UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD CHICAGO, IL 60604-3590

The Indiana Department of Environmental Management (IDEM) Quality Management Plan (QMP), dated July 7, 2023, has been approved effective December 8, 2023. The QMP documents IDEM's current quality system which encompasses environmental data operations.

The approval of this QMP will be valid for up to five years through December 8, 2028. Revision of the QMP by IDEM may be required during the five-year period based upon: periodic assessments by Region 5, your annual internal reviews, and/or significant changes in your organization, resources or scope of mission. At a minimum, a revised and updated QMP must be submitted for Region 5 review and approval six months (i.e., June 8, 2028) prior to the end of the five-year approval period.

Under this QMP approval, with the exception of any specific programs noted below, IDEM may continue to approve its own project-level Quality Assurance Project Plans (QAPPs) for all non-competitive assistance agreements and delegated programs included under IDEM's performance partnership agreements with Region 5. EPA Region 5 reserves the right to review and approve QAPPs even where approval has been authorized to external organization if such assistance is requested or if the Region determines circumstances exist which make EPA approval of the QAPP appropriate. QA documentation supporting the Superfund Program cannot be delegated and requires submission for review and approval by EPA Region 5. As determined by U.S. EPA Air Division, all Air Program QAPPs must be submitted to EPA Region 5 for review and approval. QAPPs supporting Great Lakes Legacy Act cannot be delegated and, as such, must be submitted to EPA for review/approval. Further, U.S. EPA competitive assistance agreements under, but not limited to, the Exchange Network programs shall require the submission of project-level quality documentation for U.S. EPA review and approval as specified in the assistance agreement terms and conditions.

U.S. EPA is required to assess the implementation of approved quality systems as well as extramural agreements for which U.S. EPA provides financial assistance. Beginning with the approval of the QMP, IDEM shall submit complete, signed electronic (i.e., pdf) copies of all self-approved QAPPs, under this QMP, to my attention on a mutually agreeable periodic basis (i.e., monthly or quarterly). In addition, IDEM shall submit an annual letter (by January 31st of each year beginning in 2024) to my attention which:

- identifies any minor revisions needed and/or incorporated into the QMP during the preceding year;
- confirms that the quality system documented in the QMP and approved by U.S. EPA is still in effect; and
- lists all QAPPs, by environmental program, which were self-approved during the preceding year.

If you have any questions, please contact me at (312) 353-7203 or adams.jacqueline@epa.gov.

Sincerely,

Jackie Adams

Jackie Adams
Regional Quality Assurance Manager
U.S. EPA Region 5

Indiana Department of Environmental Management
Quality Management Plan

2023

July 17, 2023

Indiana Department of Environmental Management
Indiana Government Center North
MC 50-01 IGCN 1301
100 N. Senate Ave.
Indianapolis, IN 46204

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Signatures – Indiana Department of Environmental Management

Brian Rockensuess,
Commissioner

7/17/23
Date

Matthew Stuckey, Assistant Commissioner
Office of Air Quality

7/17/23
Date

Peggy Dorsey, Assistant Commissioner
Office of Land Quality

7/17/23
Date

Martha Clark Mettler, Assistant Commissioner
Office of Water Quality

7/17/2023
Date

Robert Lugar, Assistant Commissioner
Office of Program Support

7/17/23
Date

The IDEM quality assurance reviewer.

Quality Assurance Manager

7/18/23
Date

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Signatures – U.S. Environmental Protection Agency Region 5

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Debra Shore
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Enforcement and Compliance Assurance Division — Date

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Chris Korleski, Director
Great Lakes National Program Office — Date

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George Schupp, Director
Laboratory Services and Applied Science Division — Date

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Doug Ballotti, Director
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Tera Fong, Director
Water Division

Date

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Background

In 1986, Indiana was delegated authority by the U.S. EPA to implement federal environmental laws and rules. The Indiana legislature established the Indiana Department of Environmental Management (IDEM) as the state's entity responsible for the enforcement of those federal requirements, along with associated state statutes and administrative rules. IDEM obtained delegated approval authority for all Office of Water Quality Drinking Water Branch QA documentation related to per- and poly-fluoroalkyl substances (PFAS) effective September 7, 2021.

Like environmental programs in other states, IDEM relies in part on funding from U.S. EPA to assist in accomplishing its mission. As a result, the agency must meet the requirements outlined in U.S. EPA Region 5's (EPA R5) Quality Management Plan, U.S. EPA Environmental Information Quality Procedure CIO 2105-P-01.1, Requirements for Quality Management Plans U.S. EPA QA/R-2, and Requirements for Quality Assurance Project Plans U.S. EPA QA/R-5; or by maintaining a quality system consistent with the standards established in ANSI/ASQ E4:2014 Quality management systems for environmental information and technology programs – Requirements with guidance for use, or any subsequent revisions. The quality system must be documented in a Quality Management Plan (QMP) which is reapproved by the EPA R5 Quality Assurance (QA) Manager every five years, or sooner if substantially revised. The agency also must annually report progress implementing the quality system to EPA R5.

However, federal funding requirements alone do not drive the agency to maintain a continually improving environmental quality system. IDEM recognizes a credible quality program ensures utilization of environmental information of known and documented quality, scientifically valid, legally defensible, and appropriate for the intended use. Because the quality system benefits are valued, the agency has in recent years, increased its efforts to bring its quality system into closer alignment with U.S. EPA quality requirements.

Key Acronyms and Definitions

"Accreditation" – Acknowledgment, from one of several widely recognized quality organizations, of an entity's competence to perform work in a manner consistent with the quality system standards of the International Organization for Standardization (ISO). Accreditation authorities include, but are not limited to, TNI (The NELAC (National Environmental Laboratory Accreditation Conference) Institute), the American Association for Laboratory Accreditation, and American National Standards Institute (ANSI) National Accreditation Board.

"Agency QA manager" – Supervisor of IDEM Office of Program Support; Recycling, Education, and Quality Assurance Branch; Quality Assurance Section staff.

"Agency QA staff" – Quality assurance staff in the IDEM Office of Program Support; Recycling, Education, and Quality Assurance Branch; Quality Section managing the agency quality management system.

"Assistance agreement" – Per the U.S. EPA Grants and Debarment Glossary, an assistance agreement, such as the IDEM-EPA R5 Performance Partnership Agreement (PPA), is a legal instrument used by U.S. EPA to transfer money, property, services, or anything of value to a recipient to accomplish a public purpose. It is either a grant or a cooperative agreement and will specify certain things including budget and project periods, the federal share of eligible project costs, a description of the work to be accomplished, and any terms and conditions and special conditions.

"Branch" – An organizational level within IDEM which is a subunit of an office.

“Certification” – Assurance given by an independent certification body that a product, service, or system meets the requirements of a standard (ISO definition) i.e., ASQ/ANSI E4.

“Certification” (IDEM OAQ Monitoring Branch QA Section) – A determination documented and signed on a designated form or label, an instrument provides a reading, within the accepted margin of error, the same measurement results as does an instrument recognized as the standard or certifiably accurate measuring instrument.

“Confidential” – Information protected from public disclosure under Indiana Code (IC) 5-14-3 Access to Public Records, the Indiana Archives and Records Administration’s (IARA)’s Title 60 of the Indiana Administrative Code (IAC), and in the IDEM Records Management Policy.

“Data” – A quantitative or qualitative representation of values, facts, observations, or ideas in a formalized manner capable of being transmitted, processed, stored, analyzed, interpreted, or communicated by some process, whether on paper or in electronic form.

“Data quality assessment (DQA)” – The scientific and statistical evaluation of data to determine if data are the right type, quality, and quantity to support their intended use.

“Data quality indicators (DQI)” – Quantitative statistics and qualitative descriptors used to interpret the degree of acceptability or utility of data to the user. The principal data quality indicators are bias, precision, accuracy, comparability, completeness, representativeness, and sensitivity.

“Data quality objective (DQO)” – (1) Qualitative and quantitative statements derived from the DQO process clarifying study objectives, defining the appropriate type of data, and specifying the tolerable levels of potential decision errors which will be used as the basis for establishing the quality and quantity of data needed to support decisions (EPA 2000).
(2) Statements on the level of uncertainty a decision maker will accept in the results derived from environmental data (ASTM 5283, EPA 1986).
(3) Qualitative and quantitative statements derived from the DQO process describing the decision rules and uncertainties of the decision(s) within the context of the problem(s) (ASTM D5792).
From Multi-Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual Volume I: Appendix B, The Data Quality Objectives Process; NUREG-1576, EPA 402-B-04-001A, NTIS PB2004-105421; July 2004; p B-2.

“Data quality objectives process” – An iterative seven-step process or standard working tool for project managers and planners to develop DQOs for determining the type, quantity, and quality of data needed to reach defensible decisions or make credible estimates.
Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4).

“Document” – A compilation of information which describes, defines, explains, specifies, reports, certifies, requires, or provides information, data, or results. Any form or document recording actions taken or required and is subsequently initialed or signed to verify actions taken or authorize decisions made, is a record.

“Effective” – A QA document in use or in effect; currently operational.

“Environmental data” – Any measurements or information which describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology. For U.S. EPA, environmental data include information collected directly from measurements, produced from models, and compiled from other sources such as databases or literature.

“Environmental information” – Includes data and information describing environmental processes or conditions which support U.S. EPA’s mission of protecting human health and the environment. Examples include but are not limited to:

- Direct measurements of environmental parameters or processes
- Analytical testing results of environmental conditions (e.g., geophysical or hydrological conditions)
- Information on physical parameters or processes collected using environmental technologies
- Calculations or analyses of environmental information
- Information provided by models
- Information compiled or obtained from databases, software applications, decision support tools, websites, existing literature, and other sources
- Development of environmental software, tools, models, methods, and applications; and
- Design, construction, and operation or application of environmental technology.

“Environmental information operations” – A collective term for work performed to collect, produce, evaluate, or use environmental information; and the design, construction, operation, or application of environmental technology.

“Environmental technology” – An all-inclusive term for systems, devices, and their components applicable to both hardware and methods or techniques which measure or remove pollutants or contaminants; or prevent them from entering the environment. i.e., Waste treatment processes and storage facilities, site remediation technologies and their components, wet scrubbers (air), soil washing (soil), granulated activated carbon unit (water), and filtration (air, water); pollution prevention; pollutant reduction; or containment of contamination to prevent further movement of the contaminants, such as capping, solidification or vitrification, and biological treatment.

“GLNPO” – The Great Lakes National Program Office

“GLRI” – The Great Lakes Restoration Initiative

“Graded approach” – The process of determining the level of detail for management controls to be applied to an activity according to the intended use and the degree of confidence needed in the quality of the results. This approach establishes the QA/QC requirements commensurate with the importance of the work, the available resources, and the unique needs of the organization.

“IDOA” – Indiana Department of Administration

“IDOH” – Indiana Department of Health (formerly ISDH)

“INFODump” – IDEM’s browser driven internal staff intranet, accessible only to agency staff via login and password aka SharePoint.

“Measurement quality objectives” — The individual performance or acceptance goals for the individual data quality indicators such as precision or bias.

“Office” – An organizational level within IDEM, generally one with broad responsibility over activities associated with a specific environmental medium, or other significant supporting activities. IDEM offices include the:

- Office of Air Quality (OAQ)
- Office of the Chief of Staff (OCS)
- Office of Land Quality (OLQ)
- Office of Program Support (OPS), which includes the IDEM regional offices.
    - Northwest Regional Office (NWRO)

  - Northern Regional Office (NRO)
  - Southeast Regional Office (SERO)
  - Southwest Regional Office (SWRO)
- Office of Water Quality (OWQ)
- Office of Legal Counsel

“Procedure” – A specified set of steps detailing how to perform an activity.

“Process” – A set of interrelated resources and activities which transforms inputs into outputs. Examples of processes include analysis, design, data collection, operation, fabrication, and calculation.

“Program” – Used throughout this document, always within the context of the individual part in which it appears, a program is any group of IDEM staff assigned to a specific range of tasks within the agency, within a branch of the agency, or within a section of a branch of the agency.

“Project” – A temporary endeavor undertaken to create a unique characterization or result applicable only to a specific location, and within a specific timeframe.

“Quality assurance (QA)” – An integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure a process, item, or service is of the type and quality needed and expected by the client.

“Quality assurance documents” – Signed electronic and paper copies of QA management plans (QMPs), standard operating procedures (SOPs), technical standard operating procedures (TSOPs), QA project plans (project QAPPs), QA program plans (program QAPPs), hybrid quality assurance project plan and work plan (WP), workflow charts, training material, guidance documents, and other documents which comprise the agency quality system. Non-QA documents include policies, nonrule policy documents (NPDs), and fact sheets.

“Quality assurance project or program plan (QAPP)” – A planning document related to a project or program describing in comprehensive detail the necessary QA/QC requirements and other technical activities which must be implemented to ensure the results of the work performed will satisfy the stated performance and acceptance criteria.

“Quality control (QC)” – The overall system of technical activities which measures the attributes and performance of a process, item, or service against defined standards to verify the stated requirements established by the customer are met; operational techniques and activities used to fulfill requirements for quality. In other words, QC involves measuring the "thing produced" against a standard to ensure a quality product meeting the identified need.

“Record” – An initialed form, signed document, or other documentation of actions completed, or decisions made.

“Section” – An organizational level within IDEM which is a subunit of a branch.

“Standard operating procedure (SOP)” – The method for operation, analysis, or action with prescribed techniques and steps. An SOP is the approved method for performing a specific routine function or repetitive task. SOPs should be developed in consultation with the agency staff performing the work.

“Systematic planning” – A process or standard working tool for project managers and planners to develop objectives for determining the type, quantity, and quality of data needed to reach defensible decisions or make credible estimates i.e., DQO Process.

“Technical standard operating procedure (TSOP)” – A detailed procedure associated with technical operations such as the collection, evaluation, use, or reporting of environmental data; or the design, construction, and operation of environmental technology.

“Virtual File Cabinet (VFC)” – The agency’s electronic digital image document repository system which stores, files, indexes, redacts, reassembles, and securely accesses electronic documents of all types both received and created by the various program areas within the agency.

1.0. Management and Organization

Purpose – To document the overall policy, scope, applicability, and management responsibilities of IDEM's quality system.

1.1. Quality Assurance System Commitment

Federal funding requirements alone do not drive the agency to maintain a continually improving environmental quality system. Indiana Department of Environmental Management (IDEM) maintains a credible quality system to ensure data gathering is more efficient and accurate, resulting in agency environmentally related decisions supported by accurately, statistically, scientifically, and legally defensible data. Because the quality system benefits are valued, the agency continually increases efforts to bring its quality system into closer alignment with U.S. EPA quality requirements.

1.2. Agency Quality System Policy Statement, IDEM policy is to:

- Demonstrate a continuing commitment to scientifically accurate and transparent agency products and services.
- Maintain a quality system consistent with federal and state requirements and agency needs.
- Ensure accurate and complete documentation of the quality system (Appendix A quality documentation policy) including all agency activities which encompass:
  - Collection, quality control, evaluation, and use of pre-existing or newly generated environmental information.
  - Design, construction, and operation of environmental technology, including permits and other pollution control devices, monitoring equipment, and sampling devices.
  - A significant risk of harm to human health or the environment.
- Require any entity similarly involved in the acquisition or generation of environmental information on behalf of IDEM, such as a contractor or subgrantee, if appropriate, shall have an approved quality system in place and to implement any data acquisition in accordance with an approved quality assurance project plan or quality assurance program plan (QAPP) or equivalent planning document.

1.2.1. Importance of the Agency Quality System

The development and ongoing use of the agency quality system will continue to have a positive impact on agency efforts to meet its commitments under federal grants and assistance agreements, including the Performance Partnership Agreement (PPA). It has created a culture of quality in which QA is part of what is expected and required to adequately complete assigned work, rather than something extra to be completed in addition to the work. Effort invested in QA is rewarded with clearly, consistently, speedy, and technically well supported environmental decisions protective of public health and the environment, while facilitating responsible economic activity.

1.2.2. General Goals and Objectives of the Quality System

IDEM commits to furthering the following goals, in developing its QA system:

- Strengthen coordination and collaboration with U.S. EPA Region 5 (EPA R5) and Great Lakes National Program Office (GLNPO) division, and Great Lakes Restoration Initiative (GLRI)- and Beaches Environmental Assessment and

Coastal Health Act- related programs, as well as other R5 states' QA systems and staff.
- Expand the availability and consistency of QA training for IDEM staff.
- Enhance the exchange of information on QA best practices, expectations, and document review recommendations.
- Further use of the data quality objective (DQO) process, the role of data quality indicators (DQIs), and the implementation of the data quality assessment (DQA) process.
- Expand agency implementation and participation in QA system assessments.

1.2.3. Resource Allocation of the Quality System

IDEM continues to support QA-related activities. During 2021, and as reported in its most recent QA Annual Report and Work Plan (QAAR) to EPA R5, IDEM had 70.4 fulltime equivalent (FTE) staff working on QA-related tasks. Including the agency QA manager and staff. Agency staff resources committed to the quality system comprise about eight percent of total agency staff.

IDEM is a centralized quality system implemented by the agency QA manager and agency QA staff. This group's roles are described in 1.3.2. Although the core group of agency QA staff implement the more broadly identifiable tasks of the IDEM quality system, additional staffing resources are similarly committed to the more specifically focused activities of agency environmental information operations which comprise the overall IDEM quality system.

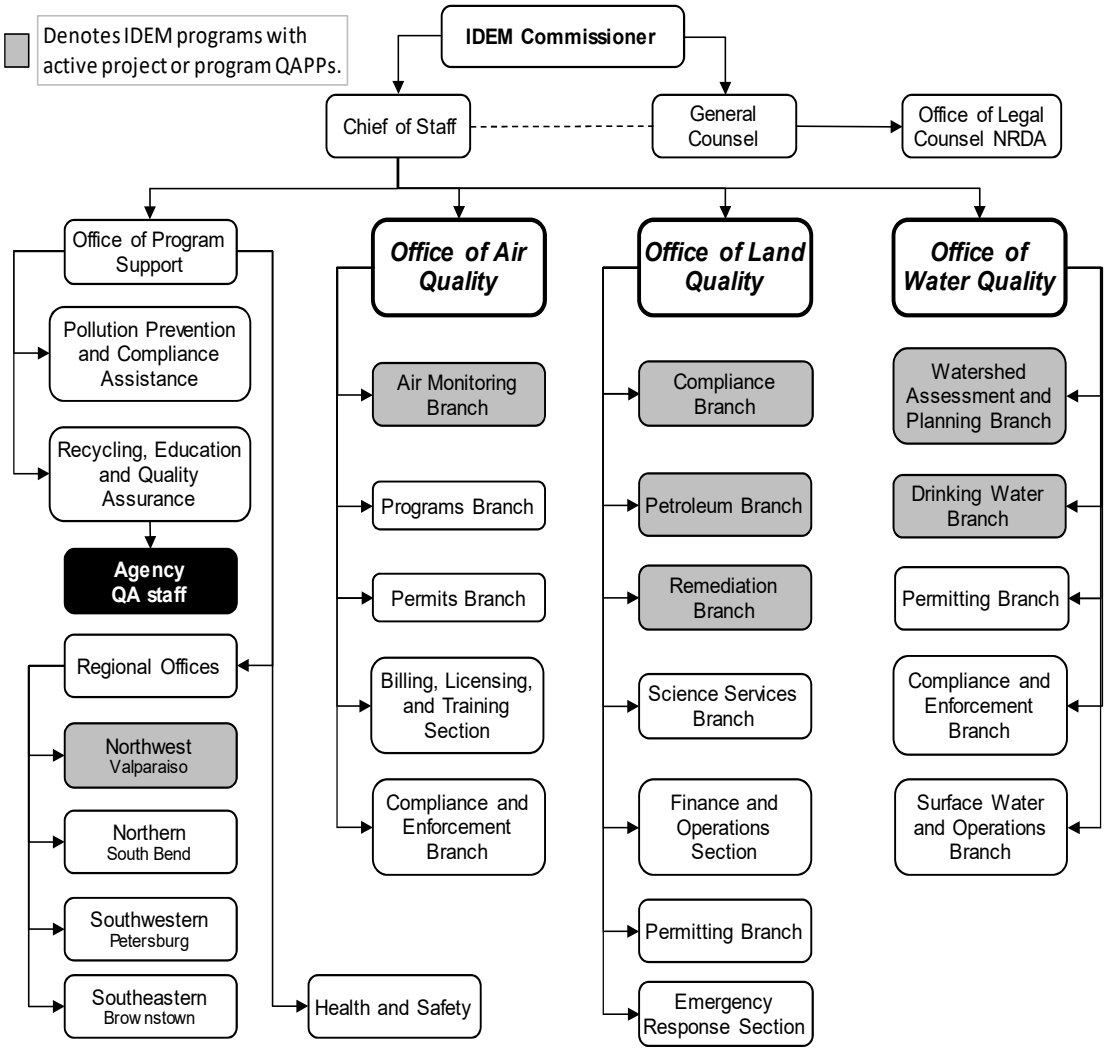
Program QA staff are found within nearly every agency program and work on data gathering, as well as the development of QAPPs, technical standard operating procedures (TSOPs), administrative standard operating procedure (SOPs), and other QA-related documents. This number includes staff performing QA reviews of data to ensure the accuracy of data uploaded into U.S. EPA databases, consistent with its Data Quality Guidelines and comparable IDEM quality requirements. Some program QA staff assist centralized agency QA staff on several projects, such as:
- Development, review, approval, and revision of QA documentation.
- Providing planning and input on overall agency QA policies and tools.

The agency calculates the total FTE staff involved in QA system tasks, by calculating the number of staff dedicating some percentage of their work time to QA related tasks multiplied by the percentage of time so engaged (Appendix B).

1.3. Agencywide Organizational Structure

As illustrated in Figure 1, the commissioner and the chief of staff direct the various IDEM environmental media specific offices of air, land, and water, as well as associated supporting offices to carry out the agency mission. In addition to the information on individual program activities listed in this section, more comprehensive descriptions of each office's activities are listed in 1.5. and Appendix C.

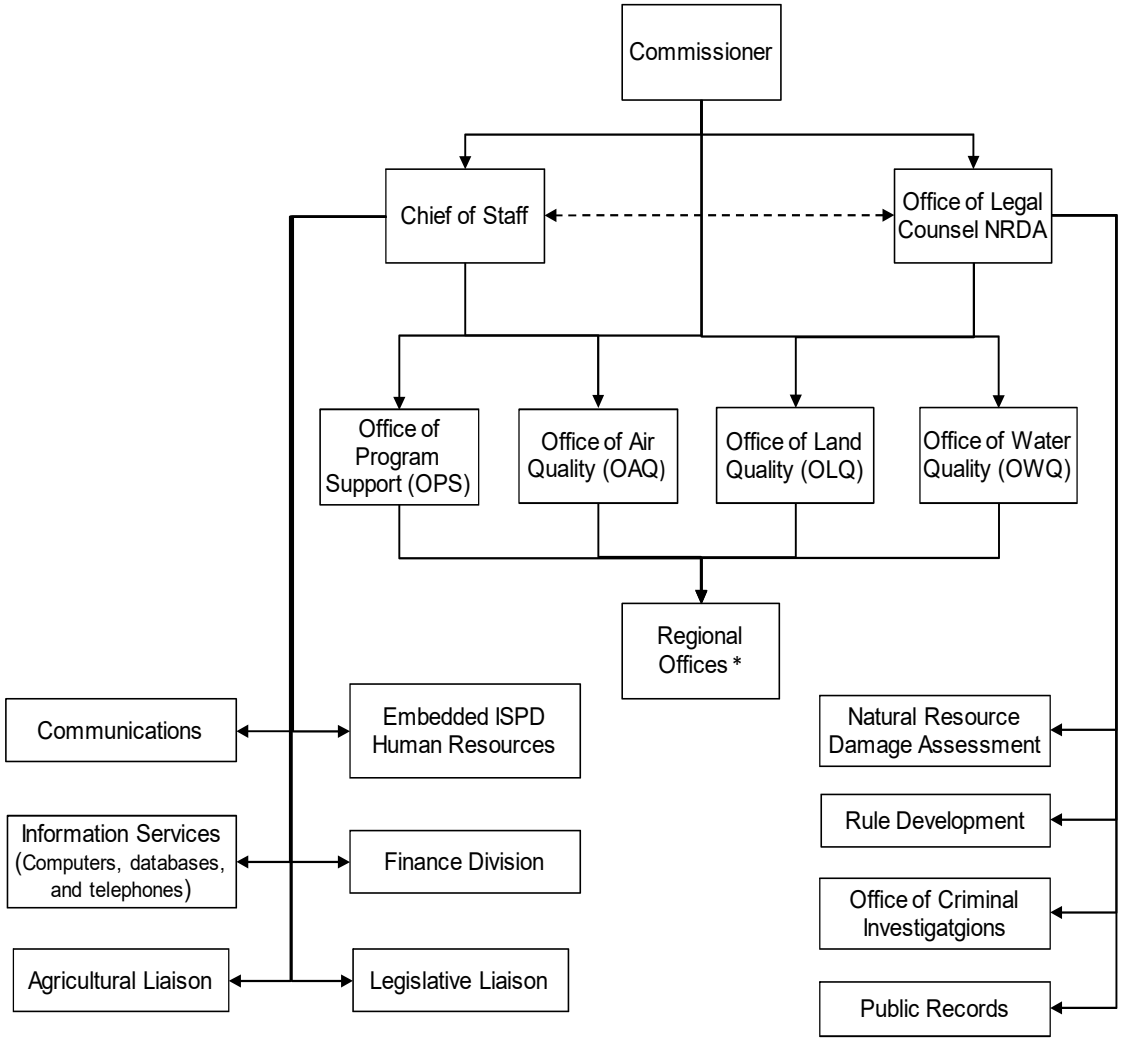
Figure 1 IDEM Organizational Structure



1.3.1. Interaction Between the Commissioner and Agency Senior Staff

Figure 2 illustrates the commissioner's direction of other IDEM senior staff and together they lead agency staff.

Figure 2 IDEM Senior Staff Organizational Structure

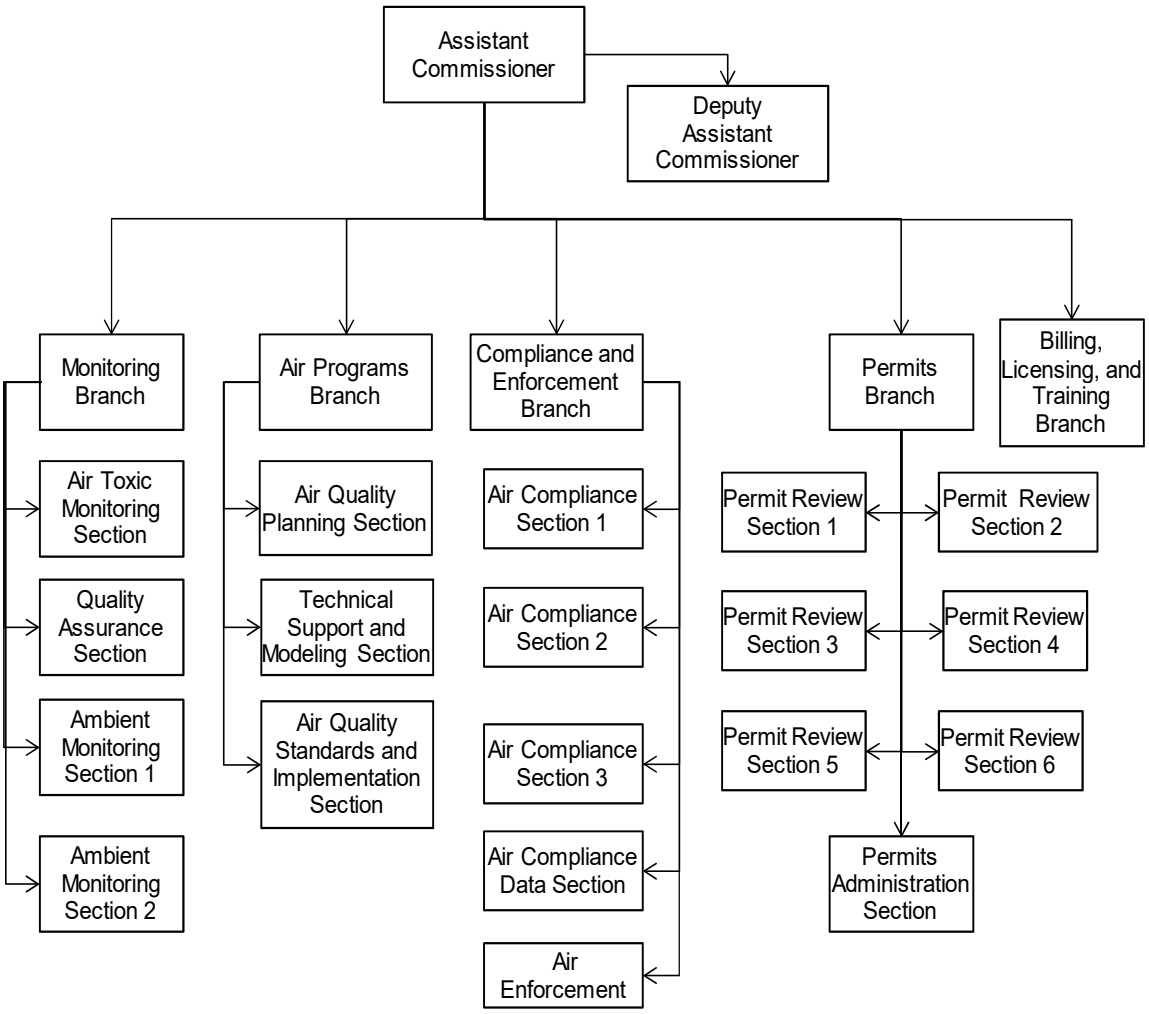


* Regional office staff engaged in compliance or monitoring program activities report to both their regional office management and the respective compliance or monitoring branches of the IDEM Offices of Air, Land, or Water Quality.

1.3.2. Office of Air Quality Organizational Structure

The organizational structure (Figure 3) followed by an overview summary describe the work completed by the Office of Air Quality (OAQ) branches.

Figure 3 Office of Air Quality Branches and Sections



Office of Air Quality

- Air Programs Branch
  - Performs air quality data analysis and modeling.
  - Develops the 1990 Clean Air Act Amendments State Implementation Plans.
  - Implements the mobile source programs.
  - Assists in rule development.
  - Responsible for criteria pollutant inventory development.
  - Develop air toxics inventories.
- Monitoring Branch
  - Collects data on ambient air quality to inform decisions regarding appropriate preventive or corrective action options available to safeguard public health and the environment.
  - Conducts audits, calibrations, verifications, and maintenance on air monitoring equipment.

