to resolve them;

c) ensuring appropriate action is taken.

7.9.4. DWTL, Osmanabad, on receiving the complaint, will gather all information required to investigate, validate, address, and review the complaint and its outcome.

7.9.5. Quality Manager acknowledges the receipt of the complaint. The complainant is informed about the progress and outcome of resolution, and formal notice of completion to the complainant.

7.9.6. The Senior Geologist reviews and approves the outcomes that are to be communicated to the complainant.

7.9.7. A formal notice of the end of the complaint handling is given to the complainant,whenever possible.

Reference documents	
DWTL/SOP/7.9	SOP for handling of complaints.

7.10. Non Conforming work

7.10.1. DWTL, Osmanabad has a control of non-conforming work procedure,(DWTL/SOP/7.10) that is implemented when any aspect of their testing work, or the results of this work, does not conform to requirements of the management system, testing methods, or the requests of the customer. This procedure addresses the following elements:

a) Responsibilities and authorities for the management of identified non-conforming work and taking actions such as the halting of work, the withholding of test reports;

b) Actions are based upon the risk levels established by the laboratory;

c) An evaluation of the significance of non-conforming work including any impact analysis on previous results and, if necessary, recall of work with notification to the customer;

d) Remedial action taken, together with any decision about the acceptability of the non-conforming work;

e) Responsibility for authorizing the resumption of work.

7.10.2. DWTL, Osmanabad retains all records of nonconforming work and action taken on them.

7.10.3. If the non-conforming work could recur, or there are other significant problems identified, the corrective action procedures in section 8.7 Corrective Action are promptly followed.

Reference documents	
DWTL/SOP/7.10	SOP for non conforming testing and/or calibration work

7.11. Control of data and information management

7.11.1. The laboratory has access to the data and information needed to perform laboratory activities through various electronic and paper records maintained according to (DWTL/SOP/7.11), Record and data management.

7.11.2. When computers or automated equipment are used for the acquisition, processing, recording, reporting, storage or retrieval of test or calibration data, the laboratory ensures that computer software developed by the user is documented in sufficient detail and is suitably validated as being adequate for use.

7.11.3. DWTL, Osmanabad has processes for the protection of data to include, but not limited to data integrity, data confidentiality during entry, collection, storage, transmission and processing. The processes also ensure safeguards are in place to prevent unauthorized access to or amendment of records. The process is detailed in (DWTL/SOP/7.11.3)

7.11.4. The information management system is managed and maintained by DWTL, Osmanabad itself.

7.11.5. DWTL, Osmanabad ensures that instructions, manuals and reference data relevant to the information system are available to laboratory personnel through the document control process (see section 8.3).

7.11.6. Calculations and data transfers are reviewed before the data is reported. All changes are identified and verified where they occur. This process is detailed in the procedure for laboratory quality control identified in section 7.7, Ensuring the Validity of Results.

Reference documents	
DWTL/SOP/7.11	SOP for control of computerized data
DWTL/SOP/7.11.3	SOP for protecting data

8. Management system requirement

8.1. Options

8.1.1. General

The laboratory management system is outlined in the following documents:

a) Quality manual,

b) Written procedures,

c) Records, Reports, Formats, Forms etc.

This management system is established to address the requirements in ISO/IEC 17025:2017 and assuring the quality of laboratory results. In addition to meeting the requirements of clauses 4 to 7, DWTL, Osmanabad has implemented a management system in accordance to option A.

8.1.2. Option A

DWTL, Osmanabad follows the requirements for option A, outlined in the following sections 8.2 to 8.9.

8.1.3. Option B of ISO/IEC 17025:2017 addresses minimal requirements for laboratories with a separate management system either certified to or at least structured to the requirements of ISO 9001. DWTL, Osmanabad does not fall within this category.

8.2. Management system documentation (Option A)

8.2.1. DWTL, Osmanabad has documented the policies and objectives for the fulfillment of ISO/IEC 17025:2017. The policies and objectives are accessible to all personnel and are included in the laboratory's training program. The detailed quality policy and objectives are given in section 3 of this document.

8.2.2. The policies and objectives address the competence, impartiality and consistent operation of the laboratory.

8.2.3. The policies for operation of the laboratory management system are established to address the requirements of ISO/IEC 17025:2017. DWTL, OSMANABAD is committed to laboratory accreditation per the requirements of ISO/IEC 17025:2017.