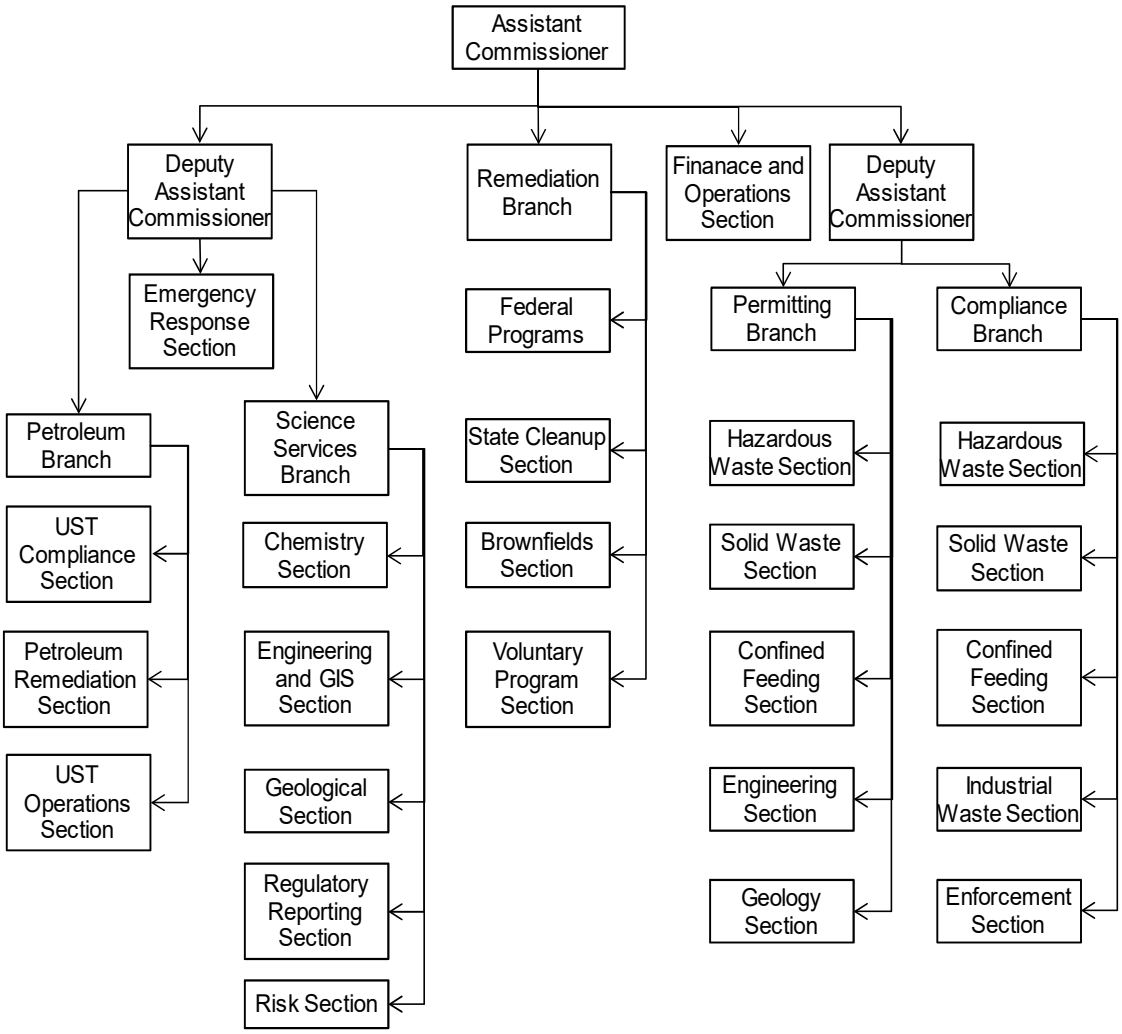
- Drafts program area quality assurance documents including SOPs, TSOP, and QAPPs.

- Compliance and Enforcement Branch
  - Verifies regulatory compliance by responding to complaints.
  - Conducts full and partial compliance evaluations, inspections.
  - Conducts compliance reviews.
  - Observes stack tests and continuous emission monitors.
  - Provides compliance oversight of sources of air emissions.
  - Pursues enforcement actions.
  - Provides compliance assistance.
- Billing, Licensing, and Training Branch
  - Manages billing and payments.
  - Tracks asbestos licensing activities.
  - Expedites the training requests of OAQ staff.
- Permits Branch
  - Acts on applications from new or existing sources with a potential to emit (PTE) criteria or hazardous pollutants exceeding established limits.

1.3.3. Office of Land Quality Organizational Structure

The organizational structure (Figure 4) and an overview summary describe the work completed by the branches of Office of Land Quality (OLQ).

Figure 4 Office of Land Quality Branches and Sections


Assistant Commissioner
Deputy Assistant Commissioner
Emergency Response Section
Petroleum Branch
UST Compliance Section
Petroleum Remediation Section
UST Operations Section
Science Services Branch
Chemistry Section
Engineering and GIS Section
Geological Section
Regulatory Reporting Section
Risk Section
Remediation Branch
Federal Programs
State Cleanup Section
Brownfields Section
Voluntary Program Section
Finanace and Operations Section
Deputy Assistant Commissioner
Permitting Branch
Hazardous Waste Section
Solid Waste Section
Confined Feeding Section
Engineering Section
Geology Section
Compliance Branch
Hazardous Waste Section
Solid Waste Section
Confined Feeding Section
Industrial Waste Section
Enforcement Section

Office of Land Quality

- Compliance Branch
  - Conducts regulatory compliance inspections and may pursue enforcement actions or provide compliance assistance.
  - Reviews “Contained-In Approval” requests for managing wastes with small concentrations of hazardous materials.
- Permitting Branch
  - Engineers and geologists provide technical expertise to review requests for registrations, permits and permit modifications to transport, handle, store, treat, or dispose (including re-use via land application) solid and hazardous waste; or septage and animal feeding operation wastes.
  - May review facility or activity closure requests.
  - Monitors groundwater and explosive gas, although most OLQ inspections are conducted by the Compliance Branch.
  - Inspects confined feeding operations and landfill construction.
- Remediation Branch
  - Conducts site assessments and oversees long-term cleanups of contaminated properties to levels safe for their intended use for the following programs.
    - Comprehensive Environmental Response Compensation and Liability Act (CERCLA or Superfund) activities
    - State cleanup activities at sites not on the National Priorities List
    - Voluntary cleanup activities at contaminated sites in return for the resolution of liability associated with the future use or transfer of involved properties
    - Leaking underground storage tank remediation program activities
    - Defense Environmental Restoration Program site investigation and assessment for potentially hazardous waste and possible ranking on the Superfund National Priorities List
    - Indiana Brownfields Program receives technical oversight and review from Remediation Branch for all projects receiving assistance from the Indiana Finance Authority or U.S. EPA brownfield grants. State legislation created the Brownfields Program 2005 which merged brownfield financial and technical review into a single program which offers educational, financial, technical, and legal assistance to eligible entities.
- Science Services Branch
  - Maintains much of the agency’s hazardous and solid waste program data.
  - Maintains data for OLQ sampling initiatives.
  - Provides technical and scientific assistance to the other branches of OLQ in five disciplines:
    - Chemistry
    - Geology
    - Engineering
    - Geographical Information Systems
    - Risk evaluation
- Petroleum Branch formerly known as the Underground Storage Tank Branch
  - Oversees the registration and operation of, and the response to environmental releases from underground chemical and petroleum storage tank systems.

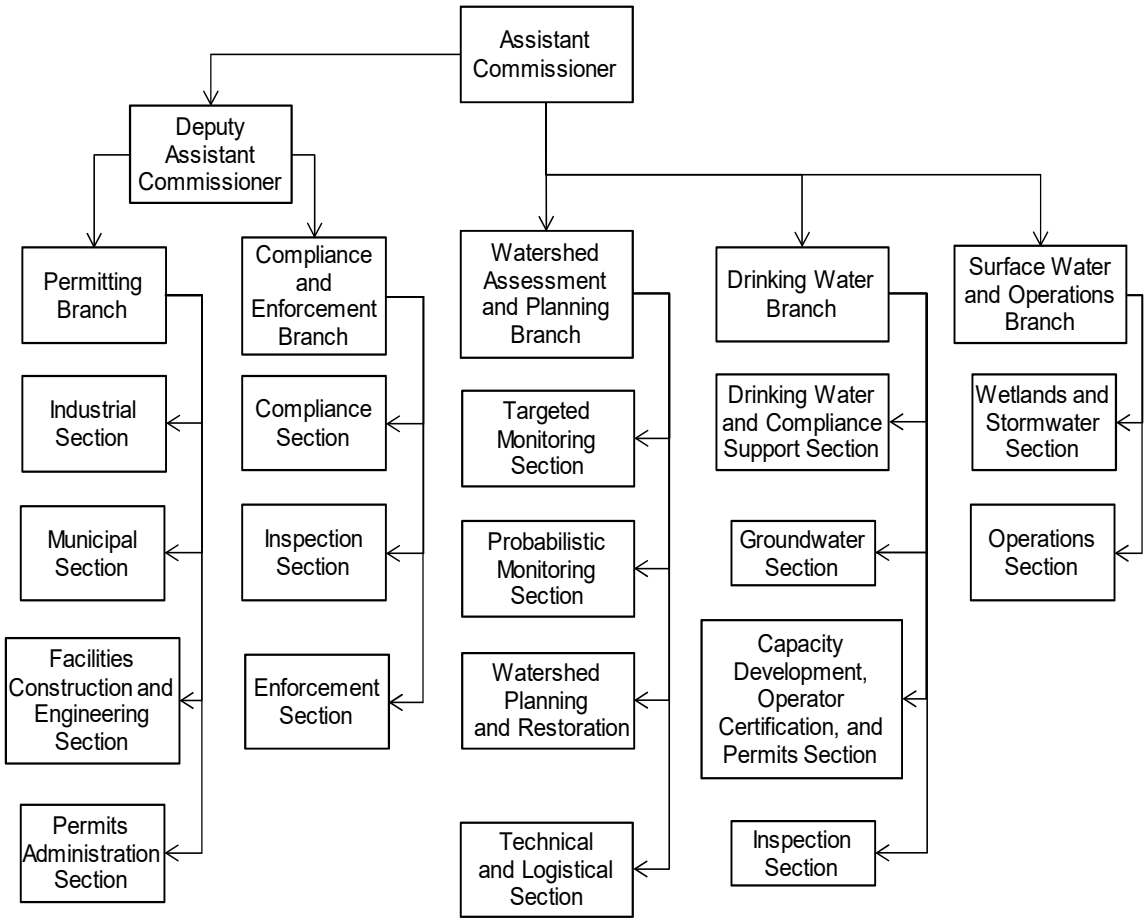
- Manages the Excess Liability Trust Fund, which allows owners and operators of underground petroleum storage tanks to establish financial responsibility for, and if necessary, remediate petroleum releases.

- Emergency Response Section
  - Provides immediate, uninterrupted, around-the-clock environmental evaluations of emergency releases.
- Billing, Licensing, and Training Section
  - Manages budgeting; permit billing and payments; and operations, facility, and contract support services.

1.3.4. Office of Water Quality Organizational Structure

The organizational structure (Figure 5) and an overview summary describe the work completed by the branches of Office of Water Quality (OWQ).

Figure 5 Office of Water Quality Branches and Sections



Office of Water Quality

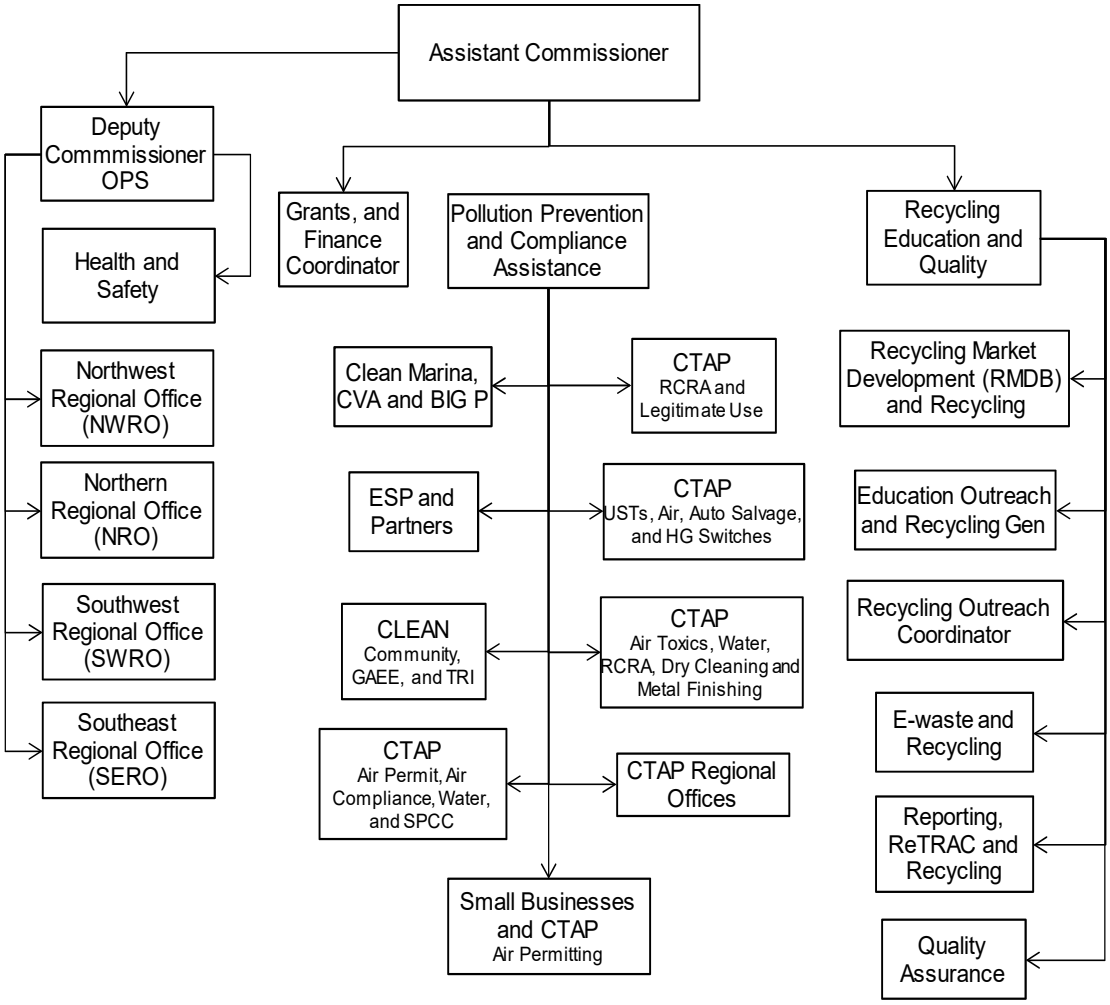
- Compliance and Enforcement Branch
  - Oversees 47 delegated municipal pretreatment programs.
  - Inspects National Pollutant Discharge Elimination System (NPDES) permitted facilities and ensures the proficiency of their laboratories.
  - Provides operator assistance and training.

  - Administers the wastewater operator certification and continuing education program.
  - Evaluates compliance data.
  - Issues noncompliance letters.
  - Makes enforcement referrals.
  - Manages Office of Water Quality enforcement cases.
- Drinking Water Branch
  - Oversees public drinking water system permitting and construction, operator certifications, and the process to ensure new public water systems (PWSs) have the necessary technical, financial, and managerial qualifications to deliver safe drinking water.
  - Carries out the requirements of the federal Safe Drinking Water Act which is designed to ensure PWSs deliver water to Hoosier homes and businesses which is adequate in quantity and is safe to drink. It does this by evaluating information about the water from the source to the tap.
    The main activities include:
    - Inspects PWSs.
    - Verifies water quality compliance.
    - Issues construction permits.
    - Follows up on PWS noncompliance.
    - Responds to citizen complaints.
    - Provides technical assistance.
    - Makes sure PWS are under appropriate supervision.
    - Generally, ensures PWSs provide safe water to Indiana citizens.
- Permitting Branch
  - Regulates the construction of and point source discharge from sanitary and industrial wastewater treatment or pretreatment facilities under the NPDES nondelegated permitting program.
  - Manages Combined Sewer Overflow (CSO) communities and oversees the implementation of CSO communities' Long Term Control Plans.
  - Conducts Wasteload Allocation Analyses to determine permit limitations which will be protective of Indiana's waters.
- Surface Water and Operations Branch
  - Oversees the OWQ budget and operations.
  - Manages permit fee billing.
  - Provides 401 water quality certifications for dredge and fill projects.
  - Issues state isolated wetland permits.
  - Regulates storm water discharges.
- Watershed Assessment and Planning Branch
  - Samples and assesses the quality of Indiana surface waters and their biotic communities on either a routinely revolving or case specific basis.
  - Uses surface water quality and various physical data inputs to develop watershed restoration plans and total maximum daily loads (TMDLs).
  - Implements the Nonpoint Source Program for the purpose of improving water quality.

1.3.5. Office of Program Support Organizational Structure

The organizational structure (Figure 6) and a summary describe the work completed by Office of Program Support (OPS).

Figure 6 Office of Program Support Organizational Structure



In addition to the regional office staff illustrated above, OPS Compliance and Technical Assistance Program regional office staff are subject to dual reporting, with work products overseen by the Pollution Prevention and Compliance Assistance Branch, as well as by regional office management.

<u>Office of Program Support</u>

Supports the technical missions of the other IDEM offices:

- Ensures the four IDEM regional offices have the infrastructure and supporting technical expertise necessary to provide the public with in-person environmental management services in the northern and southern portions of the state and are headquartered in: South Bend (Northern Regional Office), Valparaiso (Northwest Regional Office), Brownstown (Southeast Regional Office), and Petersburg (Southwest Regional Office). Also, provides local access to IDEM permitting, compliance inspection, technical assistance, and outreach services.

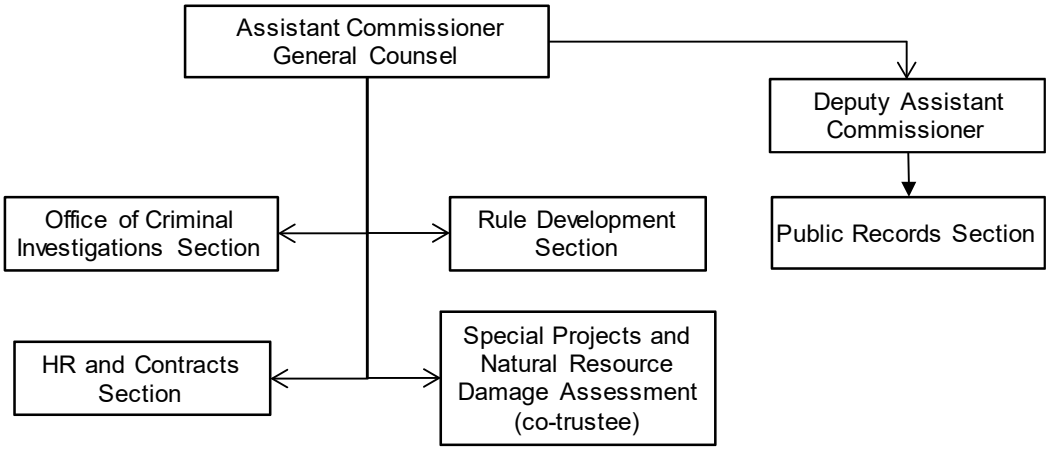
- Encourages the regulated community to understand, achieve, and exceed their environmental responsibilities through voluntary participation in outreach programs, technical compliance assistance, environmental stewardship, pollution prevention, recycling, and recycling market development.
- Quality Assurance Staff
  - Leads the agency quality system.
  - Interfaces with the EPA R5 quality manager.
  - Provides QA management and assistance throughout IDEM.
- Northwest Regional Office
  - Manages the following agency programs focused on environmental conditions in the Great Lakes basin (i.e., the Lake Michigan Programs): the Indiana Clean Marina* and Clean Boater* programs, the Lake Michigan Beaches Monitoring and Notification Program, the Lake Michigan Lakewide Action and Management Plan (LAMP) Program, and the Grand Calumet River and Indiana Harbor Ship Canal Area of Concern (AOC) Remedial Action Plan (RAP) Program.
  - Coordinates the Partners for Clean Air (PCA), a coalition of Northwest Indiana businesses, industries, local governments, and community groups committed to improving overall air quality and public health through voluntary actions.

    * These programs operate statewide: the NWRO and central office coordinators comanage activities with the NWRO coordinator focusing on the Great Lakes basin.

1.3.6. Office of Legal Counsel Organizational Structure

The organizational structure (Figure 7) and an overview summary describe the work completed by Office of Legal Counsel.

Figure 7 Office of Legal Counsel Organizational Structure



Office of Legal Counsel

- Addresses issues across all environmental media.
- Provides legal guidance to, draft communications for, and acts on behalf of agency programs.
- Public Records Section
  - Oversees the management of and accessibility to IDEM records.
  - Responses to records requests must ensure the protection of confidential and privileged information.

- Rule Development Section
  - Works with the Commissioner, the Indiana Environmental Rules Board, Indiana Legislative Services Administration, and the programs to develop, modify, or repeal – with Board and gubernatorial approval – administrative rules under IDEM jurisdiction and reports actions in the Indiana Register.
- Natural Resource Damage Assessment (NRDA) Program
  - Staff work with other state cotrustees Indiana Department of Natural Resource, U.S. Fish and Wildlife Services, and a variety of other partners to address injuries to Indiana's natural resources (e.g., fish kills, or habitat destruction caused by uncontrolled discharges of petroleum and hazardous substances).
  - The Trustees continue to work closely with GLNPO, EPA R5, the Citizens Advisory for the Restoration of the Environment (CARE) Committee, and IDEM Northwest Regional Office staff to address beneficial use impairments (BUIs) in the Grand Calumet River AOC.
- Office of Criminal Investigations Section
  - Investigates allegations of criminal violations of Indiana's environmental protection laws.
  - Prepares cases for presentation to either a state or federal prosecutor who has jurisdiction over the alleged violations. Most environmental crimes are misdemeanors. Felony crimes if the offense results in damage to the environment that makes the environment unfit for humans or vertebrate animals.
  - Work closely with local, state, and federal law enforcement officers who assist in the investigation or the execution of search warrants and arrest warrants.
  - Assist IDEM program areas in administrative and civil investigations.
  - Provide training for IDEM personnel.
- HR and Contracts Section
  - Provides counsel for support functions within the agency such as contracts and human resources

1.4. Quality Assurance Lines of Responsibility and Authority

The authority (Figure 8) for agency decision making rests with IDEM senior management, as shown by the solid arrowed lines. As a result of the investment in quality system resources described in 1.2.3., IDEM management are more confident any QA concerns associated with data relied upon for decision making, are already addressed during the environmental information operations processes conducted by their staffs.

In addition, agency management and key technical staff within each respective program have ongoing, and often long-standing, histories of interaction and institutional memory. This generally includes management knowledge and understanding of QA concerns based on their:

- Past work histories and experience addressing QA issues.
- Awareness of the QA considerations already built into some agency decision processes over time.
- Striving to keep staff up to date on the most recently required program specific technical training and knowledge. Special emphasis is placed on training which

includes new measures to address QA concerns and are provided or referred to by EPA R5 divisional staff who are the technical counterparts of IDEM staff.

1.4.1. Lines of Quality Assurance Authority

As illustrated by the dashed arrowed lines, "QA Related Communication, Input, and Oversight" also depicted in Figure 8, agency QA staff interact regularly with those program area staff with the training and experience to address QA issues. As part of these interactions, those same program staff are regularly advised and updated regarding existing or new U.S. EPA or IDEM QA requirements. The culture of quality promoted by the ongoing input from agency QA staff serves as the line of QA authority which impacts agency decision making as they discuss, remind, refresh, update, and always stand ready to assist with additional QA resources. Figure 8 is a depiction of the lines of authority for the overall agency QA system. Figure 9 depicts QA lines of authority for individual project or program environmental information operations.

Figure 8 IDEM Quality System Lines of Quality Assurance Authority

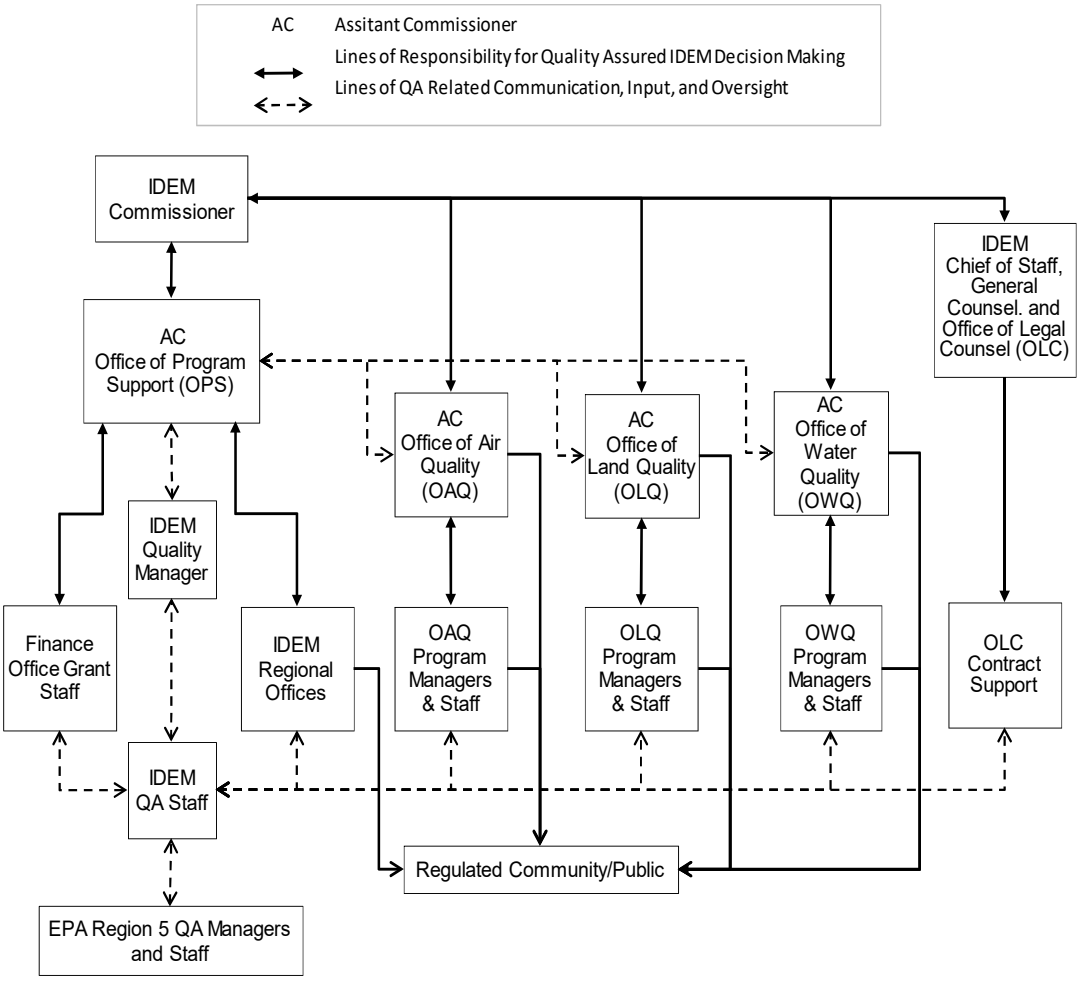
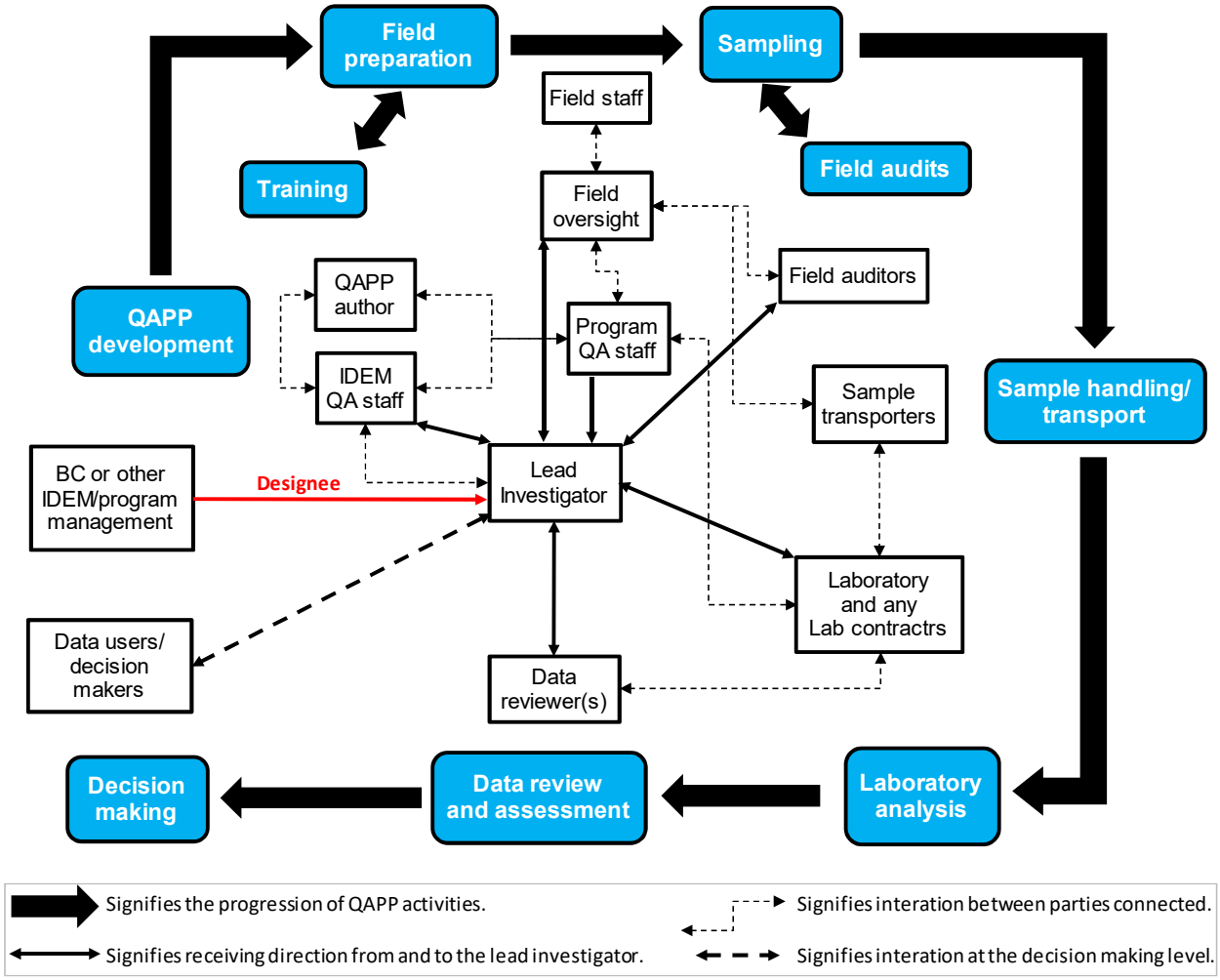


Figure 9 IDEM Quality Assurance Project or Program Plan Lines of Authority



1.4.2. Role of IDEM QA Manager and Staff

Office of Program Support QA manager and staff are independent of the authority of the Offices of Air, Land, and Water Quality. This independence helps to shield QA from the external interests such as deadlines, public pressures, and resource limits faced by the Offices of Air, Land, and Water.

The agency QA manager and agency QA staff perform the following related tasks:

- Ensure the quality system is appropriately documented in a quality management plan (QMP) and subsequently approved by EPA R5.
- Annually report progress on the implementation of the agency quality system to EPA R5.
- Continually promote adherence to QA principles.
- Review and approve agency program QA documentation to ensure all QA standards are met.
- Store and manage all IDEM QA documents.
- Maintain all IDEM QA training materials, templates, forms, and other supporting resources.
- Distribute QA policies, resources, training materials, and updates to agency staff via the INFODump on SharePoint.

- Coordinate with program staff regarding any QA services which may be needed.
- Serve as liaisons between IDEM and EPA R5 QA management and staff.
- Serve as the IDEM lead to increase program-level and agencywide use of the U.S. EPA's document management enterprise system, and EPA R5 QA Track document management software. Facilitate IDEM program staff's increasing use of QA Track for submitting documents required by EPA R5.
- Schedule regular IDEM QA committee meetings. Since August 2005, the committee has served as a forum where agency QA staff can share information with, and solicit input from, program appointed representatives as part of an ongoing effort to advance the IDEM quality system and associated policies, documents, and process tools.
- Advocate for quality-related programs, evaluations, and decisions independent of the interests and objectives of agency program management.

1.5. Technical Activities and Programs Supported by the Quality System

As stated in the agency quality policy at 1.2., all work performed to obtain, use, or report information pertaining to environmental processes and conditions – in other words, all environmental information operations – are to be encompassed by the agency quality system. The three primary IDEM program area offices air, land, and water; and the Northwest Regional Office (which manages the agency's Lake Michigan programs and coordinates the Partners for Clean Air), are engaged in activities meeting criteria. Each is involved with:

- Gathering data to characterize environmental conditions, or regathering data for a second time in the exact same manner for comparison, to characterize the impact of actions resulting from an agency decision.
- Assuring the quality of existing or newly generated data to demonstrate accurate characterization of the conditions measured and fit within the scope of the decision making which may be required.
- Using environmental information in a comparative or relative manner to make decisions such as whether to revise a rule; adjust a standard; issue or deny a permit; determine compliance or noncompliance with a permit or order; or to recommend enforcement, remedial action, or inaction.
- Reporting environmental information submitted to, or collected by the agency to EPA R5, the legislature, interested parties, stakeholders, the scientific community, or any other subgroup; all of which fall under the broader mantle of "the public."
- Any internal disagreement among program staff regarding QA related issues is resolved with input from other staff from the same program having no direct stake in the outcome of the disagreement.

1.5.1. Specific agency program activities with a QA component

The following is a representative listing of the QA and quality control activities implemented by agency programs which include a QA component. A more comprehensive listing is available for review in Appendix C.

Office of Air Quality

- Permits Branch
  - Calculates the potential to emit to determine appropriate permitting levels.
  - Evaluates applicant submitted data.

- Compliance and Enforcement Branch
  - Performs stack testing.
  - Evaluates continuous operations and emissions monitoring.
  - Collects on-site sampling or observational data.
  - Accurately examines throughput data.
- Air Programs Branch
  - Performs emissions reporting.
  - Performs modelling for source modifications and transportation conformance.
- Monitoring Branch
  - Operates and maintains monitoring network stations throughout the state.
  - Operates laboratories for quantifying toxic and particulate pollutant measurements.
  - Certifies monitoring network equipment and of some instrumentation owned by stakeholders which are required to gather and report data to U.S. EPA, IDEM, or into the Air Quality System database.

Office of Land Quality

- Permitting Branch
  - Records reviews of submitted data.
  - Tracks and evaluates leachate and leachate recirculation reports.
  - Performs groundwater borehole sampling.
- Compliance Branch
  - Inspects facilities which treat, store, or dispose hazardous wastes.
  - Utilizes the LaMotte kit for water sampling at confined feeding operations and confined animal feeding operations.
- Remediation Branch
  - Performs site investigations.
  - Develops sampling plans.
  - Scores sites.
  - Investigates and oversees investigations.
  - Oversees remediation.
  - Monitors and oversees monitoring.
- Petroleum Branch
  - Inspections of underground storage tank units and properties
  - Monitors underground storage tank compliance.
  - Investigates underground storage tank releases and approves site closures.
  - Oversees leaking underground storage tank release remediation.
- Science Services Branch
  - Processes laboratory contracts.
  - Monitors (Under the IDEM OLQ Professional Laboratory Services Contract 2022-2026) individual laboratories competency to perform requested analyses.
  - Sets-up sampling and assigns laboratories.
  - Maintains the sampling database.
  - Provides technical memos for data review and evaluation.

Office of Water Quality:

- Permitting Branch
  - Calculates or models stream waste load allocation limits.
  - Reviews antidegradation demonstrations and water quality standards variance requests.

- Compliance and Enforcement Branch
  - Evaluates performance tests of laboratories operating under a NPDES permit.
  - Reviews outfall sampling and analysis.
- Watershed Assessment and Planning Branch
  - Develops QAPPs and related sampling and analysis work plans.
  - Conducts field sampling of a variety of media including surface water, sediments, fish community and tissue, macroinvertebrates, and habitat assessments.
  - Operates field and in-house laboratories.
    - Field audit program
    - Taxonomy of cyanobacteria, diatoms, macroinvertebrates, and fish
    - Analyzing samples for cyanotoxins and coliforms
  - Reviews lab packets, using the data acquired to:
    - Characterize waters as meeting, or not meeting, or making progress toward meeting statewide standards.
    - Establish stream TMDLs for use in establishing waste load allocations for NPDES discharge permits.
    - Investigate the effectiveness of a permit's conditions.
    - Identify previously unknown sources of water pollution.
    - Quantify suspected threats to public health.
    - Monitor the fitness of fish populations for human consumption.
  - Actively works with communities in watershed planning efforts.
- Drinking Water Branch
  - Reviews lab data and reports to U.S. EPA under the Safe Drinking Water Act (Indiana drinking water labs are certified by the Indiana Department of Health (IDOH)).
  - Enforces the 10-states standards for:
    - Water treatment equipment
    - Materials which contact the water
- Surface Water and Operations Branch
  - Provides 401 water quality certifications for dredge and fill projects.
  - Issues state isolated wetland permits.

<u>Office of Program Support</u>

- Northwest Regional Office
  - LAMP Program
    - Reviews Lake Michigan basin water quality and ecosystem data against the objectives of the Lake Michigan LAMP, as applicable.
    - In concert with other members of the Lake Michigan Partnership develops the science and monitoring priorities for the Cooperative Science and Monitoring Initiative (CSMI) Lake Michigan Field Year.
    - Reviews invoices, progress reports, and work products developed and submitted by contractors working on LAMP projects.
  - RAP Program
    - Collects and evaluates monitoring data (e.g., aesthetics monitoring data) required to inform beneficial use impairment (BUI) removal target decisions.
    - Performs field audits of habitat restoration and monitoring activities, as applicable.

        - Reviews invoices, progress reports, and work products developed and submitted by contractors working on AOC or Beach Program projects.
    - Beach Program
        - Performs field audits of beach water sample collection and notification.
        - Reviews *E. coli* enumeration data against notification decisions and quarterly progress reports.
        - Reviews invoices, progress reports, and work products developed and submitted by grantees working on Beach Program projects.

1.5.2. Oversight of Contracted, Delegated, or Extramural Programs

As stated in the agency quality policy (1.2.) each IDEM program area office which engages contractors or grantees (Appendix D) to assist with environmental information gathering, analysis, or use is responsible for ensuring the QA component of those activities is adequately addressed by the contractor or grantee acting on behalf of IDEM. All IDEM contract laboratories must have current quality management systems in place and must provide demonstrations of competence to perform the work for which they are hired, as described in Element 4, Procurement of Items and Services.

1.5.3. Management Assurance Applicable Quality System Elements Are Understood and Implemented

Agency assistant commissioners and management clearly signal to staff the importance they place on QA through:

- Support for agency funding and staff allocated to the QA program.
- Reliance on QA staff to track the development and storage of QA related documentation, including on the EPA R5 QA Track database.
- Approval of QA staff acting as liaisons with EPA R5 QA management on behalf of program staff.
- Insistence QA staff remain involved with QA document development agencywide.
- Confidence materials maintained by QA staff on the SharePoint Quality Assurance (QA) System Tools site are accurate, current, and applicable.
- Expectation direct reports participate in value added QA trainings provided or arranged by QA staff.
- Assignment of program staff resources for:
    - QA document development
    - Submittals for the QAAR
- Incorporation of QA associated tasks in annual performance expectations.

2.0. Quality System Description and Components

Purpose – To document how IDEM manages its quality system and defines the primary responsibilities for managing and implementing each component of the system.

The IDEM quality system encompasses four principal components which define most of the agency's work. The agency considers quality as an integral part of each of the components' design, and the responsibility of everyone at IDEM. IDEM expects staff to plan, execute, document, and review all work performed to ensure conformance to the data objectives established for the program, project, or service provided. The principal components of the IDEM quality system are 1) systematic planning, 2) quality system documentation, 3) program- and project-level assessments, and 4) QA training for managers and staff. The following tools implement the principal components of the agency's quality system:

- An EPA R5 approved QMP
- Systematic planning processes
- QAAR
- Program QAPPs
- Project QAPPs
- SOPs
- TSOPs
- DQA
- Performance evaluations and proficiency testing
- QA training

2.1. Systematic Planning Processes

Several agency programs engage in routine, if not annual, systematic planning to identify elements of concern, means of measurement, and proposed strategies for evaluating the data generated from data gathering projects.

The principles associated with systematic planning are central to the IDEM quality system. The essentials of systematic planning are identified in Table 1, Elements of Systematic Planning (Appendix E), from page 3 of the U.S. EPA QA/G-4 Guidance on Systematic Planning Using the Data Quality Objectives Process.

The systematic planning process involves:

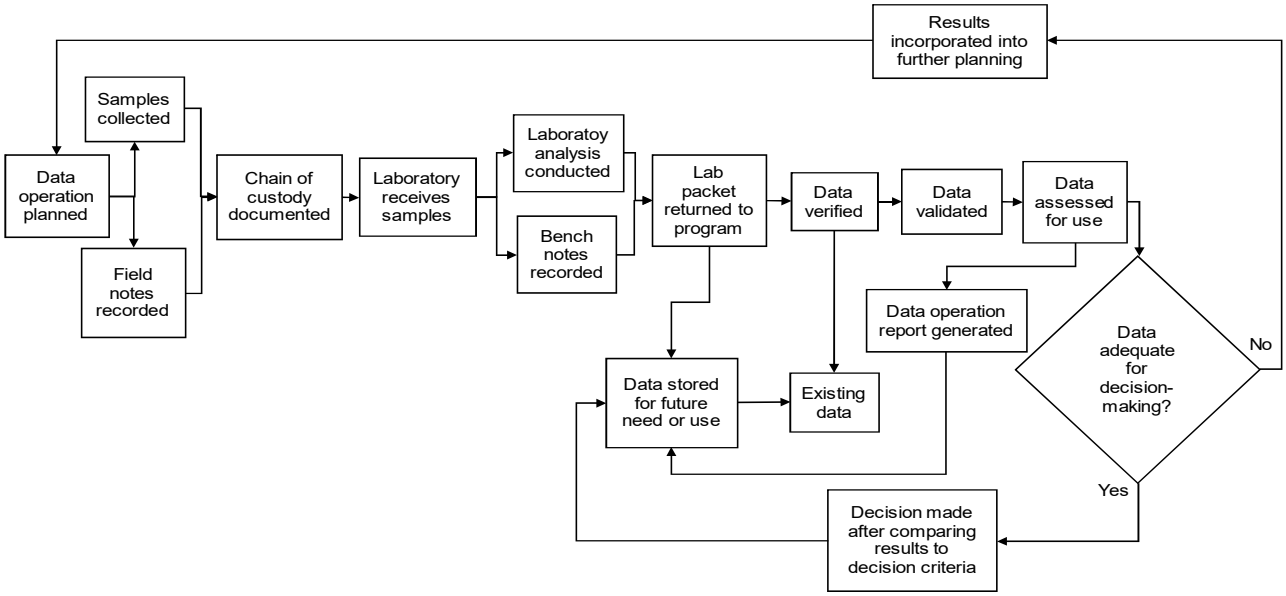
- Framing the questions which need to be answered.
- Identifying the roles and responsibilities of involved staff.
- Scheduling the actions and resources required to complete the investigation.
- Specifying what will be measured (sampled for).
- Determining how many measurements are needed, and within what range.
- Selecting where, when, and how measurements or samples should be taken, and identifying any potential obstacles to the measurement or sampling process.
- Establishing the type and number of quality control samples which should accompany the collected measurements or samples and any additional assessment of field or lab activities which also should be conducted to minimize the possibility of measurement error.

- Describing how the data will be analyzed and assessed against preselected performance criteria to demonstrate the level of confidence in the accuracy of the final measurement data to adequately support its use.

This sequence of actions makes up the development of program and project QAPPs. Its use is required by agency program staff in the early stages of planning environmental information operations. This requirement similarly applies to contractors and other entities acting on behalf of IDEM. Such quality planning is often specifically required in the terms and conditions associated with environmental information operations involving:

- Grants and subgrants
- State-U.S. EPA cooperative agreements
- Responses to statutory or regulatory requirements and consent agreements.

Workflow of an Environmental Information Operation
The steps associated with implementation of a QAPP developed for an environmental information operation.



During the environmental information operation's planning stage address each step. During the implementation phase of the operation, the lead investigator of the operation should track each step and document any variations in a final "QAPP report" (5.2.1.). The report also summarizes the project, records any deviations from the initial operation planning, and describes to future interested parties where and how records associated with the implementation of the QAPP can be retrieved and reviewed.

The program areas currently using the principles of systematic planning on a routine, or an annual basis are:

- OAQ Monitoring Branch for ambient monitoring of criteria pollutants and air toxics
- OLQ Remediation Branch for site investigation projects
- OLQ Industrial Waste Compliance Section for PCB sampling
- OLQ Petroleum Section regarding leak detection
- OWQ Watershed Assessment and Planning Branch for:
  - Probabilistic Monitoring Section activities
  - Targeted Monitoring Section activities

- OPS Northwest Regional Office for applicable BUI monitoring, habitat restoration, and beach monitoring activities.

Environmental Information operations conducted on a smaller scale, such as the work plans described in 2.2.6., rely in part on the principles of systematic planning.

2.2. Quality System Documentation

Quality system planning of an activity or set of activities, however comprehensive, must adequately document the activity to ensure:

- All participants have an opportunity to provide input to correct and improve the activity.
- For environmental information operations, all participants have access to the final QA document so:
  - Each staff can know what tasks to perform and in what manner.
  - Each identical task is performed identically, even if conducted by different staff, so results are not skewed by varied implementations.
- The review of field and lab (bench) notes of activity implementation to verify carrying out the agreed upon plan as written.
- Staff evaluating data generated resulting from the documented activity can review what processes were to be used against the record of actual field activity. If process variations occur, information is available to determine whether to adjust or discard data.
- Peers in the scientific and environmental protection community, wishing to use the data at some future date, could reference the methods and techniques originally used to generate it, to determine applicability.

Types of QA tools used by the agency Include:

2.2.1 Quality Management Plan

As a state agency delegated to perform work for, and receive financial assistance from U.S. EPA, the agency will develop, implement, and maintain an EPA R5 approved QMP. The agency's QMP is the overarching, agency level quality system policy for ensuring environmental information are of the type and quality needed for its intended use. The QMP provides information on how the agency will plan, document, implement, evaluate, and improve upon environmental information operations. The QMP documents agency practices which support environmental information operations including:

- Identification of QA system staff roles and responsibilities
- QA training requirements
- Related procurement and services oversight practices
- QAPP, and administrative and technical SOP development, review, and approval procedures
- Standards and practices associated with the electronic management of work practices and resulting data
- Quality system assessments and follow up corrective actions

2.2.2 Quality Assurance Annual Report and Work Plan

Agency QA staff, with input provided by each program area QA staff, prepares and submits a QAAR to EPA R5, which measures the agency's implementation of its QMP. The report summarizes the agency's quality assurance activities of the previous year and identifies QA activities planned for the upcoming year.

2.2.3 Quality Assurance Program Plans

The agency currently has several programs which have planned, developed, and implemented QAPPs. These QAPPs identify study parameters, personnel requirements, equipment and methods, implementation audits, data review, data acceptance evaluations, and final assessments prior to data use.

The agency currently has several programs with approved QAPPs.

- OAQ Monitoring Branch QAPPs
  - Particulates Volume I
  - Gases Volume II
  - Meteorological Volume III
  - Toxics Volume IV
  - Calibration, Certification, and Verification Methods of Transfer Standards Volume V
- The five QAPPs replace the previous QA Manual which served as the only OAQ program QAPP. Although agency QA staff reviews and approves each when updated, EPA Region 5, Air and Radiation Division retains final approval authority. Air related QAPPs and supporting QA documentation are uploaded to the Microsoft Teams folder hosted by R5 ARD. Each IDEM approved QAPP is submitted directly to the approving EPA R5 divisional office by the respective IDEM program. Upon EPA R5 approval, each QAPP is also uploaded into QA Track by OPS, Quality Assurance staff.
- OLQ Compliance Branch QAPP
  - IDEM-U.S. EPA Region 5 PCB Inspection QAPP
- OLQ Petroleum Branch QAPP
  - Investigation of Underground Storage Tank Releases QAPP
- OLQ Remediations Branch QAPP
  - Site Investigation Program QAPP

  Although agency QA staff reviews and approves each OLQ QAPP when updated, EPA Region 5's Laboratory Services and Applied Science Division, Science and Quality Assurance Branch retains final approval authority. Each IDEM approved QAPP is submitted directly to the approving EPA R5 divisional office by the respective IDEM program. Upon EPA R5 approval, each QAPP is also uploaded into QA Track, where it is accessible to EPA R5 staff.
- OPS Northwest Regional Office QAPPs
  - 2019 – 2023 Lake Michigan Beaches Monitoring and Notification Program
- OWQ Drinking Water Branch
  - IDEM PFAS Action Plan

  IDEM obtained delegated-approval authority for drinking water QA documents dealing with per- and poly-fluoroalkyl substances (PFAS) effective September 7, 2021.
- OWQ Watershed Assessment and Planning Branch
  - 2017 Indiana Surface Water Programs
  - Evaluation of PFAS in the Great Lakes Basins
  - Biological Community and Habitat Measurements

2.2.4 Quality Assurance Manuals

The following agency programs maintain QA related manuals:

- OAQ Monitoring Branch conversion of the QA Manual to five QAPPs is complete.
- OAQ Air Programs Branch developed and implemented a Modeling Guidance Document outlining current IDEM air quality modeling policies. The guidance

provides the requirements for Major Source Prevention of Significant Deterioration (PSD), nonattainment New Source Review (NSR) modeling as well as screening of hazardous air pollutants emissions. EPA R5 staff review the guidance after each update. These policies are regularly updated or as new guidance comes from EPA.

- OLQ uses the following manuals and guides to inform decision making based on the data gathered at contaminated sites:
  - The Remediation Closure Guide (RCG) documents the risk-based criteria used by OLQ to support cleanup related decisions.
  - The Remediation Program Guide, the companion manual to the RCG, sets forth the policies and procedures applicable to all remediation programs, and specifically outlines the different processes and regulatory requirements for each. OLQ is in the process of replacing the guide with several nonrule policy documents.
  - Guidance Documents
    OLQ relies upon three groupings of guidance documents which provide additional tools for investigating and removing contamination in soil and groundwater. They differ from the RCG because they do not include rules or requirements.
    - Site Characterization and Sampling Guidance documents explain how and where to investigate chemicals in soil and groundwater, including what kind of contaminants could be found, and where and how they could migrate.
    - Risk Evaluation documents which identify what levels of contaminants could require further investigation, and how to determine levels of potential hazard.
    - Remedy Selection and Implementation documents explain how to choose the best cleanup plan for a site and how to maintain the site during long-term monitoring and restricted closures.
- The OWQ Watershed Assessment and Planning Branch uses several technical SOPS to guide sampling and analysis procedures. Current SOPs and the Surface Water Monitoring QAPP are being revised.
- The OWQ Drinking Water Branch uses SOPs to direct drinking water compliance rule activities, drinking water utility permitting, drinking water operator certification, source water monitoring, and wellhead protection activities. Management of the laboratory drinking water certification program is through a Memorandum of Understanding with the IDOH. Current SOPs and the Drinking Water QAPP are being revised.
- The Lake Michigan LAMP Program, housed in the Northwest Regional Office, uses guidance materials developed pursuant to Annex 2 of the 2012 Great Lakes Water Quality Agreement, including the associated Lake Michigan LAMP, which is currently under development, and the Great Lakes Nearshore Framework.
- The Grand Calumet River AOC RAP Program, housed in the NWRO, uses guidance materials developed pursuant to Annex 1 of the 2012 Great Lakes Water Quality Agreement, including:
  - The BUI removal targets developed by IDEM with input from the Citizens Advisory for the Remediation of the Environment (CARE) and other stakeholders.
  - The various stages of the Remedial Action Plan, developed by IDEM with input from CARE and other stakeholders.

- The general BUI listing and delisting criteria developed by the International Joint Commission (IJC) in 1991.
- Guidance materials provided by U.S. EPA Great Lakes National Program Office.

- The Lake Michigan Beach Monitoring and Notification Program utilizes technical guidance documents developed by U.S. EPA, including:
  - The 2012 Recreational Water Quality Criteria (RWOC) for Bacterial Indicators of Fecal Contamination, which sets recommended evidence-based criteria for state and tribal recreational water quality standards.
  - The National Beach Guidance and Required Performance Criteria for Grants, which sets forth 11 required performance criteria which Indiana's Beach Monitoring and Notification Program must comply.
  - Various technical guidance documents developed by U.S. EPA to assist states and tribes with formatting monitoring and notification data.

2.2.5 Quality Assurance Project Plans

The agency has in place active project specific QAPPs. Currently, the IDEM Northwest Regional Office has two active project QAPPs developed by Northwest Regional Office staff. These project QAPPs are associated with, and funded by, federal GLRI grants:

- Aesthetics Monitoring in the Grand Calumet AOC GLRI Project
- Developing Neural Network Models for Lake Michigan *E. coli* prediction.

2.2.6 Work Plans

IDEM program areas have developed work plans, which the agency considers a subset of program QAPPs. Under this scenario, iterative projects are implemented following the requirements of a much more comprehensive program QAPP. Agency programs conducting essentially identical environmental information operations to gather like data from sites which vary only by location, or time frame, opt to develop and to use these sub-QAPPs. Programs include:

- The OWQ Watershed Assessment and Planning Branch, which annually targets rotating areas for specific types of water quality monitoring. Other monitoring projects may arise from OWQ program requests or commitments but with location and parameters tested being the only significant difference in work conducted. All OWQ Watershed Assessment and Planning Branch QAPP related work plans go through the same review and approval process as other quality documents.
- The OLQ has two programs which generate work plans:
  - Petroleum Branch
  - Site Investigations

  OLQ work plans do not go through the same review and approval process as other quality documents. For work plans under Site Investigations and Petroleum Branch, the project manager develops the site-specific work plan. It is peer-reviewed by senior staff, site chemist, site geologist and health and safety staff. Once peer review by technical staff has been approved, the work plan is forwarded to the program section chief for approval. Once approved by the program area, the document is sent to EPA for review and approval by the site assessment coordinator and QA staff. The Petroleum Branch has reported that work plans are rarely

generated for their program and almost all data is the generated and quality assured by the Responsible Party.

2.2.7 Standard Operating Procedures

IDEM relies on TSOPs to document procedures directly associated with environmental information operations. Complex nontechnical SOPs. Program staff develop all agency SOPs. Agency QA staff review and approve the SOPs. Element 5 Documents and Records further discusses SOPs.

2.3. Program- and Project-level Assessments

2.3.1 Data Quality Assessments

The following agency programs regularly engage in the assessment of laboratory data packets as part of assessing data prior to its usage. These and other project assessment practices, discussed in Element 9, Assessment and Response, include:

- OAQ Monitoring Branch evaluates the data it generates in the field and in its laboratories.
- OLQ Science Services Branch chemists perform data verification, validation, and assessment in response to requests for services from the various OLQ branches.
- OWQ Drinking Water Branch evaluates data generated from their contract laboratories' analyses.
- OWQ Watershed Assessment and Planning Branch staff evaluate lab data generated by contractors from the analysis of samples collected by Watershed Assessment and Planning Branch field staff.
- Northwest Regional Office evaluates data generated in accordance with the Grand Calumet AOC Aesthetics Monitoring QAPP and related SOPs, as well as *E. coli* enumeration and beach notification data which are entered into the Beach*Alert* portal by entities participating in the Beaches Program. OWQ's Watershed Assessment and Planning Branch or external parties evaluate much of the contract lab data generated through the Grand Calumet River AOC RAP program.

2.3.2 Program Assessments

Agency QA staff and program area staff rely on several approaches to conduct and expand program assessments within IDEM including:

- EPA R5 divisional staff IDEM program reviews.
- Annual QA inventories of program assessments as part of developing the QAAR for EPA R5.
- QA document update cycles which improve individual documents and by extension, expand the QA culture of the programs.
- Internal program assessments.
- Individual annual performance assessments.

Element 9, Assessment and Response discusses these in greater detail

2.3.3 Performance Evaluations and Proficiency Testing

- OAQ Monitoring Branch oversees the industrial monitoring networks operated by IDEM and tracks the proficiency testing program participation results for each source in the network.
- OLQ Science Services Branch matches the sampling requests of staff from each of the various OLQ programs with the optimal OLQ contracted laboratory, develops the Scope of Work for those contracts, and evaluates the technical

competence of each facility during the contract period. This includes monitoring each contractor with respect to the maintenance of its quality system, accreditations, and the results of any proficiency testing (PT) program participation.

- The OWQ Drinking Water Branch specifies independent accreditation and performance testing as part of its contract laboratory program. Laboratories operated by the IDOH or any other state entity are held to the same level of independent review.
- OWQ Watershed Assessment and Planning Branch tracks the laboratory accreditations and the results of a wide range of PT types used by its contractors. Watershed Assessment and Planning Branch performs proficiency testing in the cyanotoxin laboratory for ambient and drinking water samples if those types of samples are being analyzed.

2.3.4 Evaluation of Contractor QA Competency

IDEM relies on external laboratory contracts for a significant amount of sample analysis performed. IDEM is responsible for ensuring the labs contracted to perform analysis and generate data for agency meet the same quality system requirements as required of IDEM staff.

- OAQ Monitoring Branch laboratories complete most sample analysis while some external laboratory analysis is overseen by U.S. EPA.
- OLQ Science Services Branch, Chemistry Section staff drafts the Scope of Work which lays out contract laboratory requirements for the laboratory services hired by OLQ.
- The OWQ Drinking Water Branch specifies all laboratories performing regulatory analyses have a valid IDOH certification for those analyses. For nonregulatory as well as regulatory analyses, contract laboratories are vetted during the laboratory contract phase. Contract laboratories must supply quality control manuals, method detection limit determinations, equipment and primary personnel lists, method SOP's, and independent performance and accreditation results. All of which must meet minimum guidelines and performance criteria specified in the State's Request for Proposal (RFP).
- OWQ Watershed Assessment and Planning Branch uses several contract laboratories, relies primarily on contractor third-party accreditations, and on each laboratory's successful participation in PT programs.
- The Northwest Regional Office's Lake Michigan Programs group ensures labs generating *E. coli* enumeration data for the Lake Michigan Beaches Monitoring and Notification Program are certified to conduct such testing by a recognized body (e.g., the IDOH, IDEM).

IDEM technical staff must revisit the appropriateness (which can require the incorporation of graded approach QA principles) of existing environmental standards or decision-making criteria in use. This component of any quality system can have a direct impact on the quality of the environmental decisions made by the agency. Such tasks would fall to IDEM staff reviewing and assessing data and working with assessing risks. When such re-evaluations and any associated changes to standards are justified, it likely will be in conjunction with U.S. EPA and other external experts.

2.4. Quality Assurance Training

IDEM management recommends all appropriate program staff attend QA related trainings made available to them either by:

- EPA R5 QA managers
- QA presentations by EPA R5 divisional staff with whom program staff regularly interact. Such trainings most likely emphasize QA practices directly associated with the activities and topics most closely shared by IDEM staff and their respective EPA R5 counterparts.

Element 3, Personnel Qualifications and Training discusses training in greater detail. Agency QA staff provide the programs with:

- A wide variety of on demand QA training materials and associated U.S. EPA QA guidance on the agency Extranet
- In person QA training sessions, as requested.

3.0. Personnel Qualifications and Training

Purpose – To document the procedures for assuring all personnel performing work for IDEM have the necessary skills to effectively accomplish their work.

Work done by IDEM staff requires a range of ongoing training and retraining. Training topics can include administrative protocols; health and safety; or technical skills associated with chemistry, biology, engineering, geology, toxicology, meteorology; and other ecologically related scientific disciplines practiced by IDEM staff. Training in the application of QA standards and practices as they apply across the agency is the primary focus here.

3.1. IDEM QA Training Policy

As addressed in 1.2.3., a significant percentage of IDEM staff spend at least some portion of their overall work time completing tasks associated with environmental information operations, the central focus of the IDEM quality system. IDEM senior management expects all such agency staff to participate in QA specific training to the level adequate to ensure each understands, at minimum, the purpose for and the requirements of the agency's quality system encompassed by their work. The more essential each staff is to gathering, using, or reporting environmental information, the greater their individual need for adequate QA training. Appropriate QA training topics could include, but are not limited to the:

- Value of the quality system and its components.
- Establishment of DQOs.
- Development, review, and approval of QAPPs, QAPP-related work plans, SOPs, and TSOPs.
- Implementation of QAPPs, QAPP-related work plans, SOPs, and TSOPs.
- Verification, validation, and assessment of environmental information.
- Evaluation of the performance of QAPPs, QAPP-related work plans, SOPs, and TSOPs types.
- Assessment of quality system activities.
- Tracking of QA compliance of entities acting on behalf of the agency.

3.2. Training Processes, Roles, Responsibilities, and Authorities

Staff performing environmental information operations require program specific technical training and the appropriate level of accompanying QA training. The technical training is guided by managers and more experienced staff within each respective program.