The implementation of the quality policies is evidenced by the way work activities are conducted. Implementation of the management system procedures is evidenced by the generation of required records. The audit and management review activities are the mechanisms that are used to monitor the implementation effort of the laboratory management system.

Evidence of management's commitment to the management system and its continual improvement in effectiveness is demonstrated by but not limited to participation of managers in the management reviews, performance of internal audits, proficiency testing, and the analysis of quality control samples.

8.2.4. Management system documents, procedures, records supporting quality policies related to the fulfillment of the requirements of ISO/IEC 17025:2017 are cited in related section of this document and linked to the management system.

8.2.5. All laboratory employees involved in laboratory activities have access to approved and controlled consensus standards, instrument manufacturers' manuals, and procedures for reference ensuring consistent application and validity of activities that contribute toward results reported.

8.3. Control of management system documents (Option A)

8.3.1. DWTL, Osmanabad controls the documents, both internal and external, that relate to the fulfillment of ISO/IEC 17025:2017. DWTL, Osmanabad has established and maintained procedure (DWTL/SOP/8.3.1) to control all documents that have formed part of the management system, such as standards, normative reference, test methods, specifications, instructions, manuals and other used as reference are covered in the document control system.

8.3.2. DWTL, Osmanabad Document control requirements :

a) All documents issued to personnel in the laboratory as part of the management system are reviewed for accuracy and approved by authorized personnel prior to issue in accordance with DWTL/SOP/8.3.1.

b) All documents are reviewed every year and, where necessary, are revised to ensure continuing suitability and conformance with the management system and ISO/IEC 17025 requirements; documented information are retained for such periodic review of documents;

c) Changes/ amendments done in any documents are identified; the altered or new text is identified by underlining the text and deletion is identified by striking of text. Current version status of the document is identified in the document header The procedure for change of documents is described in the DWTL/ SOP/ 8.3.2;

d) Authorized management system documents and external documents are available at locations where operations essential to the effective functioning of the laboratory are performed. Distribution and locale of these documents is controlled.

e) Documents are uniquely identified. Such identification includes the identification number, revision status and inclusive pagination. The issuing authority is indicated by the name of the approving official for each document;

f) Invalid or obsolete documents are promptly removed from all points of issue or use, or marked as Uncontrolled to assure against unintended use. Obsolete documents retained for either legal or knowledge preservation purposes are suitably marked such as Obsolete.

Reference documents	
DWTL/SOP/8.3.1	SOP for document control
DWTL/ SOP/8.3.2	SOP for Document Change

8.4. Control of records (Option A)

8.4.1. All records are legible and retained in such a way that they are readily retrievable in facilities that provide a suitable environment to prevent damage, deterioration and loss. Retention time of records are established and followed. Quality records include reports from internal audits, management reviews, corrective actions, and preventive actions. Technical records include the original observations, derived data, calculations, standard preparation, instrument printouts, and results.

8.4.2. DWTL, Osmanabad has a control of records procedure (DWTL/SOP/8.4) for

identifying, collecting, indexing, accessing, filing, storing, maintaining, and disposing of quality and technical records. Retention time of records are established and followed. Access to these records is consistent with the confidentiality commitments and records are made readily available. All records maintained in computer are safeguarded from virus, having password protection and back-up of all such data/ records are taken on monthly basis by users.

Reference documents	
DWTL/SOP/8.4	SOP for control of records

8.5. Actions to address risks and opportunities (Option A)

8.5.1. Top management meet regularly to assess risks and opportunities associated with all laboratory activities to:

a) Assure the management system achieves its intended results;

b) Enhance opportunities to achieve the purpose and objectives of the laboratory;

c) Prevent, or reduce negative impacts and potential failures in laboratory activities;

d) Achieve improvement.

Examples of areas evaluated consist of the following, although the list is not all inclusive:

1. Turnaround times for data reporting
2. Training and competency
3. Structure to ensure impartiality of personnel
4. Equipment issues
5. Program requirements
6. Facilities/Environment
7. Effectiveness of corrective and preventive actions
8. Outcomes of internal audits
9. Complaints
10. Processes to ensure confidentiality

The procedure for preventive action is detailed in DWTL/SOP/8.5

8.5.2. DWTL, Osmanabad has planned actions to address the above risks and opportunities.

These actions are outlined in section 8.9 Management Reviews.