Materials used may include presentations, guidance documents, instruction manuals, technical SOPs, and other resources from several sources. U.S. EPA provides several training presentations via the internet, some of which U.S. EPA designed, and some of which originate from other scientifically respected organizations endorsed and made accessible by U.S. EPA. Some IDEM program areas may develop technically focused trainings in-house. Regardless of the source, some of these program area specific technical trainings may encompass QA related issues.

IDEM program area supervisors and management track, whether formally or informally, the training needs of staff reporting to them. Their ongoing interaction with staff, performing environmental information operations, informs management of the levels of individual staff program specific technical expertise, and the need for any additional trainings or retraining.

IDEM training to acquire or augment the QA skills needed to perform environmental information operations is provided by agency QA staff. As with program area specific technical training, agency QA training includes presentations developed or endorsed by U.S. EPA, or by IDEM staff made accessible to staff via webinar, in classroom settings, or in a document format. QA training is most often developed and presented from a generalized perspective. Because it can increase the effectiveness of the training, agency QA staff endeavors, whenever possible, to incorporate program related specifics to serve as real world examples. Nonetheless, QA principles remain applicable to any environmental information operation.

The roles, responsibilities, and authorities of various levels of agency staff to provide or participate in QA training are as follows:

3.2.1 *Program Management QA Responsibilities*

- Be knowledgeable of the practices and benefits of the IDEM quality system to the extent necessary to ensure reporting staff are adequately implementing the portions of the U.S. EPA approved IDEM QA system encompassed by the program they manage.
- Ensure appropriate staff, reporting to them, participate in QA trainings provided by:
  - EPA R5 division level QA staff from the Office of Air and Radiation, Office of Land Chemicals and Redevelopment, Superfund and Emergency Management, or Office of Water which is the media specific counterpart of the program they manage.
  - EPA R5 QA management in the Laboratory Services and Applied Science Division.
- Recommend staff participation in QA trainings provided by agency QA staff which is applicable to the work done by the program.
- Monitor the QA related training histories of staff reporting to them who perform QA related work. Those same staff should document, such training information in the form of QA related personal resume as described in 3.2.2.
- Incorporate QA components into individual staff's annual performance evaluation goals.

3.2.2 *Program Staff Involved with QA Tasks Are Responsible For:*

- Attending QA trainings required by management, especially those presented by:
  - EPA R5 division level QA staff.
  - EPA R5 QA management and staff.
- Attending QA training which they identify as helpful and approved by their respective management staff.
- Maintaining a personal resume of their individual QA training histories. This self-maintained resume should be kept updated and should include QA-related:
  - Trainings, date attended, the source or sponsor of the materials presented (U.S. EPA, or U.S. EPA endorsed entities, scientific papers or journals, and other credible sources) including, but not limited to subjects such as:
    - Project or sample planning
    - QA document development
    - Laboratory packet review
    - Statistical data testing
    - Data assessment for decision making
  - Certificates or other documentation provided to confirm participation in trainings

- Documents developed, or work performed by the individual resulting in successful environmental projects or decisions
- Other acknowledgements, awards, or achievements similarly demonstrating the individual's understanding of QA principles and requirements

3.2.3 *IDEM QA Staff Training Responsibilities*

The IDEM quality manager and agency QA staff are responsible for ensuring all agency staff required to complete QA training have the appropriate level of such training available to them. To meet this obligation, agency QA staff must:

- Develop QA training materials from introductory to advanced levels.
- Assess agency QA training needs and apprise management of the assessment.
- Provide training as requested by program or agency management.
- Proactively promote the use by staff of the on-demand QA related training and guidance materials accessible via the INFODump.
- Arrange QA training presentations for agency staff by EPA R5 or other appropriate external entities.
- Provide a training resume template, if requested, to all agency staff required to track their individual QA training histories, as required in 3.2.2., and provide feedback and assistance to program area staff in completing the training template for their records.

3.2.4 *Regarding Staff Maintaining Licenses and Professional Certifications*

IDEM encourages or even requires all staff to maintain licenses and professional certifications they may have acquired, such as attorneys' licenses, engineering registrations, and health and safety training certificates. Agency staff are responsible for providing such formal documentation upon justifiable request.

3.2.5 *Regarding the Pending Application by U.S. EPA of QA Field Activities Procedures Standards to the States*

In 2010, the U.S. EPA's Regional Science and Technology organization first established and endorsed its Field Operational Guidelines requirements. To address a more significant portion of environmental information error which is attributable to field error rather than to laboratory error. The Field Operational Guidelines is intended to address the most critical potential sources of in-the-field error.

Agency QA staff and appropriate program managers shall anticipate the need to develop a course of trainings on the ten elements of U.S. EPA's QA Field Operations Guidelines, consistent with U.S. EPA's Quality Policy (CIO 2105-P-02.0). Such training shall be required for all staff engaged in field activities involving the conduct of either on-site inspections or field studies for data development and shall require such field staff:

- Will have appropriate qualifications, education, training, experience, and a satisfactory knowledge of the requirements of the activities to be carried out, including, but not limited to health and safety training and program specific inspector training.
- Will benefit from a system of a documentation which ensures up-to-date training records are maintained, which sufficiently demonstrate staff performing particular tasks have been properly trained, and their ability to perform these tasks have been formally evaluated.

3.3. How QA Training Is Assessed

Agency QA staff relies on several processes for determining the effectiveness of QA training, and program interest in additional training. For example:

- Each training session presented by agency QA staff ends with a survey which is then used by trainers to gauge the effectiveness of the presentation.
- The template distributed to agency branch chiefs for their input on the IDEM QAAR to the EPA R5 QA manager:
  - Inventories management interest in QA training for branch staff regarding:
    - QA document development
    - QA document review
    - Sampling plan development
    - Field assessment and tracking to ensure a plan is followed
    - Verification and validation of data packages
    - Verification and validation of existing data
    - Data assessment
  - Solicits input regarding improvements to U.S. EPA or IDEM QA guidance or training materials which could improve program data gathering or use.
- QA staff continue to assist with developing and planning an agency training curriculum.

3.4. Identifying the Need for Retraining

Several features of the IDEM QA system suggest when retraining should be considered. They are:

- When changes occur to when or how a process is performed, Element 5, Documents and Records (5.2.6.) requires any existing SOP or TSOP be updated.
- Program management assessments of work completed either during annual performance reviews, field audits, the course of regularly occurring managerial surveillance, or oversight of program activities can identify activities or outcomes which may need to be remedied through retraining.
- The ongoing QA partnership maintained between the EPA R5 QA manager and agency QA staff often serves to alert QA staff and, subsequently, affected IDEM program staff of changes which could require retraining. The above discussion of potentially pending Quality Assurance Field Activities Procedures requirements is an example of how this federal-state partnership could help identify the need for retraining.

3.5. Other Ways in Which IDEM Management Supports QA Training

IDEM utilizes the state's Pay-For-Performance based system for job training decisions and documentation. At the end of each calendar year staff are rated on the degree to which their overall performance conformed to the eight basic competencies for which all agency staff are held accountable. They also are evaluated regarding how they complete each of four or five other tasks they and their supervisor jointly agreed would be completed.

The Indiana State Personnel Department provides computer-based training through Monarch SAP SuccessFactors. Training includes select Linked In Learning, Indiana State Personnel Department, Indiana Office of Technology (IOT), and state of Indiana modules.

4.0. Procurement of Items and Services

Purpose – To document the procedures for purchased items and services directly affected by the quality of environmental decision making.

4.1. IDEM Purchasing Activities

The implementation of IDEM environmental information operations requires supplies, equipment, and professional services of appropriate quality. Procurement of these items follows a chain of review and approval which includes various levels of IDEM management, the Indiana Department of Administration (IDOA), and possibly the Office of Management and Budget or IOT. Requisition amounts under $2,000 can be approved by the IDEM purchasing director, amounts between $2,000 and $100,000 require the approval of the agency Chief Financial Officer, and a purchase of greater than $100,000 must be approved by the Commissioner.

4.1.1. Regarding the Purchase of Equipment and Supplies

Program management responsible for the environmental information operations authorize procurement staff to initiate requests for supplies and equipment, based on the specifications provided by technical staff. Once solicitations or RFPs are posted publicly, program staff evaluate the technical merits, guarantees, vendor technical support provided, and bids as the requests move through the PeopleSoft eProcurement module, receiving additional needs-based, technical, and budgetary scrutiny until final approval. Purchases may be based on bids from a list of the agency and IDOA approved providers or from a sole source provider when necessary and with the appropriate wavier. The purchasing program inspects all equipment and supplies prior to payment and use. Programs should consider recommended development and use of checklists to assist with the evaluation of supplies or equipment required to meet specific standards which, if not met, could impact outcomes. Equipment purchases may include service agreements, a copy of which must be retained so long as the equipment is in use; any associated contract is in effect; or pertinent retention schedule is in effect. Unsatisfactory purchases (whether for technical, quality, reliability, or other reasons) may result in product returns or in the removal of the noncompliant supplier from approved vendors lists.

4.1.2. Regarding Agency Contracting for Laboratory Analysis Services

Because IDEM operates only some of the types of laboratories needed to validate the data it uses, agency programs must often solicit and rely on outside laboratory contractors. Programs contracting outside laboratory services are required, under Indiana Code (IC) 5-22-9, to draft an RFP for requested goods or services to be solicited for any contract valued at $75,000 or more. Price is not the sole factor in awarding the contract.

Appropriate program staff review responses to RFPs for technical and QA qualifications, services offered, support provided, client references, and other qualifications. Upon provider selection, resulting contracts include formal work proposals identifying the numbers of samples to be analyzed; describe procedures for chain-of-custody and sample preparation; specify methods of analysis; sensitivity or detection limit requirements; sample and laboratory specific quality control practices; data report formatting; and other criteria required in the Scope of Work.

Each contract and grant agreement undergoes the following internal review:

- A check of the funding source ensures eligible funds are available.

The goods or services to be provided must be justified to ensure such purchase meets the goals of the primary grant funding and complies with applicable federal and state laws and agency policies.

- Program area staff ensure the vendor meets the technical specifications for use by program staff working on the project.
- The program technical staff ensures the contractor can meet the same U.S. EPA recognized, American National Standards Institute (ANSI) and American Society for Quality (ASQ) quality assurance and quality control standards IDEM staff would be expected to meet were it to be performing the same work. When this includes third party documentation through accreditations or certifications, the expiration dates associated with such documents should run through the end of the contracting period. If accreditations or certifications must be renewed during the contracting period, no analyses or related data generation should be run on samples provided by IDEM during the interim period when the laboratory is not accredited or certified. Entities subcontracted by an IDEM contractor must be able to demonstrate the same level of QA competency as the primary contractor.
- Program technical staff and the IDEM Office of Legal Counsel contracting attorney collaborate to ensure final contract language includes all necessary QA specifications. Program staff draft language, based on program needs and any applicable grant requirements, which establish the technical and QA requirements for the RFP and subsequent contract. An attorney may assist with this process and will review the final contract language before forwarding the draft to Operations Section of the Finance Division within the Office of the Chief of Staff, which assures funding is available. Afterward, the contract must receive final approval from IDOA prior to being signed.
- When work begins, further review occurs. Regardless of the funding source used by IDEM (internal, grant, or cooperative agreement), as work proceeds:
  - Each invoice for reimbursement is reviewed to ensure each vendor meets the requirements of the contract.
  - Each subrecipient proposal is reviewed and scored on how it meets the contract requirements. Funding is then approved for those contractors meeting the requirements.
  - When goods or services do not meet the terms and conditions of the contract, follow up reviews are conducted to determine whether the vendor will be kept on the eligible vendors list for future consideration as a provider, or whether the agency will simply disqualify them from future participation in contracting opportunities.
- Program technical staff review the project deliverables and approve or deny payment.
  - If project deliverables are consistent with the requirements and objectives of the contract or other agreement, the invoice is approved for payment.
  - If the request for payment is not approved, the appropriate program technical staff requests corrective action. Only after technical staff are satisfied with the work provided, or the corrections made meet requirements, is payment approved by IDEM's Financial Division.

4.1.3. Other Means of Determining Contractor Competency

In lieu of accreditation or certification, IDEM may rely on the following means of demonstrating competency:

- Results from on-going participation in proficiency testing or round-robin programs conducted by an external organization
- Reports documenting technical and quality system assessments conducted by an external organization
- Quality documentation such as:
  - Laboratory quality manuals
  - QMPs
  - Detailed SOPs or TSOPs describing their organization's quality practices
  - Descriptions of applicable instrumentation, sampling, equipment, method sensitivities, reporting practices, capacity, experience, staffing (e.g., education, job experience, training), and demonstrations of successful past performance, consistent with U.S. EPA's Forum on Environmental Measurements (FEM) Policy 2011-01, "*Policy to Assure Competency of Organizations Generating Environmental Measurement Data Under Agency-Funded Acquisitions*.

4.2. Ensuring QA Documentation Is Consistent with Contract Language

It is the responsibility of the IDEM program area initiating an environmental information operation to develop or provide a QAPP, or similarly appropriate QA documentation. This QAPP may be specifically referenced in the contract. The Office of Legal Counsel, which reviews the legality of the draft contract, ensures all the QA requirements identified by program technical staff, such as identification of the required methods, standards, techniques, and QC practices are adequately cited in the Scope of Work as contract deliverables.

IDEM programs strive to avoid inconsistences between the QAPP and Scope of Work, or circumstances when the greater part of the required QA documentation is in the contract rather than the QAPP. Thorough referencing ensures participating program technical staff and other interested parties' adequate access to all the relevant details of technical and QA documentation associated with the project, particularly if it is not compiled into one source. Persons viewing an IDEM QAPP may not have access to IDEM laboratory contracts, so QAPPs which reference contract language should attach the language, provide a direct URL, or provide other means of accessing the contract referenced.

4.3. Evaluating the Competency of Grantees or Volunteers Performing Sampling or Analysis on IDEM's Behalf

4.3.1 Grantees

Grantees are entities receiving federal pass-through grants only from IDEM. Requirements for technical competence are proportional to the funding provided via the grant or assistance program, and to the environmental and public health impacts of the data generated. Currently, only the OWQ Watershed Assessment and Planning Branch nonpoint source grant program has staff evaluating the QA planning of grant applicants and stressing their adherence to volunteer monitoring protocols. Consistent with the graded approach, the more technical experience each grantee brings to the project, the better the quality of their QA work plan. As a result, less funding is needed for training and QA document development, and more is available for project implementation, or for funding separate additional projects.

4.3.2 Volunteer Organizations

Some IDEM program areas accept and use environmental information generated by volunteers. Those programs should have in place measures assuring such voluntarily provided data is of sufficient quality to be included with other data the program generates or uses. For those voluntary organizations unable to provide third party accreditations, quality system documentation (QAPPs or SOPs followed), or other demonstrations of technical capability; the agency program areas involved should require or provide a level of QA training consistent with the principles of the U.S. EPA-endorsed graded approach, such as ~~U.S. EPA publication *EPA 841-B-96-003, September 1996*.~~ "Handbook for Citizen Science Quality Assurance and Documentation," U.S. EPA publication EPA 206-B-18-001, March 2019. The level of acceptable training and the confidence in the data voluntarily provided should be proportionate to the environmental and public health impacts of the decisions to be made using the data.

4.4. Regarding IDEM Grant Activities

Once an IDEM program area determines it will pursue a particular grant solicitation, staff develops an application package which includes a work plan describing in detail the proposed work to be done to fulfill the goals of the grant. The application package is evaluated by the grantor (generally a program within U.S. EPA) against the RFP or Request for Applications (RFA) of the grant opportunity to ensure it follows the parameters necessary for funding.

Federal grant programs require competitive state applicants to have quality system documentation in place in the form of an approved QMP, or a comparable surrogate. The level of QA documentation required for each grant generally is established in the terms and conditions set by the grant. If environmental information operations are involved, a project QAPP specific to the work proposed may be required, usually within 90 days of the grant award. Any contractual agreements associated with grant funding require the same level of justification as is required in the primary grant agreement, and any contractors must meet the same federal requirements as the grant awardee.

Even when onsite audits or review of the laboratory QA systems are not specifically required by a grant program area staff may still perform them. Agency QA staff advise staff still must make certain contracted laboratories have in place, minimally, a third-party accreditation, or other proof they are qualified to competently complete the work for which they were hired with grant funding.

For projects closely paralleling work done under an existing agency or program QAPP, IDEM staff may instead opt to develop a sampling and analysis plan which provides project specific descriptors, locational information, and site conditions, but relies on the sampling and analysis methods and data assessment criteria already established in the existing QAPP. This option allows for program compliance with grant QA documentation requirements while providing for consideration of the appropriate level of documentation required in proportion to the degree of threat to human health and the environment consistent with the graded approach.

4.5. Other Procurement Related Issues

4.5.1 The Graded Approach

Whatever the funding source, IDEM program technical and QA staff strive to use the graded approach to ensure the quality of data generated for use in agency decision making is as demonstrably accurate as possible, while also proportionately balancing

the dollar costs associated with completing environmental information operations and conducting the subsequent actions required. IDEM management maintains a key benefit of a quality system is one which allows skillful use of the graded approach in a manner which both prevents adverse environmental conditions from harming, or further harming human health and the environment and at the same time avoids the wasteful spending of scarce resources on either inadequate or overly thorough action.

4.5.2 Using Quality Assurance Project or Program Plans

The lead IDEM program area doing or overseeing sampling, analysis, or other QA related task, is responsible for ensuring a QAPP or other appropriate QA documentation is developed and approved prior to the start of any field or laboratory work.

5.0. Documents and Records

Purpose – To document appropriate controls for quality-related documents and records determined to be important to the mission of IDEM.

A majority of all QA documents and records are developed by program area technical or administrative staff with oversight, review, and approval from agency QA staff. QA documents applicable agencywide are developed primarily by agency QA staff, with program input. QA maintains the same standards for quality, objectivity, utility, and integrity in the information used and disseminated by IDEM, as identified in the U.S. EPA Office of Environmental Information's October 2002, *Information Quality Guidelines*.

All IDEM QA program documents and records are stored in SharePoint™ libraries. Some agency program areas also store QA-related, but program-specific instructional, guidance, and policy documents in SharePoint™ folder structures they control. Some program specific documents are not provided to agency QA staff for inclusion in the agencywide QA SharePoint™ library. The agency QA program, and each agency program area maintaining folders of QA-related materials within SharePoint™ is required to develop and post therein a site map to identify the name and existence of each of the various SharePoint™ subfolders within their control, to facilitate access and use by all appropriate agency staff. Each such site map should provide an overview of site content, with hyperlinked "short-cuts" to each identified subfolder.

5.1 Process for Identifying QA Related Documents and Records

Any agency activity involving environmental information operations (the gathering, analysis, recording, or use of environmental information) is considered part of the IDEM quality system. Use of environmental information can include the design, construction, and operation of technologies to prevent contaminants from entering, or to remove them from, the environment. IDEM quality system QA documents include:

- All documents, templates, trainings, and other materials developed by agency QA staff for use in the QA system
- All requirements or guidance documents developed or supported by U.S. EPA and used by the agency
- All program documents associated with environmental information operations submitted to agency QA staff for tracking, review, and approval
- All program documents associated with administrative processes submitted to agency QA staff for tracking, review, and approval

Specific types of documents associated with agency quality system activities may include:

- The IDEM QMP
- Program QAPPs (intended for repeated use on essentially identical projects), or project QAPPs (onetime, at specific locations during specific times projects)
- QAPP-related work plans, sampling and analysis work plans, sampling plans
- SOPs and TSOPs
- Forms, generated by program staff, used to record the implementation of environmental information operations activities
- Forms, generated through IARA Forms Management which collect personally identifying information
- Related QA training materials

5.2 Agency Documentation Requirements

The documents, which inform agency staff of QA processes to be completed, and protocol and requirements to be met, are developed and managed as follows:

5.2.1 Document Preparation

The QA manager and agency QA staff are responsible for the development of QA documents for use agencywide, or by multiple agency programs. Program management determines when their staff should develop QA documentation for environmental information operations within their respective programs. However, agency QA staff may suggest to program management additional QA documentation which might be useful or required.

When program managers determine or when U.S. EPA or other external entities funding an environmental information operation require QA documentation for a project- or program-level environmental information operation, such program management shall assign staff which will be responsible for its development. It is recommended assigned staff follow the instructions in templates developed and approved by the agency QA manager. Each template includes information on the use of flowcharts, screenshots, schematic diagrams, and other visual materials which may augment document text.

Generally, the type of QA documents prepared by program staff are QAPPs, work plans, or technical or administrative SOPs. They also generate work summaries for activities not needing a more formal SOP. Program staff directed to develop, or update a project- or program-level QAPP should use one of the agency QAPP templates available in Quality Assurance Templates available from the SharePoint Quality Assurance (QA) System Tools page. Although the use, or at minimum, the incorporation of appropriate components or principles of one of these two provided templates is required, staff developing the QAPP have significant latitude. The amount of latitude is consistent with the U.S. EPA supported “graded approach” for applying such components to the degree they deem necessary to achieve the level of detail and data precision necessary to adequately address concerns regarding protecting public health and the environment, justifying the costs associated with implementation of the environmental information operation itself, or of any subsequent corrective actions based upon its finding; and maintaining a defensibly appropriate balance between those two concerns; safety and cost.

Similarly, staff charged with the management of an environmental information operation are hereby advised of the benefits of using the QA staff-developed IDEM QAPP Report Template available as Appendix B, in the IDEM QAPP Template. Completion of this template immediately at the conclusion of an environmental information operation or literature review of existing data by the QAPP project management, will capture in a single document the preponderance of metadata. Possible future uses of the metadata include use by a party interested in rechecking the data and use for comparison or incorporation into a new study. Staff should consider storing QAPP Reports in an electronic location accessible to all future data users internal or public.

5.2.2 Document Review

Once program management determines a draft QA document is ready, IDEM staff submit it for agency QA review, preferably, through the agency SharePoint™ Inbox or as needed, email systems. QA staff review the draft documents for:

- Alignment with the agency QMP and U.S. EPA's ANSI/ASQ E-4 based expectations and requirements, or adequate explanation of why expectations and requirements are not applicable.
- Formatting, grammar, and consistency with agency documentation and branding standards.
- The correct document number.

The QA reviewer may insert suggested changes to the draft text which can be accepted or further modified by program staff. The QA reviewer may provide questions or comments about the technical content, the logical flow of the document, or the reasoning regarding the planning of the activities described. The intention of the questions or comments is to prompt further program consideration of how to increase document clarity and enhance adherence to quality standards.

The review process ensures the final revision is consistent with agency QA document standards and appropriately reflects technical procedures. At which time, the draft document is finalized and signed by program management and QA staff. Section 2.2.3 Quality Assurance Program Plans describes the various QAPPs used in the agency and Section 2.2.6 Work Plans describes some of the variability in the document review process.

5.2.3 Document Issuance and Control

Once a document is approved, QA staff post it in the agency's SharePoint™ QA Library.

The Word versions are stored in the SharePoint™ IDEM QA Library are the official agency version and are available for copying by their respective program staff at some future date when further changes may be required. The QA Library is protected by group permission levels. Each permission level allows for a different set of available actions in the library.

Each document has a unique document number for each office, branch, section, a document number, name, date, and revision number. The properties of the document are used as metadata with SharePoint which can be used for storage and sorting functions. Documents typically are in effect for 3-5 years. In a documents final year, it can be flagged as due for revision in the upcoming year if necessary. Expired documents are stored within the document history of a more recent revision while document no longer in use are stored as archived documents.

5.2.4 Document Maintenance

The agency QA manager oversees the maintenance of the IDEM quality document management system, under which agency QA staff ensures each quality document:

- Is assigned a unique identification number.
- Is authorized for only a specific period, identified in the 5.2.6. table.
- Is reauthorized at the conclusion of its effective period, as appropriate.
- Is moved from the active to the archived folder of the QA SharePoint™ library.

The agency QA manager and staff maintain QA specific training materials, templates, and support documents.

5.2.5 Document Use

Program area management is responsible for ensuring any work described by an authorized agency QA document is performed by program staff in a manner consistent with the document. QA staff may assist with field audits when requested.

5.2.6 Document Revision

If substantive changes occur to a statute, rule, method, or other resource upon which a quality document is based, the affected document should be immediately revised. A QA document under revision is subject to the same preparation, review, and issuance requirements as outlined in 5.1.1., 5.1.2., and 5.1.3.

Agency QA documents are considered in effect consistent with the following schedule (Figure 10), unless regulatory or process changes occur.

Figure 10 Effective Time Frames for IDEM QA Documents

QA Document	Maximum Authorization Period
Quality management plan	Five years*
Administrative and technical SOPs	Four years*
Project QAPPs	One year or the same timeframe as any associated funding or related contract or grant cycle
Program QAPPs	Five years* (Possibly perform and document a review each year**)
QAPP related work plans or sampling plans (Time or location specific data gathering performed under an existing QAPP)	End of the field season, (unless QA staff approve use for up to one additional season, when following the same parameters)
Policies	Should be reviewed annually for consistency with federal, state, and agency requirements; and revised and re-approved as appropriate.

* Per U.S. EPA requirements, all documents require revision when significant changes to supporting laws, regulations, associated funding cycles, programs, projects, technical requirements, or processes occur before the end of the maximum period.

** The documented review may state: “After review, no significant changes are required.”

5.3 Agency Record Requirements

As listed in 5.1., forms used to record the implementation of environmental information operations activities may be considered QA documents. Generally, these forms are generated by the program areas and when required, with appropriate state forms management oversight. They are for use during the conduct of work planned in QAPPs and other QA planning documents. Many of these forms such as field sheets, chain of custody forms, and bench notes (on forms developed by the labs) are of the type used during environmental information operations (or QAPP) implementation and record:

- When, where, how, and by whom work was performed.
- Conditions in which work was performed.
- Techniques employed for sampling.
- Methods of analysis used.
- Irregularities associated with completion of the work.
- How samples were transported.
- How samples were prepared for analysis.
- Who had custody of the samples at each stage of the process.

5.3.1 When Documents Become Records

Once an environmental information operation has begun, the plan of how the operation was to be conducted and the related completed forms recording how and under what circumstances the plan was carried out become records. Archived or previous revisions of QA documents implemented as written and the associated completed forms, may no longer be altered. The exception is when the approved QAPP is subsequently revised prior to continued use during the completion of the same project. In which case, each version used to implement the project become

part of the record for the project and require preservation. In addition, when the QAPP is a program QAPP, which can be reused for any number of additional similar but separate projects, it becomes a part of the permanent record for each project for which it is used.

5.3.2 Ensuring Records and Documents Reflect Work Completed

Element 8, Implementation of Work Processes, documents IDEM measures in place to ensure agency work completed reflects agency planning. As stated in 5.3.1., the QAPP or other QA planning document followed and the associated completed forms each immediately become unalterable records, ensuring the environmental information operation planning and recorded actions are frozen in time. Field forms, which must be completed in ink or in a waterproof media when necessary; logbooks completed only in ink; or use of electronic tablets and software which cannot be altered once data is entered all ensure IDEM's final records of environmental information operations accurately reflect the work performed.

QAPPs, technical and administrative SOPs, and other QA planning documents remain dynamic because they may be used again for additional, similar, future projects. However, the agency properly controls and limits access to all previously used versions of planning documents and only allows access to currently effective versions of planning documents and forms further ensuring agency records of environmental information operations accurately reflect work completed.

5.3.3 Records Management

Record management practices are driven by the Indiana Access to Public Records Act (APRA) (IC 5-14-3), under which a public record is "any writing, paper, report, study, map, photograph, book, card, tape recording, or other material which is created, received, retained, maintained, or filed by or with a public agency and which is generated on paper, paper substitutes, photographic media, chemically based media, magnetic or machine readable media, electronically stored data, or any other material, regardless of form or characteristics." IDEM manages its records in a manner consistent with the requirements of the IARA in 60 IAC and with related agency policies.

IDEM specific policies on data, documents, and record management include:

- The Records Management Policy applies to all IDEM staff regarding the management, storage, and disposition of records including papers, electronic documents, emails, videos, films, and photographs. The policy adopts agencywide records retention policies, provides for records disposition schedule training, and provides guidance on compliance with state and federal records management and confidentiality laws and rules. It also ensures the agency's records are microfilmed or are uploaded into the Virtual File Cabinet (VFC). The VFC is IDEM's electronic digital image document repository, in which electronic document files received or created by the various agency programs are stored and accessible in part or in full to agency staff and the public for the proper length of time and are destroyed only when it is appropriate to do so.
- The E-Mail Management Policy sets requirements for managing email for evidentiary purposes and labeling and handling confidential emails.
- The Records Requests Policy ensures a timely and complete response to public record requests.

- The Litigation Hold Policy (Federal Rule of Civil Procedure 34, Indiana Trial Rule 34) ensures documents relevant to pending or reasonably anticipated litigation are preserved consistently with applicable state and federal trial rules.
- The Posting Public and/or Legal Notices on the Agency Websites Policy sets the approval process for posting agency documents.
- The Personal Information Disclosure, Prevention, and Response Policy and the Social Security Numbers Confidentiality Policy protect the personal information of IDEM staff and the public.
- The Forms Management Policy ensures all IDEM forms meet Americans with Disabilities Act formatting standards, are consistently applicable with state regulations, and are authorized by the state forms management office.

5.3.4 IDEM Record Storage

All state and agency records are subject to record retention schedules approved and maintained by IARA. These schedules ensure records are retained for as long as legally required and provide timetables for determining when certain obsolete records may be destroyed or deleted. The IDEM Office of Legal Counsel reviews draft records retention schedules before they are sent to the IARA for approval to verify all applicable state and federal record keeping requirements are met. Electronic, and any paper agency records which may exist, are retained based on IARA retention schedules while records in the VFC are currently maintained indefinitely. It is recommended, as program staff are loading QAPP or environmental information operations records into the VFC, they also record the indexing information for the data in the final QAPP Report Template. This will facilitate the recovery of such records by future data users who may need to validate the data for other uses.

5.4 Chain of Custody Practices

Each agency program involved with collecting samples has chain of custody practices in place which include:

- Individually labelled custody seals on sample containers
- Adequate preservation and packaging of samples
- Appropriate holding time requirements to preserve sample representativeness
- Custody forms accompanying samples from the sampling site to the laboratory ensuring against holding time exceedance or tampering with collected samples. The forms record the chain of all persons who had legal possession of the samples during the transport processing.

Program specific IDEM chain of custody practices:

- OAQ Monitoring Branch chain of custody procedures are outlined in Section 12 of the five branch QAPPs.
- OLQ Science Services Branch, which provides the sampling setup packets for OLQ Remediation Services Branch, Compliance Branch, and Emergency Response Section, follows the SW-846 chain of custody protocol identified in the Science Services Branch Chemistry Services Section Field Documentation Requirements SOP.
- OLQ Remediation Services Branch Federal Programs Section follows U.S. EPA chain of custody requirements.
- OWQ Drinking Water Branch relies on the chain of custody process employed under the Drinking Water Certification Program.