8.5.3. Any actions taken to address risks and opportunities are proportionate to the potential impact on the validity of laboratory results.(DWTL/DOC/01)

Reference documents	
DWTL/SOP/8.5	SOP for preventive action.
DWTL/DOC/01	Document of identification of risk and opportunities.

8.6. Improvement (Option A)

8.6.1. The effectiveness of the laboratory's management system is improved by using the following activities:

a) Internal and external audit results ;

b) Management review;

c) Analysis of quality control data;

d) Corrective actions;

e) Preventive actions;

f) Quality policy; and

g) Quality objectives.

8.6.2. The laboratory seeks customer feedback on their services and general performance. Records of the comments, both positive and negative, are maintained and are taken into account for identifying management system improvements during the reviews performed by management.

Reference documents	
DWTL/SOP/8.8	SOP for Internal Audit
DWTL/SOP/8.9	SOP for management review
DWTL/SOP/8.7	SOP for corrective action
DWTL/SOP/8.5	SOP for Preventive action

8.7. Corrective action (Option A)

8.7.1. Procedure (DWTL/SOP/8.7) is documented and implemented for the corrective action. When a non-conformance is identified, the corrective action chosen addresses the magnitude of the non-conformance and the risk attributed to the nonconformance.

a) Immediate action is implemented to correct a non-conformity and address the consequences.

b) An evaluation is performed to determine the cause(s), a history of similar issue(s), potential for recurrence, and the need for action to eliminate the problem to prevent recurrence;

c) Corrective actions are determined and implemented based upon this evaluation.

d) A review of the effectiveness of corrective actions is performed.

e) If necessary, updates for risks and opportunities are determined during planning.

f) Essential changes discovered during the corrective action investigation are implemented within the management system, where necessary.

8.7.2. Corrective actions are appropriate to the effects of the nonconformities encountered.

8.7.3. DWTL, Osmanabad records corrective action to include the nature of the nonconformities, cause(s) and subsequent actions taken, including the results of any corrective action.

Reference documents	
DWTL/SOP/8.7	SOP for Corrective action.

8.8. Internal Audit (Option A)

8.8.1. Internal audits are conducted according to a schedule included in the laboratory's audit procedure. Internal audits are conducted of activities to verify that operations continue to conform to the requirements of the management system and ISO/IEC 17025:2017. An internal audit process is used to evaluate the effectiveness of the management system established for laboratory operations.

8.8.2. DWTL, Osmanabad audit program;

a) The internal audit program is defined in (DWTL/SOP/8.8) Internal Audits. The program takes into consideration the importance of the laboratory activities concerned, changes affecting the laboratory, and the results of previous audits.

b) The quality manager defines the audit criteria and scope for each audit in an audit plan.

c) Results of the audits are reported to laboratory management.

d) When audit findings cast doubt on the effectiveness of operations or the correctness or validity of the laboratory's test or calibration results, the laboratory implements appropriate correction and corrective actions in a timely manner according to(DWTL/SOP/8.7) Corrective Action.

e) The area of activity audited, the audit findings, and corrective action that arise from them are recorded according the laboratory's audit procedure.

Reference documents	
DWTL/SOP/8.8	SOP for Internal Audit
DWTL/SOP/8.7	SOP for Corrective Action

8.9. Management reviews (Option A)

8.9.1. A management review is conducted by the laboratory's executive management at least once each fiscal Year; however, can be conducted more often according to planned intervals determined by top management. This review is conducted to ensur continuing suitability, adequacy, and effectiveness based upon information related the inputs and outputs of laboratory activities and operations and stated policies and objectives and fulfillment of ISO/IEC 17025:2017. Procedure (DWTL/SOP/8.9) is documented and implemented for planning conducting management review meeting.

8.9.2. The management review are planned and carried out taking into consideration:

a) changes in external and internal issues that are relevant to the quality management system;

b) Fulfillment of objectives;

c) Suitability of policies and procedures, analytical methods, work instructions and forms etc;

d) The status of actions from previous Management Reviews;

e) Outcome of recent internal audits;

f) Nonconformities and corrective actions;

g) Assessments by external bodies;

h) Changes in the volume and type of work or in the range of laboratory activities;

i) Customer and personnel feedback;

j) Complaints;

k) Effectiveness of any implemented improvements;

l) Adequacy of resources;

m) Results of risk identification;

n) Outcome of the assurance of the validity of results; and

o) Other relevant factors such as monitoring activities and training.