- OWQ Watershed Assessment and Planning Branch relies on the chain of custody process as documented in the 2017 Surface Water Monitoring QAPP.
- OPS Northwest Regional Office
  - Water samples collected for *E. coli* enumeration as part of the Lake Michigan Beaches Monitoring and Notification Program employ chain of custody procedures as documented in the program QAPP and associated SOP.

5.5 Agency Roles and Responsibilities Regarding QA Documents

5.5.1 IDEM Management Shall:

- Authorize agency QA documents.
- Ensure staff follow QA planning documents as written through field audits, supervisory surveillance, or other QA associated oversight.
- Designate program staff to acquire the training to develop and implement needed program QA documentation.
- Ensure QA documentation under development is not reviewed and approved by the same staff which developed the documentation.
- Ensure the review of existing program QA documents.

5.5.2 IDEM Program Staff Shall:

When working with agency QA staff to develop a QA document:

- Utilize only authorized versions of quality documents.
- Implement QA documentation as written, recording the implementation on the appropriate forms identified in the planning document.
- Record on the provided forms any deviation to implementation which may occur, along with the reason for and conditions under which the deviation occurred.
- Track their individual QA qualifications as required in 3.2.3.

5.5.3 Agency QA Staff Shall:

- Maintain convenient staff access to all agency QA documents.
- Advise program staff of documents requiring review or update.
- Develop and maintain access to templates, training, and other resources required by staff tasked with QA document development.
- Review all new and updated program QA documents submitted and approve as appropriate.
- Upload to EPA R5 QA Track all IDEM self-approved QAPPs and other QA documents which may be submitted.
- Maintain an up-to-date archive of past QA documents.
- Urge the development of QAPP environmental information operations reports by the lead investigator documenting where all documents, completed forms, raw data, and other products of QAPP environmental information operations results are filed or stored, to facilitate easier recovery of the information (metadata) for future data users.

6.0. Computer Hardware and Software

Purpose – To document how IDEM will ensure computer hardware and software satisfy the organization's requirements.

IDEM's Information Services and the IOT share responsibility for the deployment, operation, maintenance, and control of IDEM computer hardware and software resources.

6.1. Processes For Maintaining Computer Hardware and Software

Indiana Office of Technology is responsible for processes associated with the development, installation, testing (including verification and validation), use, maintenance, and documentation regarding computer hardware and software used by IDEM. Under IC Title 4, Article 13.1, IOT has consolidated the electronic data and information infrastructure of all state executive branch offices under its control. IOT's role is to provide the following services to IDEM:

- Application development services
- Hardware, software, and security for desktop, laptop, tablet, and network devices
- Desktop or laptop PC refresh and support
- Database services including database hosting and administration
- Enterprise shared services, including SharePoint™, Oracle application server, and Citrix (remote access services)
- Field operations, including PC, printer, network, and remote-server support
- GIS services which enable coordination with federal, state, and local governmental units
- Mainframe system administration
- Network maintenance and management, including voice and cellular phone services, network connectivity, adds, moves, and virtual private network remote access
- Professionalize project management partnering with IOT's customers
- Server administration and infrastructure support
- Service Management: Implementation of Information Technology Infrastructure Library best practices
- Tier 3 Services: Global changes, security, software installation, Windows administrative tasks, and troubleshooting desktops or laptops.

In 2015, the Indiana Office of Technology received a Special Achievement in GIS award at the Environmental Systems Research Institute (ESRI) Users Conference in recognition of Indiana's Data Sharing Initiative.

IDEM's Information Services program addresses agency specific electronic data and information issues such as:

- Preparing and expediting requisitions for hardware
- Controlling the purchase and management of licenses for commercially available software
- Managing agency application data
- Supporting in-house and third-party development of software applications
- Managing, developing, and supporting in-house application development
- Controlling access to agency electronic resources
- Interacting with agency and state procurement staff

6.2. Assessing and Adjusting to the Impact of Changing User Requirements

Agency hardware and software is selected specific to user requirements. When user requirements change, the Information Services director ensures the necessary changes are made to the hardware or software capabilities. These changes are facilitated by in-house:

- Business Systems Consultants
  - Serve as the point of contact with agency programs.
  - Establish application requirements and draft user documentation.
  - Provide training to users.
- Project managers (PMs)
  - Play a central role in developing medium to large, complex, multiprogram area enterprise application projects providing developers with background information on the software applications.
- The Applications Development Team, whose members include Business Systems Consultants and project managers
  - Create and manage IDEM-specific application software. In the teams' capacity they:
    - Prepare and expedite requisitions.
    - Manage and interact with contracted third-party software developers.
    - Create or develop, test, and manage IDEM-specific application software.
    - Perform database administration, security, installation or configuration, back-up, and recovery.

6.3. Evaluating Hardware and Software

- IDEM Information Services evaluates hardware and software in conjunction with program management and staff to ensure it meets program needs.
- IDEM Information Services is approved to use commercial off-the-shelf or U.S. EPA Central Data Exchange Services, Shared Cross Media Electronic Report Rule electronic reporting approaches for software such as its:
  - National Network Discharge Monitoring Report System
  - Electronic Sample Entry Verify used by the IDEM water program
  - Electronic Authentication System, which is used by each of the IDEM offices of air, land, and water
- Information Services performs commercial off-the-shelf software (e.g., Environmental Systems Research Institute (ESRI)-ArcGIS) testing. Procurement is handled in conjunction with IOT and IDOA.
- Procedures and enterprise software such as Microsoft Office or McAfee Virus procurements are under IOT control.
- In-house software development (e.g., National Environmental Information Exchange Network Node 2.0 and Data Flows for moving data from IDEM to U.S. EPA) testing is done according to the following:
  - Software Development Life Cycle
  - Data Standards (EDSC/Security, etc.,)
  - IDEM's testing procedures – First, unit testing by developers to make sure requirements or scope or deliverables are met. Then, a second unit User Acceptance Testing via plan by project managers.
- Third-party created software (e.g., Air Compliance and Enforcement System (ACES)) testing is done through IDOA contracting or procurement policies and procedures

and the above-listed Software Development Life Cycle, Data Standards, and IDEM testing procedures.

- Desktop hardware testing is done through IOT and adheres to State Quantity Purchase Agreements and the Exception Process.
- IOT controls server hardware and network environment hardware testing processes.

6.4. Ensuring Data Meets Applicable Standards

Protecting the integrity of its environmental information is essential to establishing and maintaining the agency's culture of quality. Working together to serve the electronic data and communications needs of the agency, IOT and IDEM's Information Services provide the equipment, services, procedures, and policies necessary to achieve the goal. The support they provide ensures compliance with the following categories of standards and practices:

6.4.1. Data Standards

IDEM uses the following data standards, which can be applied to any site or contact information:

- Database Standards Guide
- TEMPO360 Data Standards Guide
- TEMPO360 Data Standards USPS Appendices

6.4.2. Standards for Ensuring the Quality of Data Uploaded to U.S. EPA

IDEM programs which collect data subsequently shared with U.S. EPA to populate its publicly used searchable databases, such as Envirofacts or Enforcement and Compliance History Online work closely with their U.S. EPA counterparts to provide data consistent with U.S. EPA standards intended to facilitate environmental information sharing between the agency and the states, tribes, and other U.S. EPA partners. These databases include:

- Facility Registry System
- Integrated Compliance Information System
- Toxic Release Inventory
  IDEM internal database:
  - Multimedia Enforcement Tracking System
  - TEMPO
- OAQ ACES
- OAQ Data Management and Display System
  OAQ internal databases
  - HAPs
  - ToxWatch Monitoring
  - Meteorological Data
- OLQ Resource Conservation and Recovery Act Information
- OLQ Solid Waste Management Information System
- OLQ Geographic Information System (GIS) Data
- OLQ Global Positioning System (GPS) Data
  OLQ internal databases
  - Sampling Database
- OWQ Assessment Information Management System
- OWQ Safe Drinking Water Information System
- OWQ Federal Integrated Compliance Information System

- OPS Northwest Regional Office
  - Beach*Alert* Monitoring and Notification portal data is processed into two XML files, on for notification data and one for water quality data. These are uploaded to the appropriate U.S. EPA servers as described in the accompanying program QAPP.

6.4.3. Ensuring Intra-IDEM Data Transfers Protect Data Integrity

Indiana INFODump is a browser driven network composed of informational web sites and services. It provides secure connectivity to internal applications and data for state employees and business partners located outside of the main campus, as well as those working at field offices and remote sites. Among the services it provides are several which facilitate the safe transmission of secure material and data among IDEM staff around the state. These include:

- Citrix – A centralized application management and delivery mechanism.
- Secure File Transfer (Secure FTP) – A program which uses a secure shell cryptographic network protocol to transfer files and encrypts both commands and data.
- Virtual Private Network – Secure method of transporting data from a remote location over the Internet.

6.4.4. Data Security Standards

The following components ensure protection of the integrity of IDEM electronically managed data:

- IOT put into place a Removable Media Policy on August 21, 2017, to further reduce the risks of data loss or theft resulting from introduction of viruses or malware or spreading through the state system by using external drives like USB flash drives, external hard drives, or camera cards. They worked with agency management to identify all staff needing read and write access to external drives.
- Office 365, a Microsoft service procured by IOT, includes access to Office Suite and SharePoint™ and is enabled via cloud services. Its certifications include:
  - FISMA/FedRamp, Federal Information Security Management Act (FISMA) which provides provisional authority to operate for the Federal Risk and Authorization Management Program (FedRAMP), mandatory for cloud services used by federal agencies
  - Federal Information Process Standard Publication (FIPS) 140-2 compliance by way of underlying cryptographic modules used in Microsoft products.
- IOT Information Security Framework is an information security network developed and supported by IOT which applies to all Indiana state agencies. It sets policy, establishes control objectives, and references standards which secure Indiana government information assets. IOT Information Security Framework's National Institute of Standards and Technology (NIST) Cyber Security Framework Policy and Standards encompass the following:
  - Security Policy Overview
    The principles advanced by the IOT Security policy:
    - Ensure confidentiality, integrity, and availability of sensitive information.
    - Provide for the protection of proprietary information.
    - Ensure agency staff accountability for information assets and resources entrusted to them.
    - Ensure compliance with legal and regulatory requirements.
    - Minimize risk to the state's information resources.

- Review and Evaluation of State Policy
  All new State-wide IOT policies and standards must first be reviewed by a policy management committee and approved by the State's Chief Information Officer.
- Compliance with the State's Policy and Standards
  Demonstrating compliance provides assurance information is appropriately protected. State agencies not completing annual compliance evaluations are considered out of compliance.
- Acceptable Use Policy (Information Resources Use Agreement)
  All executive branch personnel, state employees, and long-term contractors (greater than 30 days) are required to electronically acknowledge they understand and will comply with the Information Resources Use Agreement, which establishes information resources use requirements and limits, and makes clear the consequences of noncompliance.
- Exceptions
  Any request for exceptions must be signed by a state Information Technology or Management Information System Director, or above.
- Security Mentor, Inc.
  Ensures all IDEM staff participate in mandatory, contractor provided security training addressing all electronic media which could provide vectors into the agency data management and storage system.

6.5. Agency Staff Responsibilities

Agency management and staff shall be cognizant of and compliant with all current IOT and IDEM Information Services policies regarding the use of, and restrictions associated with the electronic hardware and software used to manage and preserve agency data, which could otherwise be vulnerable to loss or unauthorized manipulation. Staff also shall remain current with all IOT and Information Services trainings offered for this purpose.

7.0. Planning

Purpose – To document how individual environmental information operations will be planned within IDEM to ensure data or information collected are of the needed and expected quality for their desired use.

7.1. Planning Environmental Information Operations Using a Systematic Planning Process

7.1.1. Agency Reliance on Systematic Planning

IDEM programs which may require the systematic planning of environmental information operations include:

- The cooperative IDEM-EPA PPA
- The Clean Air Act required State Implementation Plan development
- IDEM issued permits (may require evaluation of effectiveness)
- The National Priorities List of contaminated sites within the state
- The Indiana State Cleanup Program implemented by Office of Legal Counsel
- The conceptual site models developed by contractors working under the IDEM Leaking Underground Storage Tank (LUST) program and subject to review by Petroleum Section staff
- Remediation programs to facilitate the productive ongoing use or reuse of properties
- The Indiana Water Quality Monitoring Strategy
- The terms and conditions of funding grants received by IDEM

These and other programs regularly implemented by agency staff involve and rely upon, the acquisition and use of reliably accurate data. The accuracy of any data is always subject to some degree of error; be it sampling error, laboratory error, or assessment error.

When a high degree of certainty exists, the data generated by a particular measurement correctly reflects real world conditions, a similar level of confidence exists in the environmental decision made using the data. Conversely, when a reduced probability exists a measurement is correct, a similarly lower level of confidence exists in the data.

7.1.2. Details of the IDEM Systematic Planning Process

The tool most central to ensuring the success of an environmental information operation is the planning process used to organize it. As stated in 2.2., each IDEM program is required to incorporate the principles of systematic planning when organizing information operations. Consistent with the actions outlined in the *U.S. EPA Guidance for the Data Quality Objectives Process (QA/G-4),* staff responsible for planning an environmental information operation should adequately address the following:

- **Scoping** – What are the right questions to be asked and answered at the conclusion of the operation to identify how the data collected will be used to solve the problem?
  - What conditions are to be evaluated (what, when, where, how, why, and to what extent or affect)?
  - How will the evaluated conditions be compared to the baseline conditions to determine:
    - The extent of risk posed to human health and the environment

    - The degree to which it will be necessary to restore conditions, or limit or prevent additional changes?
- **Organizing** – Which stakeholders, landowners, suppliers, laboratories, or others need to be involved, and what is expected of, and needed from, each?
- **Staffing** – Which staff will be involved in the operation, and what are their roles, responsibilities, and associated training needs?
- **Scheduling** – What resources are required versus what resources are available (make a budget)? What scheduling options will be required to counter interferences like lack of access, weather, or factors which could be reasonably anticipated to impact the study? What schedule of field checks or audits ensure the plan is producing the desired results (data), or to prompt necessary mid-project adjustments?
- **Measuring** – What should be measured? Why is the chosen target the correct one (product vs. by-product, precursor vs. result, presence of a compound or nutrient vs. biotic impact)? What field procedures will be used? What equipment will be needed to take such measurements? What are any associated technical considerations?
- **Determining a confidence level** – What number and types of quality control samples need to be collected to ensure the data collected is appropriate for the decision? Why those are the appropriate types of control samples? What criteria the sampling results should meet to ensure an adequate confidence interval or percent chance of error? Agency QA staff recommends referencing the menu of Quality Control Sample types provided in the U.S. EPA Region 9 manual "Laboratory Data Review For Non-chemists," of October 2014, also available as Appendix A of the IDEM QAPP Templates, on the agency QA SharePoint site.
- **Sampling parameters** – Where and when will samples be collected? How will the sampling locations or sources (for existing data) be determined? What sampling activities need to be recorded? What are the holding time limits? What are the appropriate sample preservation requirements? Are adequate chain of custody procedures in place to protect sample integrity?
- **Sample analysis** – What and describe sample analysis methods and requirements (either in the field or the laboratory) to be used? How will the resulting data (or the acquired existing data) be verified, validated, tested against pre-established performance criteria, and assessed against its intended use?

7.2. IDEM Office Specific QA Planning Processes

Some of the most extensively developed and frequently used products of the systematic planning process generated by agency staff are those QA inclusive processes intended for use as part of an environmental information operation. Especially QA processes and associated tools required to conduct field sampling and analysis.

7.2.1. QA Planning Within the Office of Air Quality

The Monitoring Branch develops, and maintains:

- Five program QAPPs
- TSOPs
- A Strategic Plan

The branch also relies on the U.S. Ambient Air Monitoring Quality Assurance Guidance Documents web page..

7.2.2. QA Planning Within the Office of Land Quality

The Science Services Branch contracts with various environmental laboratories to provide analysis of samples collected from air, soils, sediments, water, wastes, and soil gas. In lieu of each OLQ field project manager having to individually conduct a systematic planning process for each site assigned to them, they contact OLQ Science Services Branch staff using the OLQ Analytical Services Guide (Appendix F) to conduct the planning process.

Science Services Branch staff use the information provided by the project manager to make all the necessary arrangements for the sampling event. They prepare a full sampling kit for field use and schedule the required sample analysis at the properly accredited contract laboratory.

Once the raw data has been returned from the laboratory, it is verified, validated, and assessed by OLQ Science Services Branch chemists. The project manager then follows the systematic approach outlined in the OLQ Remediation Program Guide and RCG to determine the need for additional action.

7.2.3. QA Planning Within the Office of Water Quality

The two primary planning tools used by the OWQ Watershed Assessment and Planning Branch, which gathers Indiana surface water data are:

- 2017 QAPP for IN Surface Water Quality Monitoring
- Indiana Surface Water Quality Monitoring Strategy

All Watershed Assessment and Planning Branch monitoring projects are evaluated through the Water Quality Monitoring Strategy review process to determine if they continue to meet OWQ and IDEM level objectives. Projects are reviewed and discussed for potential outcomes, value, and use of resulting data. The planning process in the IDEM OWQ Monitoring Strategy includes:

- Staffing
- Existing and needed equipment
- Funding sources
- Coordination with other ongoing projects
- External resources and assistance, including partnering or outsourcing
- Training needs
- Data storage, management, and usability

7.2.4. Other "Embedded" QA Processes

QA practices are also incorporated or built into what are primarily thought of as technical processes. Such embedded QA practices can be found in technical processes developed by either IDEM or U.S. EPA.

For example, permitting programs generally implement a pre-application process, especially for larger or more complex projects. During the process they may meet with stakeholders to discuss differing interpretations of permit rules, the appropriate assessment of applicant submitted data, or which calculations should be employed to predict impacts or establish permit limits. These discussions resolve the same types of issues as the systematic planning process. They only change when the standards or associated processes changes.

7.3. Documenting Planned Environmental Information Operations

Consistent with the IDEM culture of quality, documenting environmental information operations planning, and the review and approval processes associated with it, are the central feature of the IDEM QA system.

7.3.1. Planning Documents.

QAPPs are a central focus of the IDEM QA system, including:

- Project QAPPs document individual, single location, single issue, one time only studies of one environmental problem. Several current project QAPPs are identified in 2.2.5.
- Program QAPPs 2.2.3. detail repetitive environmental information operations following the same approach to planning as a project QAPP, except the same type of study is done repeatedly, with only the study location changing.
- QAPP related work plans, a hybrid QA document are also described in 2.2.6.
- SOPs and TSOPs reflect program level consensus-based processes, best practices generally encompassing the same principles central to the systematic planning process.
- In some instances, the QA planning component already is established by statute or rule. For example, the Indiana drinking water program, overseen by IDEM and the IDOH, requires each public water system demonstrate compliance by ensuring samples collected by a competent person are analyzed by a certified laboratory using Safe Drinking Water Act approved methods.

7.3.2. IDEM QA Review of Systematic Planning Documentation

Agency QA staff reviews and approves any new or revised QAPP. Therefore, to ensure a productive and timely review, agency program staff charged with developing a new QA document may want to consider enquiring with agency QA staff during the planning phase of document development. Particularly if they have questions about document naming and numbering, document formatting, available templates and resources, review turn-a-round times, or QA content expectations which could otherwise come up during the review process; especially if developing a QAPP. Agency QA staff participation in the planning phase also may help alleviate the need for significant last-minute revisions which could delay timely document approval or submittal. Additionally, work described in a QAPP must not be started before the QAPP has been reviewed and is approved by agency QA staff or R5 EPA as applicable.

7.4. Evaluating and Qualifying Data

The following IDEM programs evaluate and qualify data:

- OAQ monitoring employs the procedures established in the five EPA R5 Air and Radiation approved QAPPs. (7.2.1.)
- OLQ staff review and prepare reports on the laboratory data used by project managers and management to make decisions consistent with the RPG and RCG OLQ program guidance described in 2.2.4.
- OWQ Drinking Water Branch staff review laboratory contract data for suitability of use.
- OWQ Watershed Assessment and Planning Branch staff review and characterize the quality of laboratory data, consistent with the 2017 QAPP for Surface Water Quality Monitoring and the Biological Community and Habitat Measurements QAPP.

Agency QA staff intend to emphasize training for appropriate environmental information operations staff, in the evaluation for use of both laboratory packets and existing data using materials including, but not limited to:

- *U.S. EPA (QA/G-5) Guidance for Quality Assurance Project Plans*
- *U.S. EPA (QA/G-4) Guidance for the Data Quality Objectives Process*, which includes U.S. EPA's Elements for Systematic Planning (Appendix E)
- *U.S. EPA (QA/G-8) Guidance on Environmental Data Verification and Data Validation*
- Training videos from the GLNPO QA Track Resources Training Library:
  - Reviewing Project-level Quality Documentation
  - Preparing Project-level Quality Documentation
  - Systematic Planning and Statistical Sampling Design
  - Systematic Planning and Quality Documentation for Projects Using Existing Data
  - Quality Assurance Strategies for the Use of Existing Data

7.4.1. The Value of Existing Data.

Per 7.1.2., the final step of the IDEM systematic planning process includes identifying how data; whether acquired through recent field sampling and laboratory analysis or is existing or secondary data; is to be verified, validated, tested against pre-established performance criteria, and assessed against its intended use. Because using existing data requires fewer resources, evaluation of the option should always be a part of the planning of any environmental information operation. For existing data to be most useful, it is vital it be accompanied by adequate information on how it was generated, what its purpose was, what field and laboratory methods were used to gather and analyze it, and whether adequate reporting exists on how the final data was verified, validated, and assessed for use. The successful implementation of a well-planned environmental information operation can facilitate reuse, or additional other use of data, allowing the agency to:

- Avoid the costs of additional sampling and analysis.
- Gain additional value from environmental information operations already funded.

7.4.2. IDEM Programs Which May Use Existing Data

Some IDEM programs evaluate applicant or permittee provided data as part of regulatory functions. However, the interest here is in those IDEM programs which incorporate existing data into predictive or comparative models to evaluate potential outcomes, and then use the data generated to support adjustments to regulatory requirements or identify measurably achievable potential environmental goals. Such agency programs include:

- Permitting and compliance programs using data reported to the agency.
- OAQ Air Programs Branch, which uses secondary data in the following processes:
  - Photochemical modeling analysis and review.
  - PSD air quality modeling
  - Mobile source modeling
  - Air quality forecasting
- OWQ Watershed Assessment and Planning Branch, which may use secondary data submitted through the External Data Framework in the following processes:
  - Clean Water Act Section 305(b) and 303(d) assessment and listing decisions
  - Clean Water Act Section 314 lakes assessments of trend and trophic state
  - Water quality modeling for total maximum daily load development

  - Demonstrating effectiveness of watershed restoration efforts funded by OWQ's Nonpoint Source Program
  - Demonstrating the effectiveness of watershed management plan or TMDL implementation over time (incremental improvements which meet U.S. EPA performance measures)
  - Supplementary information for use in planning and prioritizing OWQ monitoring efforts for TMDL development, Municipal Separate Storm Sewer System Program development and prioritization, watershed characterization studies, and other projects
  - Determining representative background conditions for the purpose of developing NPDES permits
  - Classifying waters for the purpose of determining the necessary requirements new permittees must meet to comply with antidegradation rules in Indiana's Water Quality Standards
- OPS Northwest Regional Office may utilize secondary data collected by other projects as inputs to beach predictive models, or to evaluate ecological conditions in the Grand Calumet River AOC and the Lake Michigan basin.

8.0. Implementation of Work Processes

Purpose – To document how work processes will be implemented within IDEM to ensure data or information collected are of the needed and expected quality for their desired use.

The IDEM quality system ensures the repeatability of IDEM environmental information operations. Peers from the scientific community challenging or using data generated by IDEM programs following the same QA documentation used by IDEM staff will get the same results from the same location. The QA culture being fostered by IDEM promotes the adequate planning, documentation, implementation, and recording necessary for the future review of environmental information operations by interested internal and external peers.

8.1. Ensuring Work Is Performed as Planned

IDEM programs have several measures in place to promote and support the thorough and accurate implementation of planned activities including:

8.1.1. Regular Calibrations of Field Equipment

To ensure the ongoing and consistent accuracy of field equipment, each program has in place requirements and processes, documented in TSOPs and equipment manuals which address equipment calibration. Each program also maintains logs documenting calibration activities.

OAQ Monitoring Branch QA Section maintains standards instruments used to certify the transfer standards agency field staff uses to calibrate the instruments at each of the field stations in the Indiana air monitoring network. It similarly certifies the transfer standards used by other public entities as well as some owned by permittees required to perform self-monitoring as a condition of their permit. Items which cannot be certified in-house are sent to an accredited laboratory for a NIST traceable certification.

OLQ Emergency Response, LUST, and Federal Site Investigations programs are the primary users of equipment requiring calibration. The Electronics Technician 1 position, embedded in the Office of Emergency Response, is responsible for the in-house calibration of dissolved oxygen meters, 4-gas photoionization detectors, and multimeters using NIST traceable gases. Equipment which cannot be correctly calibrated in-house is contracted to certified vendors.

OWQ Watershed Assessment and Planning Branch, the primary water program for gathering field data, performs or contracts regular calibrations of its field multiparameter data sondes, pH meters, flowmeters, turbidimeters, and other field equipment as described in the OWQ technical SOPs.

8.1.2. Use of Technical Standard Operating Procedures

IDEM maintains a library of TSOPs documenting field activities on equipment operation, sample collection, data logging of electronic sampling, packaging of samples collected, recordkeeping associated with field activities, and other processes relevant to the gathering of field data. 5.2 outlines the review and approval process. In addition, OAQ Monitoring Branch and OWQ Watershed Assessment and Planning Branch also maintain quality and field manuals documenting technical procedures associated with environmental information operations.

8.1.3. Supervisory Review

Most environmental information operations performed by IDEM staff include some degree of supervisory oversight, surveillance, or review. This reinforces and further contributes to the implementation of activities as they were planned. Oversight is consistent with long standing agency management practices and is often incorporated into staff performance evaluations as a work goal.

8.1.4. Adequate Training and Planning

IDEM QAPPs and related work plans are required to include sections on training for involved staff. Agency QA staff review each such document before work may commence, and may require additional training requirements, or further clarification of training materials used.

8.1.5. Commitment to U.S. EPA QA Field Activities Procedures

As stated in 3.2.5., agency QA staff are ready to coordinate with EPA R5 QA staff to assist with the expanded implementation of Quality Assurance Field Activities Procedures once U.S. EPA is prepared to expand its field operations guidance program to require greater adherence by state environmental organizations.

8.1.6. Field Audits

Some IDEM programs conduct audits during their QA plan implementation to further ensure and record work is being completed as stated in the approved planning document.

- OAQ monitoring performs QA audits to ensure planning documents or standards requirements were followed at sample sites, for evaluating data, or for certifying equipment in the Monitoring Branch QA standards laboratories.
- OLQ maintains a field guidance used during their environmental information operations.
- OWQ Watershed Assessment and Planning Branch performs field audits of staff during sample gathering.
- OPS Northwest Regional Office conducts field audits of AOC habitat restoration and BUI monitoring efforts as applicable, and beach monitoring and notification activities performed by contractors or grantees.

8.1.7. Documentation of Field Activities

As described in 5.1. and 5.3.2., each IDEM program collecting field data has developed forms (paper or electronic) which must be completed by program staff in the field. Some agency programs use forms provided by U.S. EPA contract labs. These forms, also described as field sheets or logs, match the sampling container identification numbers, and provide specific sample collection details.

Once completed per 5.3.2., these forms serve as records of sample collection activities and conditions. Their storage location is documented in the QAPP or environmental information operations final report to facilitate access by future data users.

8.1.8. Verification and Validation Activities

As addressed in 7.4., IDEM staff, not otherwise associated with the planning or implementation of environmental information operations or the use of the resultant data, verify and validate the data received from the laboratory by reviewing field sheets and laboratory bench notes. This ensures chain of custody forms, sample identification numbers, sample receipts, instrument logs, worksheets, and the information regarding sampling locations, numbers of samples collected, and

laboratory methods used are consistent with the specifications established in the QAPP.

8.2. Standard Procedures

SOPs and TSOPs are most useful for documenting processes which must be completed many times over and in the same manner each time. Once written and approved, they can be referenced in multiple QA documents which use the same process. This makes SOPs and TSOPs the building blocks of the IDEM quality system. IDEM processes used in conjunction with implementation of environmental information operations, or QAPPs, are required to be documented in TSOPs. Additional requirements for when a SOP is required are outlined in Whether to Develop a SOP, or a More Informal Work Summary. Requirements for the preparation, review, approval, revision, and withdrawal of SOPs from the QA system are fully outlined in 5.2.

IDEM uses two different levels of SOPs:

- The technical SOPs template is more formal, and more reflective of the *U.S. EPA QA/G-6 Guidance for Preparing Standard Operating Procedures*. TSOPs require flowcharts, written procedural steps, and information on health and safety, cautions, interferences, calibrations, and trouble shooting. They also require descriptions of staff roles, needed forms and equipment, definitions, quality assurance and quality control requirements, information on managing and preserving the work product generated, and references and appendices as appropriate.
- The administrative SOPs template is streamlined to require only procedural steps, any training requirements, management of the work product generated, references, and appropriate definitions.

8.3. Managing Plan Changes

If work begins or continues once it is determined a change to the QA documentation is needed, any data generated might not be consistent with data needs established by the final plan. In addition, it could skew study results or adversely impact the project budget if the prematurely gathered data is unusable. Conventional quality system principles require work should be halted whenever conditions prevent the QAPP from being implemented as written or if it is determined the data being generated by the QAPP is not of the type or quality needed to address the issues for which the QAPP was written. Either scenario could also skew results or waste resources.

Because individual environmental information operations vary in complexity, decisions to halt the implementation of, or to change a QAPP are best made by agency management and staff most closely involved. They are the most informed regarding key factors like costs; the importance of data confidence proportional to the potential impacts of study results; the importance of extenuating circumstances regarding time, staff, equipment, or laboratory availability; or even options to employ correction factors to improve the usability of the data.

Any changes which might be made to the QAPP will have different impacts, some more substantial or potentially disruptive than others. The key factor, consistent with use of the graded approach, is all changes made to the manner in which the approved QAPP was conducted are adequately documented so those implementing it, verifying, validating, or assessing the value of the data it generates; intending to use the data for decision making; and any peers from the scientific community which may have a future interest in the data will each be able to adequately determine all the circumstances associated with

the environmental information collected. To maintain the value of the data generated, IDEM requires any changes which could impact the understanding of the data generated should also be documented in the QAPP or the accompanying field records, as appropriate.

Like the agency processes for SOP development, the staff roles, and requirements for QAPP development, revision, approval, withdrawal from staff access, and archiving are discussed in 5.2.

9.0. Assessment and Response

Purpose – To document how IDEM will determine the suitability and effectiveness of the implemented quality system and the quality performance of the environmental programs to which the quality system applies.

Ensuring data quality through use of effective and accurate planning, implementation, and assessment of the results obtained from project level environmental information operations is the primary purpose of and benefit from the IDEM quality system.

Since the last system wide assessment, IDEM programs have substantially expanded the numbers and refined the quality of QA planning documents (TSOPs and QAPPs Review cycles at 5.2.6.). As stated in the IDEM QAAR, the assessment and evaluation of project level data has improved as agency programs have escalated their scrutiny of the QA competency of the laboratory contractors and are also relying on increasing numbers and types of internal self-assessment processes.

These advances have subsequently elevated the need for more systematic evaluation of the IDEM quality system. Resultant agency planning, to more fully assess the overall IDEM quality system, has driven project level QA successes described below.

9.1. Agencywide Quality System Assessments

Some IDEM programs have implemented internal, or undergone external technical systems audits to evaluate equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a system. For example, EPA R5 Air and Radiation Division performs such audits on the QAQ Monitoring Branch every three years, often in conjunction with updates to the branch QAPPs (7.2.1.). OWQ Watershed Assessment and Planning Branch conducts internal technical audits of its Fixed Station Monitoring Program as well as technical audits of branch field staff activities. Each audit noted compliance with planned activities and QA practices and identified opportunities for process improvements.

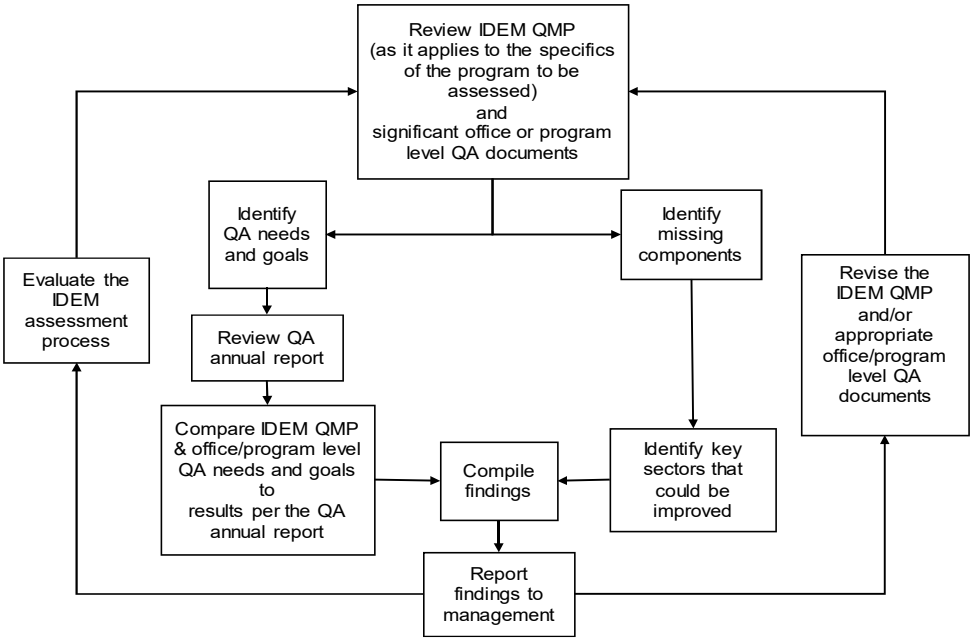
EPA R5 conducted the 2005 Management System Review of the IDEM quality system. IDEM responded by improving its agency document storage and retrieval capabilities.

9.2. Agency Assessment Planning

IDEM has developed an initial plan to conduct quality system audits (Figure 11) using some of the processes outlined in *U.S. EPA QA/G-3 Guidance on Assessing Quality Systems*. The intent is to objectively verify applicable elements of the quality system are in place and being effectively implemented throughout the agency. The goal is to identify any key sectors of the QA system requiring additional QA improvement.

Assessment staff (agency QA staff, and possibly staff from offices other than those being assessed) will first meet with program management to identify assessment goals. Managers and assessors may each propose topics of interest, but all finalized assessment topics must be mutually supported. Assessments will focus on the quality of program QA documentation, its alignment with QA annual reporting, and interviews with management and staff.

Figure 11 IDEM Quality System Assessment Plan



Beginning with document review, assessors will first identify those processes and goals in the agency QMP most applicable to the QA activities of the program being assessed. During the second phase of document review, assessors will evaluate significant office or program level QA documents to similarly identify any specific QA procedures which may need more emphasis. Comparing QMP goals to accomplishments, noted in the IDEM QAAR to EPA R5, will make up the third phase of the documentation assessment.

Assessors will then conduct interviews with appropriate staff to assess their understanding of the importance and proper implementation of QA procedures. Finally, assessment findings will be shared with management. QA staff may also assist, as appropriate, with the implementation of any subsequent recommendations. These assessments will, in turn, engage each agency office in a rotation to be completed once during each QMP cycle.

9.2.1 How Assessment Should Benefit the IDEM Quality System

Strengthening the IDEM QA assessment process will:

- Drive further improvement of the agency quality system and strengthen the IDEM culture of quality.
- More closely align the QMP with the QAAR.
- Increase the utility of the QMP as a reference for planning and QA guidance.

9.2.2 Important Characteristics Needed for QA Assessment Staff

Staff participating in QA assessments should:

- Adequately document:
  - The assessment plan
  - Review findings
  - Staff interview summaries (protecting staff anonymity as appropriate and agreed to)
  - Assessment findings and recommendations

- Be technically competent, so they have a strong understanding of:
  - ANSI/ASQ and U.S. EPA required endorsed quality system tools and requirements including how to use those tools to comply with QA requirements and why their successful implementation is important to data quality.
  - The fundamental understanding of the technical aspects of the program (and associated activities) being assessed including program goals; primary processes involved; the specifications and function of any equipment, supplies, forms, or software used; any potential pitfalls to be avoided; and an appreciation for the ramifications of the decisions to be made with the data generated.
- Have no conflicts of interest in the form of assessment responsibilities which may overlap with their current work assignments.
- Have the support of appropriate management, both external and internal to the program being assessed and their authorization to implement the assessment as planned and report any findings.
- Be free to track any changes made to a program or related process in response to assessment findings in determining the effectiveness of the assessment and impact on the subsequent quality of work products.

9.3. Assessment Follow Up

Upon completion of an assessment, the assessors will report their findings and recommendations to management. Management may simply accept the report, or further discuss the findings. If they concur with any recommended changes, they can require QA staff input regarding:

- Identification of possible causes for the QA problems noted
- Implementing or measuring any improvements resulting from changes precipitated by the assessment
- Suggesting steps to avoid reoccurrence of the problem or to prevent backsliding once corrective measures are put in place.

Contracts for laboratories and services used by IDEM have a dispute resolution clause in the contract which discusses a formal process for resolving conflicts which cannot be resolved. However, most issues are resolved between IDEM and contractor informally through telephone conversations and meetings.

IDEM is in the formative stages of regular program level quality system assessments. Therefore, any additional annual assessment follow-up steps will be developed and included in a future revision of the IDEM QMP.

9.4. Project Level Assessments

- **Peer reviews** of program planning documents and reviews, performed in the OLQ Science Services Branch, OAQ Monitoring and Air Programs branches, OWQ Watershed Assessment and Planning Branch, and by QA staff which review QAPPs, QAPP-subordinate QA work plans, and TSOPs.
- **Technical reviews** of specific in the field environmental information operations conducted and reported to EPA R5 in QAARs. Although performed in-house, program staff remain motivated by knowing the data they generated is reliable for responsible decision making.

- **Surveillance,** or the frequent monitoring and verification by management of the proper implementation of QA planning and subsequent data assessment to ensure requirements are being adequately fulfilled, is a significant part of the IDEM quality system, which has traditionally relied on a chain of review and approval by managers and more experienced staff.
- **Performance evaluation** is perhaps one of the most regularly used tools to ensure the quality of data generated by contracted laboratories and internally operated agency labs.
- **Data quality assessment** is used as necessary to evaluate the suitability of data used for agency decision making.

10.0. Quality Improvement

Purpose – To document how IDEM will improve the organization's quality system.

10.1. Ensuring the Promotion of the IDEM Culture of Quality

The decisions made by IDEM, using data generated by environmental information operations, are frequently of the type necessary to protect human health and the Hoosier natural environment. As a result, agency management, QA staff, and all IDEM program staff engaged in environmental information operations have some responsibility toward furthering the culture of quality. Though a limited number of IDEM staff sign or authorize agency decision documents each group of agency staff mentioned above has some collective ownership of the data upon which IDEM decisions are based, and so similarly has a stake in the quality of the information used to make decisions.

Each environmental information operation should be undertaken in accordance with and benefit from the safeguards against risky and presumptive thinking, which are built into the plan, do, check, act (PDCA) cycle. These four actions, or steps, represent the iterative cycle upon which ANSI/ASQ and U.S. EPA quality system requirements are based. Notably, they also reflect the titles or purposes of the last four of the ten elements of this QMP:

- Plan – Analyze the situation, develop solutions

QMP Element 7 – Planning

- Do – Implement the planned solutions

QMP Element 8 – Implementation and Work Processes

- Check – Assess the results of the implementation

QMP Element 9 – Assessment and Response

- Act – Take corrective action after assessment

QMP Element 10 – Quality Improvement

As stated in various places throughout this QMP, IDEM strives to ensure the data it uses to make decisions is always of a quality (accuracy and correctness) appropriately proportionate to any adverse risk posed by the consequences of an incorrect environmental decision. Agency management provides QA resources and direction, while agency QA staff must advise staff of requirements, manage QA documentation, provide training, assess implementation, and otherwise support agency QA efforts. Program staff engaged in environmental information operations should participate in QA training commensurate with their roles in environmental information operations, adequately document QA training, and regularly impart their QA know-how into assigned work.

10.2. Sustaining the IDEM Quality System

To preserve the quality system improvements built up over time, each IDEM staff should:

- Exercise vigilance against conditions adverse to quality by:
  - Never making assumptions. When staff do not remember what to do next or what to record. double-check rather than assume.
  - Clearly communicating. Staff developing QA documents or recording field conditions should review what they wrote and ask themselves whether their audience will know what is meant.

  - Questioning situations or results inconsistent with their understanding of proper quality practices and discussing with their managers, colleagues, or technical staff any uncertainties they may have.
  - Avoiding the temptation to take shortcuts regarding such things as:
    - Preparing planning documents without verifying all references, or otherwise being overly reliant on the reuse of a previous copy of an "almost the same" version of a QA document.
    - Skipping practice runs or refresher trainings.
    - Not ensuring up to date instrument calibrations.
    - Not performing repetitive processes uniformly, thereby risking inconsistencies which could potentially affect data outcomes.
    - Recording field notes accurately.
- Identify process improvement opportunities or propose solutions for problems to prevent reoccurrences after problems are noted or corrective actions taken.
- Always go to the shared IDEM QA Library when QA documents are needed rather than store them elsewhere in a manner which could result in the use of an expired version.
- Request training or clarification when proper procedures change or are unclear.

10.3. Inviting the Participation of Others

Agency offices, programs, and staff invite input on QA issues from sources external to their own program. Because QA principles are applicable across environmental media (air, land, or water) issues, suggestions from those who may not be doing the same work but who are sufficiently cognizant of similar types of work, whether from within IDEM, U.S. EPA, other EPA R5 states, accrediting organizations, or the broader scientific community, can always offer a fresh perspective. Comparing in-house QA processes with those of other entities practicing QA is another avenue for ideas to move QA forward.

Accordingly, agency QA staff will, during the effective period of this 2023 QMP, try to bring new ideas into the agency QA system by:

- Reviewing available QA related guidance materials to gain new insight into how to better meet ANSI/ASQ required, or U.S. EPA endorsed QA standards.
- Increasing interaction with other EPA R5 states, all of which also comply with the same U.S. EPA QA requirements as does IDEM.
- Continuing intra-agency interaction through ongoing IDEM QA Committee meetings and workshops, as mentioned in 1.3.2. Role of agency QA manager and staff.
- Strengthening QA interaction with the EPA R5 QA management, and with EPA R5 divisional QA leaders.
- Making use of existing and future EPA R5 sponsored data enterprise management systems to access and review QMPs, QAPPs, and other QA documentation developed by the EPA R5 states to contrast and compare various ways of accomplishing QA goals with those of IDEM to implement best practices which meet IDEM specific program needs.

Appendix A. IDEM Quality Documentation Policy

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AGENCY POLICY	COVERAGE: Agencywide	POLICY NUMBER: A-050-AW-18-P-R2
	AUTHORIZED: Bruno L. Pigott, Commissioner	
SUBJECT: QUALITY ASSURANCE DOCUMENTATION	SUPERCEDES: A-050-OEA-09-P-R1	OFFICE: Office of the Commissioner
	EFFECTIVE: February 15, 2007	REVISED: March 16, 2018

1.0. PURPOSE

This policy addresses the development, review, approval, and management of agency quality assurance (QA) documents that enhance the implementation of the Indiana Department of Environmental Management (IDEM) Quality Management Plan (QMP).

2.0. SCOPE

This policy applies to all agency staff developing or approving QA documents.

3.0. SUMMARY

This policy establishes:

3.1. Requirements for the content, development, review, and approval of agency QA documents.

3.2. Staff responsibilities associated with the development, review, and approval of QA documents.

4.0. DEFINITIONS

4.1. “Agency staff” – Any employee or representative of the IDEM including regular employees, temporary employees, contractors, and interns.

4.2. “Agency quality assurance (QA) staff” – Agency staff within the Office of Program Support (OPS) responsible for the implementation and maintenance of IDEM’s QA system.

4.3. “Authorized” – Ordered and/or approved by agency management.

4.4. “Data” – A collection of numeric and/or non-numeric information from which conclusions may be drawn.

4.5. “Deliberative” – Involved in or characterized by deliberation, discussion, and examination pursuant to IC 5-14-3-4(b)(6).

4.6. “Environmental technology (as defined in U.S. EPA Order 5360.1 and U.S. EPA QA/R-2)” – An all-inclusive term used to describe pollution control devices and systems, waste treatment processes and storage facilities, and site remediation technologies and their components that may be utilized to remove pollutants or contaminants from or prevent them from entering the environment. Usually, this term applies to hardware-based systems; however, it also applies to methods or techniques used for pollution prevention, pollutant reduction, or containment of contamination to prevent further movement of the contaminants, such as capping, solidification or vitrification, and biological treatment.

4.7. “Procedure” – A specified set of steps detailing how to perform an activity.

4.8. “Project” – A temporary endeavor undertaken to create a unique product, data set, or service.

4.9. “Quality assurance (QA)” – An integrated system of management activities involving planning, implementation, documentation, assessment, reporting and quality improvement to ensure that a process, item, data set, or service is of the type and quality needed and expected by the client.

4.10. “Quality assurance (QA) document” – Any document associated with the agency quality system such as the IDEM QMP or any agency policy, SOP, or QAPP developed and authorized to ensure data operations and other agency business is conducted in a consistent, effective, efficient, and transparent manner.

4.11. “Quality assurance (QA) library” – A centralized collection of agency QA documents in which the IDEM QMP and agency policies, SOPs, QAPPs, and related QA documents are stored, archived, and made accessible for use by agency staff and stakeholders.

4.12. “Quality assurance project plan (QAPP)” – A document describing the activities of an environmental data operations project involving the acquisition of environmental information whether generated from direct measurement activities, collected from other sources, or compiled from computerized databases and informational systems. A QAPP may reference one or more standard operating procedure or other QA documentation. A QAPP:

A. Documents the results of the technical planning process that should precede implementation of an environmental data operations project.
B. Identifies the goal(s), boundaries, scope, and the quality objectives of a project, or multi-project program.
C. Identifies key project personnel and their responsibilities for implementing the project.

4.13. “Quality control (QC)” – The overall system of technical activities that measure the attributes and performance of a process, item, data set, or service against established standards to verify that they meet the level of quality required to adequately support any decision made based on that data.

4.14. “Quality Management Plan (QMP)” – A document that describes the IDEM quality system in terms of its organizational structure, policies and procedures, management and staff responsibilities, lines of authority, and the required interfaces between those planning, implementing, documenting, and assessing data operations and related activities. The QMP serves as an umbrella document under which policies, SOPs and QAPPs are developed, maintained, stored, distributed, and implemented to ensure that all agency decision-making processes and related work products benefit from sound QA practices.

4.15. “Quality system” – A structured and documented system for ensuring the quality of agency work processes, products (items), data sets, and services.

4.16. “Standard operating procedure (SOP)” – The method for operation, analysis or action with prescribed techniques and steps. An SOP is the approved method for performing a specific routine function or repetitive task. SOPs are developed in consultation with staff who regularly perform the work.

4.17. “Supervisor” – The manager to whom the agency staff reports.

5.0. ROLES

5.1. The commissioner, or designee, may authorize the development and/or approval of any agency QA document.

5.2. An assistant commissioner (AC) or designee(s) shall:

A. Ensure that program areas within their respective offices are developing and using the necessary QA documents.

B. Designate program area staff to draft, review, or sign QA documents developed for use within their respective program area.

5.3. Supervisory staff shall:
A. Lead policy development.
B. Manage the development and use of QA documents within their program area.
C. Ensure staff have knowledge of, access to, and comply with all applicable agency QA documents.
D. Review, and when designated by the AC, authorize program QA documents by signature.
E. Designate staff to develop QA documents or to assist with policy development.
F. Ensure that an electronic copy of each draft QA document is submitted to agency QA staff for review, comment, approval, and maintenance within the agency QA library.
G. Ensure all program QA documents are reviewed and, if necessary, updated, consistent with the time frames shown in the table in 6.5.
H. Ensure appropriate program management and technical staff have the opportunity to review QA documents under development.
I. Request when appropriate, that agency QA staff archive out-of-date program area QA documents.

5.4. The agency QA staff shall:
A. Develop and maintain the IDEM QMP and its components.
B. Promote and track the development and completion of program area QA documents by:
1. Developing agency specific quality system-related policies, templates, checklists, and training materials that meet accepted scientific standards.
2. Assigning a unique ID number to each QA document to facilitate tracking it during development and approval, and accessing it during storage and use.
3. Reviewing each draft QA document for formatting and logical content.
C. Approve a QA document that meets all agency QA standards.
D. Post each authorized QA document in the QA library.
E. Maintain the agency QA document library.
F. Archive agency QA documents no longer in effect.
G. Submit to the U.S. EPA R5 QA manager:
1. The IDEM QMP and, as a condition of sustaining R5 approval of that QMP,
2. A QA annual report, and
3. All IDEM self-approved QAPPs and QAPP related work plans.
H. Provide agency staff with the training needed to develop QA documents.

5.5. Agency program area staff shall:
A. Participate in available QA document development and implementation trainings provided by IDEM, U.S. EPA QA staff, or equivalent sources.
B. Coordinate as assigned with agency QA staff, to develop and obtain approval of the QA documentation required to meet IDEM, U.S. EPA, and accepted scientific standards.
C. Comply with the document formatting and content requirements established herein.
D. Ensure that any project contractors or sub-grant recipients they oversee, comply as required with associated QA documentation and implementation requirements.

E. Notify agency QA staff of all ongoing and new QA or QAPP agreements they reach with their U.S. EPA counterparts.

5.6. The IDEM grants coordinator shall monitor agency program grant recipients to confirm, in conjunction with agency QA staff, that grant related QA documentation and implementation requirements are met and reported to the awarding entity.

6.0. POLICY

6.1. The agency will demonstrate its commitment to scientifically defensible and transparent decision making by:

A. Recording its QA practices and requirements in standardized QA documents; and
B. Reviewing, approving, and systematically maintaining access to QA documents for use by agency staff and others, as requested.

6.2. QA documents will be developed using the appropriate agency standardized template, or another format approved by the agency or by U.S. EPA.

6.3. Agency QA documents are applicable as follows:

A. Policies are management directives to agency staff that relate to internal operations and shall be documented in a standard policy template. A policy shall not conflict with, or supersede a policy approved at a higher organizational level.
B. Standard operating procedures (SOPs) prescribe orderly steps in a routine or repetitive process. There are two types of SOPs:
    1. Administrative SOPs developed for procedures associated with the administration or implementation of a task not associated with the gathering or use of environmental data.
    2. Technical SOPs for procedures that involve the collection, evaluation, use, or reporting of environmental data, or that involve the design, construction and operation of environmental technology based upon that data.
C. Quality assurance project plans (QAPPs) capture the planning, implementation, assessment, and reporting associated with the environmental data operations required to gather new or use existing data to design, construct, or operate environmental technology to prevent the pending, or remediate the past release of constituents potentially detrimental to human health or the environment.
    1. There are two types of QAPPs:
        a. A project QAPP; describing a data operation meant for one time implementation, at a specific location and time.
        b. A program QAPP; describing data operations meant to be implemented multiple times, at multiple locations, and/or during multiple time frames, but always in the same manner.
    2. A QAPP may be required of agency staff as part of a federally funded grant.
    3. The agency may similarly require that a QAPP be included as a component of contracts or other agreements involving the collection of environmental data by parties representing IDEM.

6.4. Regarding the authorization of QA documents:

A. Each QA document must be authorized by the appropriate level of management within the hierarchy of the agency's organizational structure, such that:
    1. The commissioner, or a designee, shall sign any document applicable agency wide.

2. The appropriate supervisor, or a designee, shall sign program specific documents.
3. A supervisor or designee representing each affected program area shall sign any document applicable to multiple programs.

B. An unauthorized QA document is considered under development, not in effect, and therefore deliberative and exempt from public disclosure under IC 5-14-3-4(b)(6).
C. Most QA documents may not be developed and approved by the same individual staff. However, policies are management directives and may therefore be developed and approved by the same manager(s).
D. Each QA document authorized or reauthorized through the signature process shall be posted and maintained in the QA library.
E. Authorization of a new or revised QA document requires that:
   1. Staff listed on the signature page must each sign the same version of the pending QA document. If a document is revised after the signature process has begun, it must be re-signed by each approving staff.
   2. To facilitate posting in the agency QA library, program area staff must provide agency QA staff with an electronic copy of the same version of the signed document.
F. A QAPP must be signed by all staff with oversight of its implementation before any work may begin. A QAPP that is subsequently revised must be re-signed by those same staff before work may resume.
G. The time frames during which various types of authorized QA documents are in effect, appears in the following table:

Time frames during which QA documents are in effect (as established in 5.2.6. of the IDEM QMP).

QA Document	Maximum Authorization Period *
Standard Operating Procedures and Technical SOPs	Four Years
QA Project Plans (QAPP)s	Project QAPPs are in affect for the same time-period as any associated funding or related contract or grant cycle, not to exceed one year without additional approval
QA Program Plans (QAPPs)	Should be reviewed each year and revised to accommodate changes to technical and legal requirements, project goals, or funding cycles; but should never be in effect for more than five years
Sampling plans/Work plans (time or location specific data gathering projects done under an existing program QAPP)	End of the field season, (unless approved by QA staff for up to one additional season, following the same parameters)
Policies	Should be reviewed annually for consistency with federal, state, and agency requirements; and revised and re-approved as appropriate.

* Except when there is a change to the processes, methods, or regulations on which a QA document is based, in which case it should be immediately revised to reflect those changes.

6.5. Program areas using QA documents containing confidential information shall maintain control of those documents, and agency QA staff may only review them at the discretion of the controlling program.

7.0. REFERENCES

7.1. CIO 2105.1 Environmental Information Quality Policy, March 2021

7.2. CIO 2106.0 U.S. EPA Quality Policy

7.3. CIO 2106-P-01.0 U.S. EPA Procedure for Quality

7.4. U.S. EPA Requirements for Quality Assurance Project Plans (QA/R-5)

7.5. U.S. EPA Guidance for Preparing Standard Operating Procedures (QA/G-6)

7.6. IDEM Quality Management Plan

8.0. Signatures

_____ _____

Brian Rockensuess, Commissioner — Date

Indiana Department of Environmental Management

This policy is consistent with agency requirements

_____ _____

Quality Assurance Staff — Date

Office of Program Support

Appendix B. Calculation of IDEM Fulltime Equivalent Quality Assurance Staff

The numbers of full-time equivalent (FTE) IDEM staff reported above in section A.1.2. Staff Resources Dedicated to Quality Assurance was calculated by multiplying the numbers of staff doing QA-related tasks by the estimated percentage of work time each spent on that task, then adding those products to find the total FTE of QA-related work done. For example, if one staff person is doing 80-percent QA-related tasks (0.8 FTE) and four other staff are each doing 33-percent QA (0.33 FTE each, or 1.33 total FTE QA), then those five staff would be counted as doing QA work equivalent to 2.13 FTE staff.

IDEM Office-level FTE QA Totals (Rounded up to the nearest 0.1 from Appendix C totals)	**Program Area**	**FTE Program Staff Engaged in QA Activities** (See details in Appendix C)
Air Quality = 25.2 FTE	Monitoring Branch	19.66
	Compliance and Enforcement Branch	2.85
	Permits Branch	None reported
	Air Programs Branch	2.65
Land Quality = 23.7 FTE	Compliance Branch	0.66
	Permitting Branch	0.90
	Remediation Branch	2.40
	Science Services	19.46
	Petroleum Branch	0.30
Water Quality = 18.9 FTE	Compliance and Enforcement Branch	2.75
	Drinking Water Branch	9.04
	Surface Water and Operations Branch	None reported
	Permitting Branch	None reported
	Watershed Assessment and Planning Branch	7.06
Program Support = 2.6 FTE	IDEM quality assurance (QA) staff	2.25
	NWRO Lake Michigan Program staff	
	• LAMP and RAP Programs	0.02
	• Lake Michigan Beaches Monitoring and Notification Program	0.37
Office of Legal Counsel = 0.0 FTE	Natural Resource Damage Assessment (NRDA)	0.00
Agency Total = 70.4 FTE		

**** From section A.1.2., page 8, of the 2021 IDEM QAAR submitted to EPA R5 January 4, 2022. There were 63.2 FTE IDEM staff positions (9.0 percent of the approximately 819 total agency staff) engaged in QA-related work during 2021*.

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System

Office of Air Quality Technical Activities and Programs

Monitoring Branch

- Field Monitoring – site selection, site setup, ongoing operations
- Laboratory – Analytical analysis of samples
- Data Processing – Collection, evaluation, corrections, submittal, etc.
- Standards laboratory – comparisons

Technical Program	Environmental Activity
Field Monitoring	Sample acquisition Sample transport Site information Sampler, analyzer, or equipment setup Monitoring plan development
Laboratory analysis of samples	Sample preparation Sample analysis
Data Processing	Data analysis QA documentation Data transmission
Standards laboratory – comparisons	Sampler, analyzer, or equipment performance evaluation
Laboratory and office operations	Maintenance and cleaning of monitoring and analysis equipment Safety training and implementation QA personnel documentation QA operations policy Equipment tracking Training equipment operations Administrative operations

Air Programs Branch

- Development of the State Implementation Plans
- Data analysis projects
- Oversight of the Inspection and Maintenance program
- Transportation conformity
- Mobile source modeling
- Diesel Wise On-Road Mobile Source Inventory
- Photochemical modeling
- PSD air quality modeling
- Emission statement review, correction, and coordination with reporting
- ToxWatch data screening
- Criteria pollutant and air toxics emission inventory development

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Air Quality Technical Activities and Programs (cont.)

Air Programs Branch (cont.)

- Lake Shore Screening Analysis for Air Toxics project completed
- Southwest Indianapolis Air Toxics Study – QAPP: Quality Assurance Project Plan – Southwest Indianapolis Neighborhood Air Toxics Study project completed

Compliance and Enforcement Branch

- Inspections
- Stack test and Continuous Emissions Monitoring System and Continuous Operation Monitoring System observations
- Review of compliance documents (e.g., quarterly reports, annual compliance certifications, stack test reports, stack test protocols, Continuous Emissions Monitoring System and Continuous Operation Monitoring System reports)
- Complaint response
- Data input and tracking
- Sampling and monitoring

The QA components associated with the OAQ Compliance and Enforcement Branch stack testing program include reviewing test plans submitted by the sources required to participate in stack testing. The testing, generally required by the source permit can include testing for the Clean Air Act designated criteria pollutants (PM, NOx, SO_2, CO, VOCs, and Pb) as well as specific hazardous air pollutants.

Performing the tests is the responsibility of the source, but Compliance and Enforcement Branch staff observers are sent to quality assure the testing at about 50-60% for a given year. The assigned staff review the testing plan submitted by the source in advance of the testing operations. What equipment is identified. What pollutants are being measured and by what method? Does the plan match up with permit requirements? Staff also are onsite to oversee adherence to that plan. They assess and confirm how all production and applicable air pollution control device units will be run during the test and all appropriate operating parameters are recorded.

Staff also work with the stack-test company contracted by the source to ensure all testing equipment meets standard specification and any required chemical reagents used are the correct ones. They then observe the performance of the tests, including sample collection and the sampling train cleaning. In addition, they ensure everything is run at the correct temperature, the proper sample volumes are collected, adequate leak checks are performed, and operating temperatures during testing are within equipment specifications, ensuring outlier, hot or cold running temperatures or other inconsistencies do not bias test results. The testing events, which also require measuring airflow rates and drawing samples at a certain rate over time, can require a minimum of 3, 1-hr runs per pollutant. The participating Compliance and Enforcement Branch field staff then write a field report, which is reviewed by an OAQ supervisor.

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Air Quality Technical Activities and Programs (cont.)

Compliance and Enforcement Branch (cont.)
When the test results are submitted to IDEM Compliance and Enforcement Branch from either the source company or its contracted consultant, program staff check the report to ensure all supporting documentation necessary to validate the results are included.

Regarding testing frequencies, most sources are required to run stack tests on a 5-year testing cycle. Although some larger sources may be on 2½ to 3-year cycle, while utilities are tested on a 2-year cycle. These frequencies, when coupled with the parametric monitoring of the pollution control device (bag house, precipitator, scrubbers, etc.,), are adequate to meet Clean Air Act emissions standards. Other test frequencies are set in federal requirements, like the New Source Performance Standards. Other triggers requiring testing are:

- Tied to permit renewal frequency.
- Changes in equipment restart of testing timeframe requirements, such as testing which must occur within 180 days of startup of a new unit.

The emphasis is on how well the equipment is working. Stack tests are of real-time emissions, but companies may also have to do continuous monitoring to show source units are operating as they did during stack tests. For example, are the amperage use, air flow, water flow, and operating temperatures of the pollution control equipment within the operating parameters recorded during real-time testing. Some really large sources also have continuous monitoring built into the stack, so monitoring is on a continuous basis.