8.9.3. The outputs of the management review shall include decisions and actions related to:

a) The effectiveness of the management system and its process'

b) Improvements for the QMS and processes for the fulfillment of ISO/IEC 17025:2017;

c) Resources needs; and

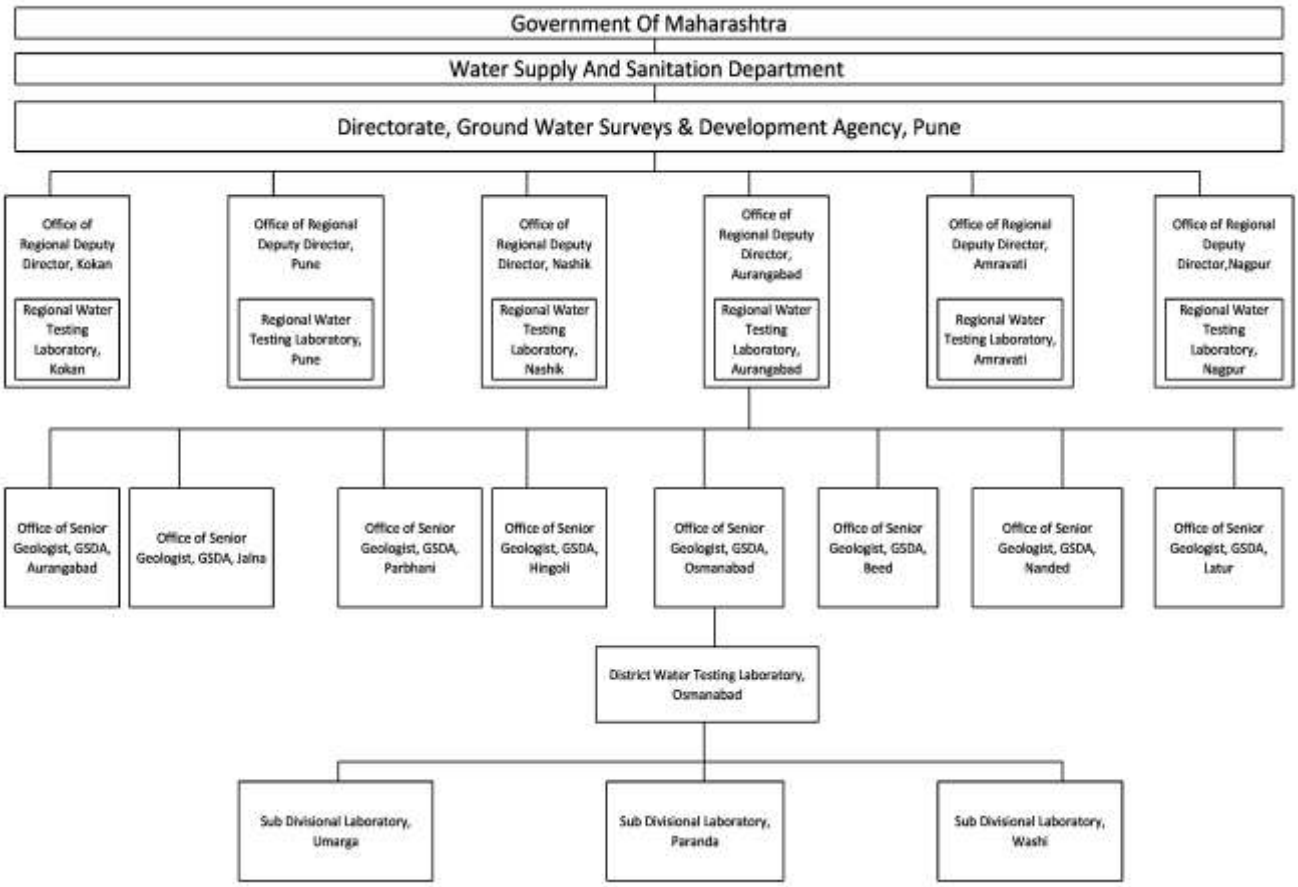
d) Any need for changes to the quality management system.

DWTL, Osmanabad retains documented information as evidence of the results of management reviews.

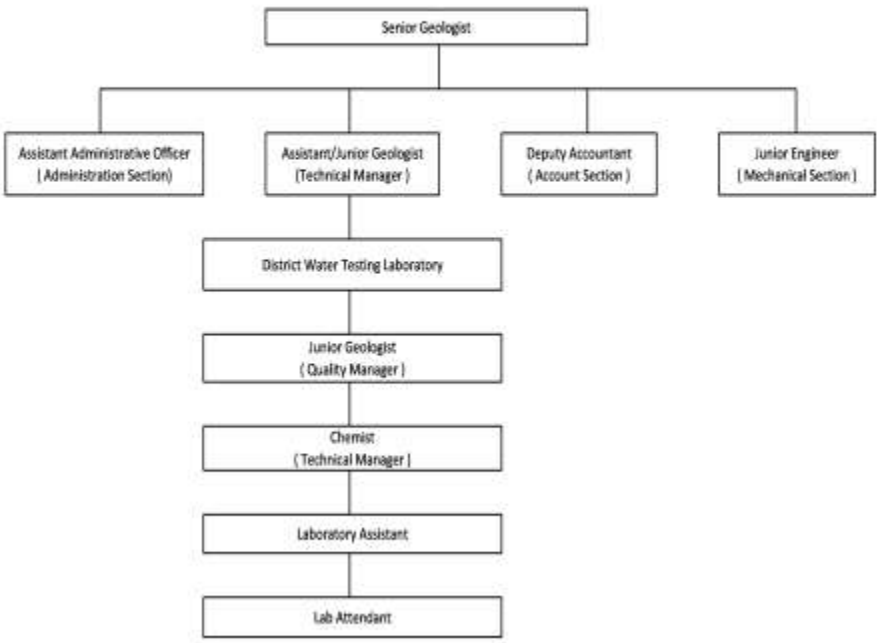
Reference documents	
DWTL/SOP/8.9	SOP for management review meeting

International Research Journal
IJNRD
Research Through Innovation

9. Annexure-1 (Organization Chart)



10. Annexure-2 (Management Structure)



Conflict of Interest

We authors declare that we have no conflicts of interests.

11. Normative Reference

1. ISO/IEC 17025:2017: General Requirements for the Competence of Testing and Calibration laboratories.
2. NABL 100 : General Information Boucher
3. NABL 103: Specific guidelines for Chemical testing laboratories.
4. NABL 131: Terms and condition for obtaining and maintaining NABL accreditation.
5. NABL 133: NABL Policy for Use of NABL Symbol / Claim of Accreditation by Accredited Conformity Assessment Bodies (Laboratories / PTP / RMP)
6. NABL 141: Guidelines for estimation and expression of uncertainty in measurement.
7. NABL 142: Policy on traceability of measurement results.
8. NABL 160: Guide for Preparing a Quality Manual..
9. NABL 161: Guide for internal audit and management review for laboratories.
10. NABL 162: Guidelines for proficiency testing program for testing and calibration laboratories.
11. NABL 163: Policy for participation in proficiency testing activities.
12. NABL 164: Guidelines for inter laboratory comparison for calibration laboratory where formal PT program is not available.

12. Abbreviations

APHA	American Public Health Association
BIS	Bureau of Indian Standards
CBD	Central Business District
CGWB	Central Ground Water Board
CPCB	Central Pollution Control Board
CRM	Certified Reference Material
DD	Deputy Director, Groundwater Surveys & Development Agency, Aurangabad Region, Aurangabad.
DQM	Deputy Quality Manager
DTM	Deputy Technical Manager
G.S.D.A.	Groundwater Surveys & Development Agency
IEC	International Electro-technical Commission
ISO	International Organization for Standardization
NABL	National Accreditation Board for Testing and Calibration Laboratories
NEERI	National Environmental Engineering Research Institute
PWD	Public Works Department, Govt of Maharashtra
QM	Quality Manager
DWTL, OBD	District Water Testing Laboratory, Osmanabad .
SOP	Standard Operating Procedure
SRM	Secondary Reference Material
TM	Technical Manager
WSSD	Water Supply & Sanitation Department, Govt of Maharashtra

District Water Testing Laboratory of Osmanabad, Maharashtra Photo