Such testing series can cost $100K and last for a week; a factor considered as part of the graded approach principle of balancing costs and effectiveness. Smaller sources often do not perform as well at testing as do larger sources, which have more staff and expertise. As a result, they must rely more on consultants, which require substantial coordination between those sources, their consultants, and Compliance and Enforcement Branch staff.

Compliance and Enforcement Branch field staff also:

- Review draft permits.
- Write up permit guidance.
- Communicate with EPA regarding source compliance and QA as it relates to testing.

Permits Branch
The primary role of OAQ Permits Branch is to prepare and review air permit applications utilizing data prepared and analyzed by the applicant, Air Programs Branch, Compliance and Enforcement Branch, and U.S. EPA permit construction and operating requirements. The review of permit applications and the issuance of appropriate levels of permits based on technical data and emission factors provided by others is a principally administrative action best implemented through the development and use of SOPs as the primary quality assurance planning tools.

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Land Quality Technical Activities and Programs

Science Services Branch

The Science Services Branch assists OLQ with their processes. The Science Services Branch sections and the senior risk assessors provide technical information, advice, and guidance to the decision-makers in the other branches of OLQ. Subsequently, the quality assurance components of the Science Services Branch also benefit OLQ programs being assisted by Science Services Branch. The work product consists of a technical memo which contains the document name, location, site number, and any other identifying information. The standardized format for these memos is available upon request. The memo sections consist of the site history, the specific comments, and the conclusion with any recommendations about how to proceed with the site. The following table illustrates the Science Services Branch sections, the program they assist, and the associated expectation:

Science Services Branch

Chemistry Services Section (CSS)

Program or Section	Assistance	Work Product
Hazardous Waste Program	Review and evaluate various permit types. Review and evaluate delisting petitions. Provide sampling assistance.	Technical memo
Solid Waste Program	Review and evaluate various permit types. Review and evaluate waste determinations. Provide sampling assistance.	Technical memo
Petroleum Section	Review and evaluate work plans, corrective action plans, other plans. Provide sampling assistance.	Technical memo
State Clean Up Section	Review and evaluate work plans and sampling plans. Provide sampling assistance.	Technical memo
Federal Programs Section including Defense Restoration Program and Superfund	Review and evaluate work plans and other plans.	Technical memo
Voluntary Cleanup Program Section	Review and evaluate remediation work plans and other plans. Provide sampling assistance.	Technical memo
Excess Liability Trust Fund Technical Section	Review and evaluate work plans and other plans.	Technical memo
Site Investigations	Review and evaluate work plans and other plans. Provide sampling assistance	Technical memo
Indiana Brownfields Program Technical Section	Review and evaluate work plans and other plans.	Technical memo

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Land Quality Technical Activities and Programs (cont.)

Science Services Branch (cont.)

Geological Services Section (GSS)

Program or Section	Assistance	Work Product
Underground Storage Tanks Section	Review and evaluate work plans, corrective action plans, and other plans. Provide sampling assistance.	Technical memo
State Clean Up Section	Review and evaluate work plans and other plans. Provide sampling assistance.	Technical memo
Federal Programs Section including Defense Restoration Program and Superfund	Review and evaluate work plans and other plans.	Technical memo
Voluntary Remediation Program Section	Review and evaluate work plans and other plans. Provide sampling assistance.	Technical memo
Excess Liability Trust Fund Technical Section	Review and evaluate work plans and other plans.	Technical memo
Site Investigations	Review and evaluate work plans and other plans. Provide sampling assistance.	Technical memo
Natural Resource Damage Assessment Program	Provide GPS and GIS assistance.	

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Land Quality Technical Activities and Programs (cont.)

Science Services Branch (cont.)

Engineering and GIS Section

Program or Section	Assistance	Work Product
Hazardous Waste Program	Import groundwater data into database. Review and evaluate work plans.	Technical data memos and maps
Solid Waste Program	Import groundwater data into database. Provide GPS and GIS assistance.	Data and maps
Underground Storage Tanks Section	Review and evaluate work plans, Caps, and other plans. Provide GPS and GIS assistance. Import groundwater data into database.	Technical memos and maps
State Clean Up Section	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Federal Programs Section including Defense Restoration Program and Superfund	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Voluntary Remediation Program Section	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Excess Liability Trust Fund Technical Section	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Site Investigations	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Indiana Brownfields Program - Technical Section	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Natural Resource Damage Assessment Program	Provide GPS and GIS assistance.	Technical memos and maps
Federal Programs Section including Defense Restoration Program and Superfund	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Voluntary Remediation Program Section	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Excess Liability Trust Fund Technical Section	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Indiana Brownfields Program - Technical Section	Review and evaluate work plans and other plans. Provide GPS and GIS assistance.	Technical memos and maps
Natural Resource Damage Assessment Program	Provide GPS and GIS assistance.	Technical memos and maps

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Land Quality Technical Activities and Programs (cont.)

Science Services Branch (cont.)

Regulatory Reporting Section

Program or Section	Assistance	Work Product
Hazardous Waste Program	Receive data, quality check data, import into database, and generate reports.	Data
Solid Waste Program	Receive data, quality check data, import into database, and generate reports.	Data
Petroleum Section	Maintain database.	Data
State Clean Up Section	Maintain database.	Data
Federal Programs Section including Defense Restoration Program and Superfund	Maintain database.	Data
Voluntary Remediation Program Section	Maintain database.	Data
Excess Liability Trust Fund Technical Section	Maintain database.	Data
Site Investigations	Maintain database.	Data
Indiana Brownfields Program Technical Section	Maintain database.	Data
Community-right –to-know program	Quality check data and generate reports.	Data

Risk Services Section and Senior Risk Assessors (E7s)

Program or Section	Assistance	Work Product
Hazardous Waste Program	Review and evaluate work plans.	Technical memo
Petroleum Section	Review and evaluate work plans, CAPs, and other plans.	Technical memo
State Clean Up Section	Review and evaluate work plans and other plans.	Technical memo
Federal Programs Section including Defense Restoration Program and Superfund	Review and evaluate work plans and other plans.	Technical memo
Voluntary Remediation Program Section	Review and evaluate work plans and other plans.	Technical memo
Excess Liability Trust Fund Technical Section	Review and evaluate work plans and other plans.	Technical memo
Site Investigations	Review and evaluate work plans and other plans.	Technical memo
Indiana Brownfields Program Technical Section	Review and evaluate work plans and other plans.	Technical memo

In addition, a senior level Science Services Branch position provides information on, and audits contract laboratory services used by, OLQ; and a senior level data coordinator provides information regarding data management systems.

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Land Quality Technical Activities and Programs (cont.)

Remediation Services Branch (RSB)
The branch focuses on the identification, investigation, and remediation of hazardous substance and petroleum releases in the State of Indiana. These environmental activities are performed under the regulatory authorities of the CERCLA and RCRA. The RSB manages various programs for site investigation, immediate removals, risk evaluation, long-term remedial actions, and cost recovery activities, where applicable. The RSB programs are organized within the following sections:

- State Cleanup Section

  The State Cleanup Section manages short-term to long-term remediation (i.e., cleanup) of uncontrolled or abandoned hazardous waste sites which may not qualify for cleanup under the federal Superfund Program. The majority of sites are referred to the State Cleanup Section via the IDEM's OLQ Emergency Response Section. The Emergency Response Section addresses environmental emergencies but has no mechanism for long-term remedial oversight. The State Cleanup Section coordinates and manages waste tire dump cleanups and sites requiring immediate removals due to imminent threat.

  Although the State Cleanup Section is modeled after the Federal Superfund Program, it differs from the Superfund Program in several respects. Hazardous substance sites are prioritized with the Indiana Scoring Model as prescribed by 329 IAC 7. Unlike Superfund, the State Cleanup Section has the authority to respond to petroleum releases in addition to releases of hazardous substances. As a planned quality improvement initiative, the State Cleanup Section is proposing modifications to existing legislation to replace the current Indiana Scoring Model with a more streamlined prioritization process.

- Federal Programs Section

  Congress passed CERCLA, also known as Superfund, in 1980. CERCLA requires the identification, investigation, and cleanup of sites contaminated by past releases of hazardous substances. Within OLQ, the Federal Programs Section manages and coordinates remediation at facilities which are: 1) listed on the National Priorities List; 2) non-National Priorities List sites managed by the Superfund program; or 3) under the Defense Environmental Restoration Program.

  The Federal Programs Section receives program and site-specific federal grants which provide the majority of the section's funding. The terms of the federal grants are documented in site-specific project narratives. By federal law, IDEM works in a highly structured partnership with the U.S. EPA, the Department of Defense, and the Army Corp of Engineers in which the roles of the respective agencies are dictated in site specific project narratives rolled into Cooperative Agreements.

- Site Investigation

  This section administers the federal Site Investigation program, following the statutory requirements of the National Contingency Plan, CERCLA, and the Superfund Amendments and Reauthorization Act. Funding is provided from U.S. EPA, with program expectations outlined in a Cooperative Agreement with EPA R5.

  Activities conducted with grant funds include site discoveries, site screening, preliminary assessments, site inspections, integrated assessments, Hazard Ranking System scoring

packages, and, when necessary, site reassessments. These activities are conducted to determine if sites require immediate response actions, should be referred to the State Cleanup Section, or ultimately qualify as federal Superfund sites.

- Voluntary Remediation Program (VRP)

  VRP provides a mechanism for property owners, operators, or potential buyers to voluntarily address environmental liability issues associated with buying, selling, or developing contaminated property. The VRP provides oversight of site investigations and any necessary remediation to ensure health-protective closures are achieved. Upon successful completion of a project, IDEM issues a Certificate of Completion, and the Indiana Governor's office issues a Covenant Not to Sue to the VRP participant for the property. In addition, IDEM has a Memorandum of Agreement with the U.S. EPA which provides assurance they will not pursue enforcement action if a site is addressed within the VRP.

  The VRP is primarily self-funded by recovering costs for administrative and technical oversight from program applicants. Costs for staff time which cannot be directly recovered from participants (program development, staff training, etc.,) are provided through a U.S. EPA Cooperative Agreement.

- Indiana Brownfields Program (Administered by the Indiana Finance Authority)

  The Indiana Brownfields Program offers educational, financial, technical, and legal assistance to eligible entities involved in brownfields redevelopment. The Remediation Services Branch provides technical oversight and review for all projects receiving state financial assistance, as well as projects receiving U.S. EPA brownfield grants.

  The Indiana Brownfields Program was created by 2005 Indiana legislation which merged the brownfield financial and technical review programs into one program. Thereby combining existing brownfield resources to better assist communities with brownfields redevelopment. The Indiana Brownfields Program works in partnership with U.S. EPA and other Indiana agencies to assist communities in making productive use of their brownfield properties.

The State Cleanup, LUST, Excess Liability Trust Fund, VRP, and Indiana Brownfields Programs utilize IDEM OLQ's RCG and Remediation Program Guide, companion manuals which set out risk-based criteria for deciding how to address contaminated sites. The guides provide flexible closure options for conducting site assessments, cleanup alternatives, and consistent closure goals. The Federal Programs Section and Site Investigations Section follow investigative and remediation guidance established by U.S. EPA or Department of Defense. For more information, including links to U.S. EPA guidance documents, visit the U.S. EPA Superfund Cleanup website.

Each of these programs performs, or oversees the performance of, site-specific environmental investigations regarding the actual or potential release of hazardous substances or petroleum. All environmental information collection, project planning, data collection, data analysis, data verification and validation, and determinations for action, based upon the environmental information collected, are subject to independent QA review by entities outside of the RSB. The primary review function is provided by either the OLQ Science Services Branch or environmental consultants.

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Land Quality Technical Activities and Programs (cont.)

Compliance Branch technical activities subject to quality assurance and quality control practices:

- Program inspection planning – Each compliance program has its own criteria addressed in the Neutral Selection Policy.
- Sampling, both field and real time.
- Making determinations for corrective action associated with program violations.
- Performing Compliance Program Inspections including the PCB program.

PCB inspections will be conducted in accordance with the IDEM-U.S. EPA Region 5 PCB QAPP. This document was signed by Larisa Leonova, U.S. EPA QA Manager Land and Chemicals Division; Kendall Moore, U.S. EPA Technical Contact, Pesticide and Toxics Compliance Section, Land and Chemicals Division; David Star, U.S. EPA Chief, Pesticide and Toxics Compliance Section, Land and Chemicals Division; and Mardi Kievs, U.S. EPA Chief, Chemical Management Branch, Land and Chemicals Division. This document directs all OLQ contract lab procedures relating to PCB sampling and analysis. Science Services Branch chemists review all data deliverables as outlined in the QAPP.

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Land Quality Technical Activities and Programs (cont.)

Permits Branch technical activities subject to quality assurance and quality control practices:

Activity	Section	QA Staff Resources	Tools, SOPs, Standards Used
Review records submitted for groundwater, surface water, soil, methane gas data, groundwater flow maps, statistical analyses, statistical exception notices.	Geology	Geologists Supervisor	Protocol for documenting the review of groundwater monitoring reports, OLQ sampling database and correspondence module entries, Digital data submission requirements, Nonrule policy document on Methane Monitoring Program, Indiana groundwater standards, NPDES standards, Great Lakes Restoration Initiative protection standards, Risk Information Support Center default closure levels, Indiana drinking water standards, Prescribed methane gas limits, Drinking water equivalent levels, Removal action levels, Region IX Preliminary Remediation Goals and Health Effects Assessment summary tables
Collect groundwater, surface water, soil, and methane gas data.	Geology	Geologists Supervisor (Performed in conjunction with chemists from Science Services Branch as needed.)	Facility specific sampling and analysis plans, Geology's groundwater sampling and analysis plan preparation guidance, OLQ generic health and safety plans, Nonrule policy document on methane monitoring program, Field instrumentation procedures, Abandoned landfill generic SAP, U.S. EPA's groundwater sampling guidelines for Superfund and RCRA project managers
Collect GPS data.	Geology	Geologists Supervisor	GPS training manuals, GPS specific library templates
Perform groundwater program inspections.	Geology	Geologists Supervisor	Comprehensive monitoring evaluation, Operations and maintenance evaluation, Monitoring well system inspection checklists (New SOP in final draft stage), Groundwater sampling inspection (Proposed), Monitoring well installation observations, U.S. EPA and state guidance documents and narratives
Evaluate submitted sampling and analysis plans.	Geology	Geologists Supervisor	Geology's Groundwater Sampling and Analysis Plan Preparation Guidance, U.S. EPA and state guidance documents and rules
Evaluate submitted statistical evaluation plans.	Geology	Geologists Supervisor	U.S. EPA and state guidance documents and rules, Commercial statistical programs and training, Stats Workgroup SOP (to be revised)
Evaluate submitted methane monitoring plans.	Geology	Geologists Supervisor	Nonrule policy document on Methane Monitoring Program, U.S. EPA and state guidance documents and rules, Proposed SOP on review of methane monitoring plans
Evaluate groundwater	Geology	Geologists Supervisor	U.S. EPA and state guidance documents and rules, Indiana well construction and

Activity	Section	QA Staff Resources	Tools, SOPs, Standards Used
monitoring network plans.			abandonment rules, Well installation observations
Oversee enforcement.	Geology	Geologists Supervisor	Section SOP on making enforcement referrals, Economic costs of benefits, Enforcement Sections' SOPs and guidance documents, Supplemental Environmental Project Policy, U.S. EPA and state guidance documents and rules
Track and evaluate leachate and leachate recirculation reports.	Engineering	1 Engineer, 1 Engineering Supervisor	Solid waste rules, Guidance documents, and Permit conditions
Evaluate landfill gas collection and control systems and coordination with OAQ.	Engineering	1 Engineer, 1 Engineering Supervisor, OAQ staff	Solid waste and air pollution control rules, Guidance documents, and Permit conditions
Evaluate and analyze construction installation, tank leak tests, action leakage rate exceedances, as built design, site conditions, slope stability, hydraulic conductivity, operational and maintenance plan, and monitoring data.	Engineering	12 Engineers, 1 Engineering Supervisor	Solid and hazardous waste and confined feeding operations rules, Guidance documents, and Permit requirements
Review financial assurance documents	Engineering, Hazardous Waste (HW) Permits	1 Engineer, 1 Financial assurance officer, 1 Engineering supervisor	Solid and hazardous waste rules, Proposed SOP on financial assurance review, Guidance documents, and Permit requirements
Evaluate work plans and reports	HW Permits, Solid Waste (SW) Permits, Engineering, Geology	Project managers, engineers, geologists, supervisors, and managers	Solid and hazardous waste rules, Proposed SOPs, Guidance documents, and Permit requirements
Issue enforcement actions	HW Permits	Project managers	Hazardous waste rules, Proposed SOPs, Guidance documents, and Permit requirements
Preserve photo and video documentation	HW Permits SW Permits, Engineering, Geology	Project managers, engineers, geologists,	Preservation of film photographs, digital photographs, video, and audio recordings for Evidentiary Purposes Policy

Activity	Section	QA Staff Resources	Tools, SOPs, Standards Used
		supervisors, managers	
Review and develop permits	HW Permits, SW Permits, Geology, Engineering	Permit managers, engineers, geologists managers	SOPs, Rules, NPDs, Statutes, and Guidance
Review and develop closure plans	HW Permits, SW Permits, Geology, Engineering	Permit managers, engineers, geologists, managers	SOPs, Rules, NPDs, Statutes, and Guidance
Implement corrective action	HW Permits, SW Permits, Geology, Engineering	Permit managers, engineers, geologists managers	SOPs, Rules, NPDs, Statutes, and Guidance
Support Compliance, Enforcement, and Rules	HW Permits, SW Permits, SW Geology, So Engineering	Permit managers, engineers, geologists, managers	SOPs, Rules, NPDs, Statutes, and Guidance
Compliance (Geology)	Geology	Geologist	SOPs, Rules, NPDs, Statutes, and Guidance

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Land Quality Technical Activities and Programs (cont.)

Petroleum Branch technical activities subject to quality assurance and quality control practices:

- Leaking Underground Storage Tanks Program (LUST)

  The LUST program oversees the investigation and remediation of suspected and confirmed releases of regulated substances (petroleum and hazardous substances) from regulated underground storage tank (UST) systems. LUST program responsibilities have been delegated to IDEM through a cooperative agreement with the U.S. EPA. The primary program elements of this cooperative agreement are:
  1. Program administration – Provide management, supervisory and support services to develop grant applications, clean up contaminated sites, and report financial and performance measures to the EPA R5.
  2. Corrective action – Receive release reports, evaluate and prioritize sites, mitigate immediate threats to human health and the environment, and investigate and remediate releases of petroleum and regulated substances from regulated USTs.
  3. Enforcement and cost recovery – Compel owners and operators to conduct appropriate responses to LUST incidents including mitigation, site characterization, and corrective action or to recover costs for state funded responses.
- Excess Liability Trust Fund Program

  The Excess Liability Trust Fund program provides a mechanism for the reimbursement of monies spent by UST owners and operators on the cleanup of petroleum released from USTs. This section is integrally linked with the LUST Program and provides technical oversight of LUST report submittals for sites seeking reimbursement from the Excess Liability Trust Fund.

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Water Quality Technical Activities and Programs

Watershed Assessment and Planning Branch

Virtually all of Watershed Assessment and Planning Branch's programs involve the collection or analysis of quantitative data.

Technical Programs Subject to Quality Assurance and Quality Control Processes
Fixed station monitoring
Probabilistic Monitoring Program
Watershed characterization for TMDL development and watershed planning
Monitoring to identify improvements (performance measures) in water quality
Reference Sites Monitoring Program
• Special studies and compliance evaluations inspections program
• Monitoring to support development of public health advisories
❖ Fish Tissues and Sediment Contaminants Monitoring Program for Fish Consumption Advisories
❖ Cyanobacteria and cyanotoxins monitoring
Lakes monitoring
319/205(j) Project monitoring

Compliance and Enforcement Branch

The following Compliance and Enforcement Branch activities involve quality assurance and quality control processes:

- Reviewing Discharge Monitoring Report, Monthly Report of Operation, and Monthly Monitoring Report.
- Collecting, entering, and maintaining data.
- Providing compliance assistance and outreach.
- Performing inspection protocol.
- Responding to complaints per protocol.
- Evaluating operator certification applicants and trainers.
- Managing enforcement case.
- Calculating enforcement case penalty.

Permits Branch

The following Permits Branch activities involve quality assurance and quality control processes:

- Sewer construction
- Industrial NPDES permits
- General permits
- Municipal and semi-public NPDES permits
- Industrial pretreatment program
- Wastewater facility construction permitting
- Waste load allocations and TMDL reviews
- Combined Sewer Overflow (CSO) Communities Long Term Control Plans
- Antidegradation Demonstration and Water Quality Standard Variance reviews

Appendix C. Technical Activities and Programs Supported by the IDEM Quality System (cont.)

Office of Water Quality Technical Activities and Programs (cont.)

Drinking Water Branch

The following Drinking Water Branch activities involve quality assurance and quality control processes:

- Reviewing construction permit applications.
- Developing rules.
- Collecting, entering, and maintaining data.
- Providing compliance assistance and outreach.
- Performing inspection protocol.
- Performing complaint response protocol.
- Performing sampling protocol.
- Evaluating operator certification applicants and trainers.

Surface Water and Operations Branch

The following branch activities involve quality assurance and quality control processes:

- Reviewing stormwater run-off plans.
- Construction stormwater inspection.
- Reviewing wetland mitigation plans.
- OWQ budget and spending plans.
- Developing OWQ contracts and grants.

Office of Program Support Technical Activities and Programs

Northwest Regional Office

The following Northwest Regional Office activities involve quality assurance and quality control processes:

- Collecting and evaluating monitoring data (e.g., aesthetics monitoring data) required to inform BUI removal decisions.
- Performing field audits of habitat restoration and monitoring activities, as applicable.
- Performing field audits of beach water sample collection and notification.
- Reviewing *E. coli* enumeration data against notification decisions and reports submitted by grantees.
- Reviewing invoices submitted by contractors working on LAMP, RAP, or Beach Program projects.
- Reviewing Lake Michigan basin water quality and ecosystem data against the General, Substance, and Lake Ecosystem Objectives specified in Annex 2 of the 2012 Great Lakes Water Quality Agreement or developed pursuant to that Annex.
- In concert with the other members of the Lake Michigan Partnership, developing lists of Partnership actions to advance the nine General Objectives of the Great Lakes Water Quality Agreement.
- In concert with the other members of the Lake Michigan Partnership, developing the science and monitoring priorities for the Cooperative Science and Monitoring Initiative (CSMI) Lake Michigan Field Year.

Appendix D. Oversight of Contracted, Delegated, or Extramural Programs

Office of Air Quality Oversight of Contracted, Delegated, or Extramural Programs

Monitoring Branch

Some laboratory analyses are performed by contract laboratories. Local agencies perform some environmental monitoring under agreement with IDEM. Some industries are required to monitor for various reasons. While this monitoring is not delegated to them, they are subject to quality assurance and quality control requirements and oversight by the Monitoring Branch.

Contract or Extramural entity	Data or Service provided	Means of oversight
Eastern Research Group (ERG)	Analysis – Carbonyls, PAMS	U.S. EPA contract Lab – U.S. EPA provides QA/QC. QAPP is written for analysis by the contactor ERG prior to U.S. EPA awarding a contract. QA/QC of performance evaluation is done in comparison to QAPP requirements. U.S. EPA QAPP and contract oversight is provided by EPA – OAQPS staff.
UC Davis	Analysis – $PM_{2.5}$ speciation	Same as above.
Industries – Each is a primary quality assurance organization required to have its own QMP.		
Duke Energy	Monitoring, QA, and QC of SO_2 and meteorology	Monitoring and QA plan - outlines the QA/QC requirements to assure the quality of data submitted. Systems evaluation by OAQ QA (annually) provides an external audit of the QA/QC procedures. Quarterly QA data submittal review by Monitoring Branch staff to provide oversight on all data submitted.
Cleveland Cliffs	SO_2 and meteorology	Same as above

Appendix D. Oversight of Contracted, Delegated, or Extramural Programs (cont.)

Office of Air Quality Oversight of Contracted, Delegated, or Extramural Programs

Programs Branch

The branch reviews the QMP of potential contractors prior to receiving bids on contracts. It reviews the QAPPs of potential contractors before contracts are awarded.

Contract or Extramural entity	Data or Service provided	Means of oversight
Envirotest Systems	Operation of the inspection and maintenance program	IDEM staff refers to exhibits contained in specific contracts, which outline the scope of work, the timeline for each step of the project, and the associated costs, and monitors all parameters are met. This review is conducted to ensure quality assurance requirements are met on any project which provides a service or data to the department.
BP Amoco South Shore Clean Cities	Rebates to municipalities for alt fueled vehicles, Conversions, Rebates to individuals for alt fueled vehicles, Idle Reduction Education Program	Project complete
BP Amoco NW Indiana Diesel Grant Program	Diesel retrofits	Project complete
Hammond Department of Environmental Management (BP Amoco)	Idle Reduction Education Program	Project complete
Merrillville School Corp (Ispat/Inland)	Diesel retrofits	Project complete

Compliance and Enforcement Branch

The Compliance and Enforcement Branch is currently using two contractors.

Contract or Extramural entity	Data or Service provided	Means of oversight
Micro Air	Asbestos sample analysis	National Voluntary Laboratory Accreditation Program approval. Third party independent accreditation.
Kerimida Environmental	Conducts coke oven battery 303 inspections.	40 CFR 63, Subpart L and 40 CFR 60, Appendix A-4, Method 9. Third party independent accreditation.

Appendix D. Oversight of Contracted, Delegated, or Extramural Programs (cont.)

Office of Land Quality Oversight of Contracted, Delegated, or Extramural Programs

Science Services Branch
Science Services Branch conducts oversight of contractors.

- Contracted Laboratory Analysis

  Laboratory analysis is performed for the OLQ by private laboratories under contract to the state. As part of the contract process, the laboratories are required to have a documented quality control system (QCS). The QCS criteria are outlined in the Laboratory Services Request for Proposals 9-34. All prospective vendors were audited for QCS criteria prior to award.

- Laboratory Analyses

  Laboratory analyses are either performed by IDEM contract laboratories or are performed by U.S. EPA laboratories. IDEM contract laboratories are required to have a documented QCS in place. Details regarding acceptable laboratory QCS criteria can be referenced in the contracts to provide analytical laboratory services A305-9-291 thru A305-9-293 Broad Agency Announcement 2-003 for Laboratory Services or in the following OLQ contract RFP 5-102 for Laboratory Services. Prior to awarding any laboratory contract, the Science Services Branch conducts a laboratory audit of their respective QCS to ensure IDEM's quality criteria are met.

- Consultant or Services Contracts

  When needed, the Remediation Services Branch generally procures services for sampling, risk assessment preparation, remedial or construction oversight, and technical review services under one of two contracts (referred to as Master Agreements) for Services including:
    - Field Response Services

Remediation Services Branch
These Master Agreements are currently in the revision process and their scope has not been completed yet. Contractual oversight is provided through project manager and technical staff review of plans or reports; or through direct observation of environmental information collection or remediation. Payment of invoices for work performed is contingent upon the signature of the RSB project manager to signify approval of the work performed. General Remediation Services Branch Contracts: Occasionally, Remediation Services Branch procures contracts for specialized supplies, training, or other miscellaneous services. Procurements are defined in writing via Scope of Work, requests for proposals, or requests for quotations. These documents individually specify tasks, deliverables, quality assurance, and other requirements as determined by the Remediation Services Branch project manager. As with the Master Agreement contracts, the Remediation Services Branch project manager must approve adequate work performance prior to invoice payment.

The remediation of the majority of sites in the Remediation Services Branch programs are funded by responsible parties which conduct site investigations and remediation activities with oversight from Remediation Services Branch project managers who review and validate the quality of the data upon which remediation activities are based.

Appendix D. Oversight of Contracted, Delegated, or Extramural Programs (cont.)

Office of Land Quality Oversight of Contracted, Delegated, or Extramural Programs

RSB program specific information:

- State Cleanup

On sites where an imminent threat to human health or the environment has been identified, State Cleanup Section staff may conduct limited environmental investigation or conduct immediate removal actions. Any IDEM-lead investigation will follow the appropriate U.S. EPA and IDEM RCG, or risk guidelines and typically utilize one or more of the existing Master Agreement for Services contracts.

- Federal Programs

As part of the federal grant process, IDEM and U.S. EPA enter into Cooperative Agreements which include Scopes of Work detailing the work, and quality system components, expected to meet annual and long-term goals. Work products undergo technical review by either internal Science Services Branch staff or external contracted consultants. In accordance with Cooperative Agreement and grant requirements, Federal Programs staff submit quarterly and semi-annual reports to EPA R5 detailing performance results and meet with them twice a year to discuss relevant issues. Project managers evaluate contracted work products for adherence to the appropriate U.S. EPA guidance. Superfund and Department of Defense sites utilize QAPPs.

- Site Investigation

Site Investigation program staff conduct their own environmental investigations, following the appropriate U.S. EPA guidance, the SI Program QAPP, and site-specific work plans. Laboratory analyses are performed by U.S.EPA laboratories (CLP/CRL/SAS).

- Voluntary Remediation Program

Documentation (investigation reports, remediation work plans, QAPPS, health and safety plans, etc.,) submitted to IDEM is subject to review and evaluation for technical sufficiency. The VRP project manager or designated technical representative may perform direct oversight during field work activities. In addition, the VRP project manager or designated technical representative collects split samples for all project closures as verification of conditions meeting closure criteria.

- Indiana Brownfields Program (Administered by the Indiana Finance Authority)

Site assessment and petroleum or hazardous substance remediation activities conducted with Indiana Finance Authority grants must be performed consistent with IDEM RCG. Specific assessment activities must receive Indiana Brownfields Program approval prior to implementation. Project managers staff perform oversight at all grant-funded site assessments to ensure quality of work.

Appendix D. Oversight of Contracted, Delegated, or Extramural Programs (cont.)

Office of Land Quality Oversight of Contracted, Delegated, or Extramural Programs

Permits Branch

The branch does not work with contractors and so performs no oversight.
All data analyzed by the OLQ contract laboratories is subject to an independent data verification and validation review by the Chemistry Services Section. The data package is assigned by the Chemistry Services Section chief to a Chemistry Services Section chemist to be reviewed after being logged in as stated in the "Data Package/Field Documentation Receipt" SOP. The Science Services Section chemist reviews the data in accordance with the "Data Verification and Validation" SOP. The data review is conducted independently of the project manager, who uses the data for project decisions. A Verification, Validation and Project Assessment memo is written, peer reviewed and sent through the Chemistry Services Section chief to the project manager. Any data quality disputes are handled by the quality assurance officer, a senior level chemist who specializes in laboratory analytical methods, and the contract specifications. Both the Chemistry Services Section chief and the quality assurance officer report to the Science Services Branch chief. This ensures independence and authority for these reviews.

Petroleum Branch

As part of the federal grant process, IDEM and U.S. EPA enter into Cooperative Agreements which include Scopes of Work detailing the work, and quality system components, expected to meet annual and long-term goals. Work products undergo technical review by internal Science Services Branch staff. LUST Program staff submit quarterly and semi-annual reports to U.S. EPA detailing performance results and meet twice a year with U.S. EPA to discuss relevant issues. Project managers evaluate contracted work products or those submitted to IDEM for review for adherence to the RCG or risk-based guidelines.

Office of Water Quality Oversight of Contracted, Delegated, or Extramural Programs

Watershed Assessment and Planning Branch

Environmental samples, collected from different matrices (water, sediments, and fish tissues) are sent to contract laboratories for chemical analyses. All contracts with laboratories require a U.S. EPA approved QA/QC system is in place and acceptable to IDEM. A copy of the current quality assurance manual of each contracted laboratory is reviewed and kept in the contract manager's files. Additionally, assessment activities in the field may be conducted in cooperation with non-IDEM groups such as U.S. Geological Survey, Indiana University School of Public and Environmental Affairs (IU SPEA), or volunteer monitoring groups. Lake assessments may be conducted by IU SPEA.

All contract labs are prequalified by IDEM which reviews and approves their QMP, SOPs, and other technical documents in response to IDEM RFPs. Labs submitting bid responses to IDEM also include details about each facility, staffing, staff qualifications, and lab audit reports performed by other groups or organizations as well as state or federal accreditations. Consequently, IDEM does not require a site visit or audit of any contract lab. Site visits may occur to resolve laboratory quality assurance problems which may occur or to verify the proper corrective action has been taken.

Appendix D. Oversight of Contracted, Delegated, or Extramural Programs (cont.)

Office of Water Quality Oversight of Contracted, Delegated, or Extramural Programs
The Watershed Assessment and Planning Branch performs a vigorous quality check of data provided to IDEM by contract laboratories. Each lab data set is checked for compliance against the IDEM Watershed Assessment and Planning Branch QAPP and contract requirements for QA/QC. Contract labs also submit data in electronic format which is reviewed for accuracy and completeness, and assigned to a specific level of DQA indicating the quality of data and its usefulness in water quality assessments which are suitable for regulatory decision-making.

319 and 205(j) grant project managers in the Watershed Planning and Restoration Section are responsible for review of tasks, deliverables, and schedules during quarterly site visits with contractors or grant sponsors. The contractors or grant sponsors are required to submit progress reports with every invoice, or at least quarterly progress reports if they don't invoice as often. The project managers review reports and invoices to ensure all tasks are on schedule, expenses and match are eligible, and deliverables are acceptable. Invoices are signed by the senior project manager or section chief for submittal to the accounting office.

Contract or Extramural entity	Data or Service provided	Means of oversight
Pace Analytical Services Indianapolis, IN	Provides analytical services for water and sediment samples collected by IDEM. Analyses may include general chemistries, nutrients, metals, and organic parameters. These services support multiple Watershed Assessment and Planning Branch Projects including the Probabilistic and Watershed Characterization Programs, Reference Site Monitoring, TMDL development, and special projects.	Data reports and packages are reviewed for QA/QC in compliance to a template check list developed for project specific Water Quality Monitoring Programs. This QA/QC template has been designed to be consistent with IDEM RFP and Watershed Assessment and Planning Branch QAPP requirements so each QA/QC review is consistent with agency standards.
Eurofins Eaton Analytical South Bend, IN	Provides analytical services for water samples collected by IDEM. Samples may be analyzed for general chemistries, nutrients, metals, organic, and bacteriological parameter. These services support IDEM's Probabilistic and Watershed Characterization Programs, TMDL development, and special projects.	Data reports and packages are reviewed for QA/QC in compliance to a template check list developed for project specific Water Quality Monitoring Programs. This QA/QC template has been designed to be consistent with IDEM RFP and Watershed Assessment and Planning Branch QAPP requirements so each QA/QC review is consistent with agency standards.
Indiana Department of Health (IDOH) Environmental Laboratory Indianapolis, IN	Provides analytical services for water samples collected by IDEM. Analyses may include metals, inorganic chemicals, organic chemicals, physical properties, and *E. coli* bacteria. These services support IDEM's Fixed Station	Data reports and packages are reviewed for QA/QC in compliance to a template check list developed for project specific Water Quality Monitoring programs. This QA/QC template has been designed to be consistent with IDEM RFP and Watershed Assessment and Planning Branch QAPP

Contract or Extramural entity	Data or Service provided	Means of oversight
	and performance monitoring, and special projects.	requirements, so each QA/QC review is consistent with agency standards.
Pace Analytical Services Madison, WI and Minneapolis, MN	Provides analytical services for fish tissues and sediment samples collected by IDEM staff. Samples are analyzed for general chemistry, nutrients, and organic parameters in support of Fish Tissues and Sediments Contaminants Monitoring Project, Fish Consumption Advisories, and special projects.	Data reports and packages are reviewed for QA/QC in compliance to a template check list developed for project specific Water Quality Monitoring programs. This QA/QC template has been designed to be consistent with IDEM RFP and Watershed Assessment and Planning Branch QAPP requirements, so each QA/QC review is consistent with agency standards.
IU SPEA	Conducts water quality monitoring in lakes and reservoirs through the Clean Lakes Program. Implements a volunteer monitoring program which provides more limited data. Clean Lakes Program data is submitted to IDEM for use in Clean Water Act assessments, and volunteer data is submitted for potential use in these processes. Contractor also conducts data analyses, submitting the results in a report to IDEM annually.	Data reviewed by IU SPEA for compliance to 319 IDEM approved QAPP. Only qualified data are submitted to IDEM. Data which would be assessed as rejected are maintained according to the IU retention schedule by IU SPEA. Data undergo internal QA review in accordance with the approved QAPP prior to reporting to IDEM. IU SPEA submits a QA report to IDEM annually.
319/205(j) Grantees	Environmental sampling and analyses. Nature and scope of monitoring efforts vary from project to project but may include biological, bacteriological, and chemical parameters. Grantees conduct outreach, develop watershed management plans, including watershed characterization, source identification of pollutants, and information on cause-and-effect relationships. Grantees install and may monitor best management practice with the goal of improving water quality.	• Quarterly site visits by project managers • Progress reports with every invoice submitted or at least quarterly • Quality assurance project plan submission and approval required before sample collection can begin • Any changes to the monitoring plan must be approved prior to their implementation. Data submission with final project report for final review and evaluation

Compliance Branch

Laboratory technical assistance with NPDES approved test methods or with other laboratory issues, is available. The branch assists U.S. EPA in the administration of the Discharge Monitoring Report-Quality Assurance Study program.

Permits Branch
Permits does not delegate or contract out any work.

Drinking Water Branch
Environmental samples, collected from different matrices (groundwater, surface water, and finished drinking water) are sent to contract laboratories for chemical analyses. All contracts with laboratories require an IDEM acceptable QA/QC system. A copy of the current quality assurance manual of each contracted laboratory is reviewed and kept in the contract manager's files.

Appendix D. Oversight of Contracted, Delegated, or Extramural Programs (cont.)

Office of Water Quality Oversight of Contracted, Delegated, or Extramural Programs
All contract labs are prequalified by IDEM which reviews and approves their QMP, SOPs, and other technical documents in response to IDEM RFPs. Labs submitting bid responses to IDEM also include details about each facility, staffing, staff qualifications, and lab audit reports performed by other groups or organizations, as well as state or federal accreditations.

IDEM works with other state and federal agencies through a Memorandum of Understanding system. Each memorandum of understanding is typically for a one-year period. QA/QC is managed in the same manner as with commercial labs and require an acceptable IDEM approved QA/QC system.

Contract or Extramural entity	Data or Service provided	Means of oversight
Pace Analytical Services Indianapolis, IN	Provides analytical services for water and sediment samples collected by IDEM. Analyses may include general chemistry, nutrient, metal, and organic parameters.	Data reports are minimally set to receive analytical quality control results accompanying sample results. QA/QC data is reviewed for suitability of use. Enforcement level data includes additional bench and analytical run data for a more in-depth review.
Eurofins Eaton Analytical South Bend, IN	Provides analytical services for water and sediment samples collected by IDEM. Analyses may include biological, general chemistry, nutrient, metal, and organic parameters.	Data reports are minimally set to receive analytical quality control results accompanying sample results. QA/QC data is reviewed for suitability of use. Enforcement level data includes additional bench and analytical run data for a more in-depth review.
IDOH Environmental Laboratory Indianapolis, IN	Provides analytical services for water and sediment samples collected by IDEM. Analyses may include biological, general chemistry, nutrient, metal, and organic parameters.	Data reports are minimally set to receive analytical quality control results accompanying sample results. QA/QC data is reviewed for suitability of use. Enforcement level data includes additional bench and analytical run data for a more in-depth review.

Surface Water and Operations

- Mapping and GIS services
- Mobile Application Development

Appendix D. Oversight of Contracted, Delegated, or Extramural Programs (cont.)

Office of Program Support Oversight of Contracted, Delegated, or Extramural Programs

Northwest Regional Office

The Northwest Regional Office conducts oversight of contractors involved in habitat restoration or monitoring efforts in the Grand Calumet River AOC as applicable, as well as data collection and support of IDEM's Lake Michigan Beaches Monitoring and Notification Program.

Contract or Extramural entity	Data or Services provided	Means of oversight
Indiana Department of Natural Resource (IDNR)	• Monitors restoration work conducted under the Dune and Swale, Phase II and Pine Station Ponds Restoration GLRI Direct Funding Grants. • Provides or oversees habitat restoration contractors and crews and equipment purchases pursuant to GLRI Direct Funding Grants. • Develops natural resource plans and administers contracts on IDNR properties. • Provides Clean Marina Program Support. • Plans and chairs NWI Septic System Coordination Workgroup Meetings. • Attends LAMP/RAP related meetings. • Supports LAMP Conference Planning. • Coordinates IDNR portion of LAMP implementation, including nonpoint source and SepticSmart Week initiatives. • Represents Indiana at Great Lakes Fisheries Commission meetings. • Develops invasive species control programs for IN Dunes State Park. • Provides Lake Michigan interpretative presentations at IN Dunes State Park. • Provides Lake Michigan Water Program Coordination and NWI Urban Waters Federal Partnership support.	• Quarterly reimbursement requests and backup documentation reviewed against Memorandum of Agreement specifications. • Review of progress reports submitted by IDNR in accordance with the respective MOA.
Beach Grantees: • IDNR • Hammond Port Authority • City of Whiting • East Chicago Health Dept. • City of Gary • Town of Ogden Dunes • Town of Beverly Shores • City of Michigan City	• *E. coli* sample collection and analysis during the designated beach season. • Timely input of E. coli monitoring results into Beach*Alert*. • Conduct timely public notification actions, including input of current swim status into Beach*Alert* and posting of appropriate signage on site.	• Invoices and backup documentation reviewed against grant specifications. • Periodic site visits conducted. • Review of progress reports and final reports. • Daily review of Beach*Alert* monitoring and notification entries

Contract or Extramural entity	Data or Services provided	Means of oversight
• LaPorte County Health Dept.		

Appendix E. The Systematic Planning Process

From: *U.S. EPA QA/G-4 Guidance on Systematic Planning Using the Data Quality Objectives Process*

Table 1. Elements of Systematic Planning
Elements
Organization: Identification and involvement of the project manager, sponsoring organization and responsible official, project personnel, stakeholders, scientific experts, etc. (e.g., all customers and suppliers).
Project Goal: Description of the project goal, objectives, and study questions and issues.
Schedule: Identification of project schedule, resources (including budget), milestones, and any applicable requirements (e.g., regulatory requirements, contractual requirements).
Data Needs: Identification of the type of data needed and how the data will be used to support the project's objectives.
Criteria: Determination of the quantity of data needed and specification of performance criteria for measuring quality.
Data Collection: Description of how and where the data will be obtained (including existing data) and identification of any constraints on data collection.
Quality Assurance (QA): Specification of needed QA and quality control (QC) activities to assess the quality performance criteria (e.g., QC samples for both field and laboratory, audits, technical assessments, performance evaluations, etc.).
Analysis: Description of how the acquired data will be analyzed (either in the field or the laboratory), evaluated (i.e., QA review/verification/validation), and assessed against its intended use and the quality performance criteria.

Appendix F. The OLQ Analytical Services Guide

A guide used by OLQ staff to communicate sampling information to Science Services Branch staff.

OLQ Analytical Services Guide

Requesting Lab Services from Contracted Labs for Analyses

Office of Land Quality (OLQ) staff collects various samples of different matrices such as air, soils, sediments, water, wastes, and soil gas to identify the concentration of potential hazardous contamination. Staff from any section or branch within OLQ may request analyses set up and sampling assistance.

You're Going Sampling. What's next?

You need to determine what constituents need to be analyzed in the various matrices at your site or facility. OLQ contracts with various environmental laboratories to provide analyses of your samples collected from your site or facility.

Consult with the site chemist or Environmental Chemistry Technical Specialist (Chemist E7) regarding the objective of the sampling event and sample analyses. The Chemist E7 also serves as the Sampling Gatekeeper (SG).

To obtain the sample containers with subsequent analyses, you will need to determine the type of analyses and complete the Sample Request Sheet (SRS) which is available on the OLQ Chemistry Services SharePoint Site.

Sample Request Sheet – Fill out the turquoise colored portions of the SRS. The turn-around-time (TAT) is generally 30 days to complete the analyses and return the data.

Note: Remember to include Quality Control samples such as duplicates, equipment blanks, and trip blanks, on the SRS. Matrix spike/matrix spike duplicates are automatically accounted for and do not need to be included on the SRS. Also, allow enough time for the SG to complete the cost estimation, determine contract laboratory, and to set up sampling kit.

After you have consulted with a chemist and completed the SRS, then e-mail or take the completed SRS to the SG for cost estimation and determination of the contracted laboratory that will provide sample containers and analyze your samples. The SG will return the SRS with assigned sample identification numbers to you to review and finalize the details of the sampling event (ensure that Item 11 on the SRS will meet your expectations). Next, have your supervisor sign the SRS, make a copy for your records, and then return the original signed SRS to the SG. If you are in the UST Branch or the Federal Programs Section, see Attachment 1 for additional information.

The following field documentation sheets are delivered with the sampling kit and are also available on the OLQ Chemistry Services SharePoint Site.

Appendix F. The OLQ Analytical Services Guide (cont.)

- Site Information Sheet - You will need this sheet to document site conditions and basic site information.
- Sample Field Sheet - You will need this sheet for each sample location.
- Chain-of-Custody Form – You will need this three page carbonless State of Indiana form (IDEM COC form) to account for samples relinquished to the laboratory. The laboratory keeps two, the white and the yellow copy. You keep one copy, the pink form, and return it to the SG.

Additional information regarding Quality Control samples is provided in Attachment 2 and sample forms are in Attachment 3.

I have placed my request. Now what happens?

You should allow time for the SG to consult and communicate with the lab, to order the sample kit set-up, and delivery and transfer of the sampling kit within IDEM OLQ. Please allow a minimum of a week for this process. The sample kit, consisting of cooler(s) with the appropriate matrix containers, will be delivered to you with the following field documentation: site information sheet per site, sample field sheets per sample location, and the IDEM COC form. When the sampling kit arrives from the lab, the SG will check to ensure you received what you ordered. Let the SG know right away if you experience problems with items in the sampling kit.

Complete the site information sheet in pen (black or blue ink only).

Complete sample field sheets during the sampling event - **one sample field sheet per sample location will be included with the sampling kit.**

Note: You may be able to complete some information on the field documentation sheets prior to the sampling event.

After completing the sampling event, return the sampling kit that contains sampled materials to the assigned contracted laboratory identified on the SRS. After you complete the IDEM COC form, both you and the laboratory technician will sign and date the IDEM COC form at the laboratory to relinquish sampled materials to the laboratory. You give the laboratory the white and yellow copies of the IDEM COC form and keep the pink copy.

Return the completed field documentation sheets (SRS, site information sheet, sample field sheets, the pink copy of the IDEM COC form, and statement of container cleanliness sheet(s) to the SG. This is an important step because it will ensure a timely and thorough evaluation of your data.

Appendix F. The OLQ Analytical Services Guide (cont.)

How Long Do I Wait For the Data?

The laboratory will generally take 30 days (See SRS) to analyze and process your samples. If you need the data sooner be sure to discuss this with the SG during the consultation phase prior to your sampling event. When the data package arrives, the SG documents the receipt of the data and sends the data package and your documentation to the OLQ Chemistry Services Section.

The site chemist will be assigned to review the data package for verification, validation, and interpretation. The site chemist will check that the laboratory performed the applicable analyses.

You will receive a Data Summary Sheet, a Data Verification and Validation Memo, and a Data Interpretation Memo from the site chemist that performed the evaluation of your sampling data. Your Administrative Assistant will ensure that these memos are placed in Virtual Filing Cabinet (VFC).

Appendix F. The OLQ Analytical Services Guide (cont.)

Attachment 1

Quality Assurance Project Plan

The Tanks Branch, Site Investigation (SI) program, and Compliance Branch (PCB sampling) use a QAPP format when sampling in the field. Tanks Branch, SI program, and Compliance Branch staff should read and be familiar with all aspects of the respective program QAPPs which can be found at:

Tanks Branch QAPP (2014)

Site Investigation program QAPP (2014)

Compliance Branch PCB QAPP (2015)

A general QAPP guidance (2015) is available on OLQ Chemistry's webpage here.

Appendix F. The OLQ Analytical Services Guide (cont.)

Attachment 2

Additional Information

Quality Control

Quality control measures are those activities one undertakes to demonstrate the accuracy (how close to the real result one is) and precision (how reproducible the results are) of the analysis. Quality Control (QC) consists of field and laboratory steps one will take to determine the validity of specific sampling and analytical procedures. Terms with which the sampler should be familiar relative to the sampling event are listed below.

Quality Control Definitions

- *Field Blanks* - A trip blank (also known as a field blank), ambient blank, and equipment/rinsate blank use deionized water which is treated as a sample. They ae used to identify errors or contamination in sample collection and analysis.
- *Field Duplicates or Co-located Samples* - A field duplicate is a split sample of the original field sample collected by the same team or by another sampler or team at the same place, at the same time. A co-located sample is collected in the same place as the duplicate. It is not a split. These samples are used to estimate sampling and laboratory analysis precision.
- *Temperature Blank* - For each cooler that is shipped or transported to an analytical laboratory 40 ml Volatile Organic Analyte (VOA) vial will be included that is marked "temperature blank.' This will be used by the laboratory custodian to check the temperature of samples upon receipt at the laboratory.
- *Matrix Spike Samples* – A sample of the same matrix (e.g., water, soil, sediment, waste) per every twenty samples being analyzed for the same constituents may be associated with a single matrix spike (MS) sample of a matrix spike/matrix spike duplicate (MS/MSD) pair.

Special Considerations

The Emergency Response (ER) Section obtains approximately 100 sample numbers (designated as RI numbers) and provides samples to the Indiana State Department of Health (ISDH). These samples are analyzed by the ISDH using the EPA 500 analyses series. This is a drinking water series of analyses and is primarily used to determine if the matrix may be contaminated with hazardous materials as described in the RCRA or Superfund programs.

Appendix F. The OLQ Analytical Services Guide (cont.)

Site Investigations Section, a Federal Programs gatekeeper process, may use the laboratory contracts for requests to:

- Provide Derived Waste disposal,
- Provide rental of sampling equipment, or
- Provide Site Investigation screening analyses.

Attachment 3

Sample Forms

Appendix F. The OLQ Analytical Services Guide (cont.)

OLQ Sample Request	1. Date 2/27/2015	Sample Numbers	
2. Site Name	3. Site ID Numbers (Old)	(New)	4. Grant Code
5. Street Address	6. City		7. County
8. Person Requesting Samples	Branch/Section		Phone
9. Sampler(s)	Branch/Section		Phone
10. Site Manager / Facility Contact			Phone
11. Reason for Sampling: Briefly describe the problem **sampling and analysis** should resolve.			Electronic Copy: Yes
12. DQO:	13. Protocol:		
14. Matrix Type:	15. Dedicated Equipment?		
16. **This section for Air Analysis only:** 16 A. Six (6) Liter Summa Certification (Includes vacuum and pressure gauge):			
16 B. Flow Controller:			

17. Analysis:									
18. Samples:									
Duplicates:									
Trip Blanks:									
Equipment Blanks:									
Total:									

19. Projected Sample Date(s)	20. Projected Date(s) to Lab	21. Turnaround Time	22. Cooler Arrival
Lab Assigned	Lab Contact	Lab Contact Date	Projected Cost
Actual Date to Lab	Data Package Due	Preliminary Results Received	Package Received
Sampling Gatekeeper			
Section Chief	Branch Chief		
Assistant Commissioner	Assistant Commissioner of OMBA		
$0-$10,000 - Section Chief **$20,001-$40,000 - Add Assistant Commissioner of OLQ**	**$10,001-$20,000 - Add Branch Chief** **Over $40,000 - Add Assistant Commissioner of OMBA**		

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Appendix F. The OLQ Analytical Services Guide (cont.)

SAMPLE REQUEST SHEET INSTRUCTIONS

Please complete only the numbered items on the form.

1. **Date** – Today's Date (Filled in automatically).

Items 2-7 are facts about the site being sampled.

8. **Person Requesting Samples** – Assuming you are filling out this form, that would be you.

9. **Sampler(s)** – Person(s) who will be in the field, collecting the samples.

10. **Site Manager/Facility Contact** – Non-IDEM contact person for the site or facility (if applicable).

11. **Reason for Sampling** – Briefly describe the problem sampling and analysis should resolve. Identify thresholds or action levels for decision criteria. For site characterization identify the sampling locations by map, site document, or descriptive sampling points. **Electronic Copy – Always Yes.**

12. **Data Quality Objectives** – The adjoining turquoise cell contains the following drop-down categories: Preliminary/Screen, Waste ID/Characterization, RISC-ISC, RISC-Monitoring, RISC-N&E, RISC-Closure, VRP (grandfathered), UST/LUST (grandfathered), Other, Multiple, thus varies by use of data. All contract laboratory data packages are enforceable. Highlight the best category that best describes your objective and either click your mouse or hit enter.

13. **Protocol** – The adjoining turquoise cell contains the following drop-down categories: SW846, Drinking Water, CLP, and Special Analytical Services (SAS). SW-846 should be suitable for most purposes. Drinking water methods should only be used on drinking water samples. CLP use is program and site specific. Highlight the category that best describes your protocol and either click your mouse or hit enter. Please note, if you are utilizing a SAS, Mr. David Harrison (Chemist E7) must sign the sample request.

14. **Matrix Type** – The adjoining turquoise cell contains the following drop-down categories: Air, Soil, Sludge, Other Waste, Surface Water, Ground Water, Waste Water, Wipe, Other. Please submit one form for each matrix being sampled. This should reduce confusion about the appropriate number of duplicates and matrix spikes to obtain. Highlight the category that best describes your matrix and either click your mouse or hit enter.

15. **Dedicated Equipment** – The adjoining turquoise cell contains the following drop-down categories: Yes or No. In other words, is the sampling equipment you will be using going to be dedicated (single use) or will it have to be decontaminated between uses? Highlight the category that describes your use of sampling equipment and either click your mouse or hit enter.

16. **Analysis** – The adjoining turquoise cells contain the following drop-down categories: See #11, BTEX, BTEX/MtBE, Cyanide, Lead, Metals-A, Metals-B, Metals-C, Metals-D, Metals-E, VOCs, SVOCs, PAHs, PCB, Pest, Pest/PCBs, TPH-Gas, TPH-Diesel, TPH-Oil, TPH-ALL, % Solids. The pull down menu contains only the most common parameter lists. If you need another parameter, please choose "See #11" and indicate the needed parameters in Item 11 above. Highlight the category that describes the requested analysis and either click your mouse or hit enter. Please select one analysis per cell.

17. **Samples** – Enter the number of samples.

Appendix F. The OLQ Analytical Services Guide (cont.)

18. **Projected Sample Date(s)** – Enter the date or dates on which you expect to collect the samples. Please try to avoid collecting on Saturdays unless you can get the samples to the laboratory by the end of the day.

19. **Projected Date(s) to Lab** – We ask for this information because the laboratories like to know what to expect. If your plans change, please let the SG know as soon as possible. Samples should be submitted to the laboratory as soon as practicable, generally within 48 hours of collection. Some analyses (e.g. hexavalent Chromium) may require more rapid submittal to allow the laboratory to do the analysis within holding times. Extended sampling events may require multiple submissions to the laboratory. Try to avoid delivery to the laboratory on Saturdays - labs are sometimes closed on weekends, or charge us high "emergency" response fees to have someone on hand to accept weekend deliveries.

20. **Turn-a-round Time** – The turquoise cell below contains the following drop-down categories: 90 Days, 60 Days, 30 Days, 21 days, 14 Days, 7 Days, 2 Days, Other. Highlight the category that describes the requested turn-around -time and either click your mouse or hit enter. The laboratory has to submit the full data package to IDEM. Ordinarily 30 days. Faster turn-a-round times can be requested at ***rapidly*** escalating expense. In some cases we are able to obtain preliminary faxed or electronic results; ask the SG for these if you need them.

21. **Cooler Arrival** – Enter the date for either cooler arrival (out-state labs) or when you would like to pick up the cooler (in-state Labs). Please note: If you do not need coolers or bottles type: NA.

Appendix F. The OLQ Analytical Services Guide (cont.)

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF LAND QUALITY

PAGE _____ OF _____

SITE INFORMATION *

IDEM Sample #s: _____ Sampling Date(s): _____

Site Name: _____ Site ID #: _____

Street Address: _____ City: _____ County: _____

Site Representative(s): _____ Company: _____
IDEM Samplers: _____ Laboratory: _____

Weather Conditions: Sky _____ Ground _____ Wind _____ Temp _____ Humidity _____

Sample Types (check all applicable): ☐ Mon. Well ☐ Res. Well ☐ Creek ☐ Leachate ☐ Ditch
☐ Drainage Tile ☐ Lagoon ☐ Pond ☐ Sludge ☐ Sediment ☐ Industrial Waste
☐ Waste Pile ☐ Soil ☐ Truck ☐ Drummed Waste ☐ Waste Liquid ☐ Oil
☐ Solvent ☐ Sand ☐ Ash ☐ Other _____ _____

Sample Choice (check): ☐ Grab ☐ Composite ☐ Statistical ☐ Random ☐ Judgmental

Sampling Equipment Used: _____
Decontamination Procedures: _____

Field Test Equipment Used: _____
Calibration Notes: _____

Container Source: _____ Sample Preservative Source: _____
Blank Water Source: _____ Decontamination Water Source: _____

Program Area (check): ☐ RCRA ☐ CERCLA ☐ Solid Waste ☐ DOD ☐ LUST/UST ☐ VRP
☐ State Cleanup ☐ Emergency Response ☐ Other _____

Purpose (check): ☐ Complaint ☐ Compliance ☐ Enforcement ☐ Other _____

Constituents Expected: _____ Handling Precaution: ☐ Yes ☐ No

Photos Taken? ☐ Yes ☐ No Send analytical data review to: _____ Phone: _____

Other Notes or Deviations from Sampling Plan: _____

Revised 09-11-00 **Sampler Signature:** _____ **Date:** _____

* This form is for general use in OLQ sampling projects.

Appendix F. The OLQ Analytical Services Guide (cont.)

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF LAND QUALITY

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SAMPLE FIELD SHEET *

Site Name: _____ County: _____
IDEM/OLQ Sample #: _____ Sample ID: _____
Collection Date: ____ / ____ / ____ Time: ____ : ____ AM / PM

Sample Types (check all applicable): ☐ Mon. Well ☐ Res. Well ☐ Creek ☐ Leachate ☐ Ditch
☐ Drainage Tile ☐ Lagoon ☐ Pond ☐ Sludge ☐ Sediment ☐ Industrial Waste
☐ Waste Pile ☐ Soil ☐ Truck ☐ Solvent ☐ Oil ☐ Drummed Waste
☐ Waste Liquid ☐ Sand ☐ Ash ☐ Trip Blank ☐ Field Blank ☐ Equipment Blank
☐ Background ☐ MS/MSD ☐ Duplicate of _____ ☐ Other _____

Containers:	Volume	Material	Quantity	Preservative	Analysis

Sample Location Information: (location marker, depth taken, flow rate, vegetation damage, wildlife present, etc.)

_____

_____

For Well Samples: Well purged less than ☐ 1 ☐ 2 ☐ 4 ☐ 6 ☐ 12 ☐ 24 ☐ 48 hours prior to sampling.
Purged to dryness? ☐ Yes ☐ No Approx. ☐ 1 ☐ 2 ☐ 3 ☐ 5 ☐ >5 well volumes.

Sampling Equipment Used: _____

Field Test Performed	Result	Field Test Performed	Result

Sample Appearance and Observations: (color, odor, clarity, suspended solids, reaction to preservatives, etc.)

_____

_____

Deviations from Sampling Plan: _____

_____

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Appendix F. The OLQ Analytical Services Guide (cont.)

SAMPLE CUSTODY CHAIN - IDEM OFFICE OF LAND QUALITY

State Form 42091 (2-03)

(1) SAMPLE CERTIFICATION - I certify the following samples were collected by me or in my presence:	Print Name:
Sample Date(s):	Signature:

Please Send Report to:
IDEM
OLQ Chemistry Section
Attn: QA Officer
100 N Senate Avenue, N1101
P. O. Box 6015
Indianapolis, IN 46206-6015

(2A-2C) SAMPLE INFORMATION			(2D) COUNTS				(2E-2F) ANALYSES REQUESTED	(2G) COMMENTS	(2H-2J) DATE & TIME			
Laboratory Control Number (Lab Use)	IDEM Sample Number	Matrix or Sample Type	Glass Bottles	Plastic Bottles	40 ml Vials	Other			Date	Time	AM	PM

(3) REQUIRED TURNAROUND TIME (with full documentation)			
30 days	14 days	7 days	2 days

(5) TRANSFER OF CUSTODY - I certify that I received the above samples.	Date	Time
Relinquished by: Sign		
Received by: Sign		AM / PM
Relinquished by: Sign		
Received by: Sign		AM / PM

(4) COMMENTS

FOR LABORATORY USE ONLY:	
Cooler Temp:	Sample Condition:

(6) LABORATORY RECEIPT OF SAMPLES		
I certify that I received the above samples. After recording these samples in the official logbook, they will remain in the custody of competent lab personnel or be secured in a locked area at all times.		
Received by: Sign	Date	Time
Laboratory:		
Address:		AM / PM

~~(7) DISTRIBUTION: PINK COPY - IDEM Sample YELLOW COPY - Lab (Keep) WHITE COPY - Lab (To be Returned to IDEM with Data Package)~~

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