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Louisiana Department of Environmental Quality

Multimedia Oil and Gas ERP

Quality Assurance Project Plan

Louisiana Department of Environmental Quality
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Abstract: This document details a quality assurance plan to guide the successful implementation of Multimedia Oil and Gas Production Environmental Results Program by the Louisiana Department of Environmental Quality (LDEQ).

The goals of this project include reducing the air and water permitting burden while providing regulatory flexibility and improving the environmental stewardship of participants. An important aspect is the collaboration with the Louisiana Department of Natural Resources (LDNR) to develop an information exchange. LDNR regulates many of the same facilities in this sector and maintains similar as well as supporting data. The goals of this collaboration for each agency are reduced administrative burden of data maintenance and the achievement of high data quality. Through the ERP project, the LDEQ will replace the traditional permitting process and incorporate the air and water requirements for the oil and gas industry by consolidating all the permitting and regulatory requirements into a multi-media, self-certification compliance assistance program.

The Oil and Gas ERP project will use LDEQ resources and leverage outside community partners including LDNR, USEPA Region 6, community organizations, local trade organizations and economic development agencies. LDEQ will take a multi-media approach to prepare fact sheets, self-assessment checklists, a workbook for guidance on how to complete the self-assessment checklists, and compliance assistance tools for the industry sector on pollution prevention including release notification. Additional training will be provided through on-site assessments and workshops. These tools will also be available as models for other states.

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A PROJECT MANAGEMENT

A1. Approval Sheet

Melissa Lantz Project Manager LDEQ IDMS Coordinator	Date
Kermit Wittenburg QA Representative LDEQ Environmental Chemical Specialist Staff	Date
Don Johnson Quality Manager EPA, Region 6	Date
Annette Evans Smith Pollution Prevention Grants Specialist EPA, Region 6	Date

A2. Distribution List

Each person listed on the approval sheet and each person listed under Project/Task Organization will receive a copy of this Quality Assurance Project Plan (QAPP). Individuals taking part in the project may request additional copies of the QAPP from personnel listed under Section A3.

This document has been prepared according to the United States Environmental Protection Agency publication EPA Requirements for Quality Assurance Project Plans dated March 2001 (QA/R-5).

A3. Project/Task Organization

Personnel involved in project implementation are listed in Table 1, and shown as an organization chart in Figure 1.

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Table 1: Project Implementation Personnel

Individual	Role in Project	Organization Affiliation
Melissa Lantz	Project Manager	OMF
Kermit Wittenburg	QA Representative	OES
Michael Defley	Air Permitting Data Systems Manager	OES
Jim Davies	Air Permitting – Oil and Gas Section Supervisor	OES
Debbie Ford	Air Surveillance Technical Expert	OEC
Dwight Bradshaw	Water Surveillance Technical Expert	OEC
Jeff Nolan	Air and Water Enforcement Program Manager	OEC
Heather Babin	Water and Waste Permitting Data Systems Manager	OES
Yanfu Zhao	Small Business Assistance Program	OES
Chris Mayeaux	Community-Industry Relations (Environmental Justice)	OES

The LDEQ Project Manager will be responsible for the following activities:

- Conduct outreach with regulated industry and internal/external stakeholders
- Maintain official, approved QAPP
- Develop amended QAPP
- Issue quarterly and annual reports to U.S. EPA
- Contractor oversight

A4. Problem Definition/Background

For both the Air and Water programs at LDEQ, the universe of facilities in the oil and gas production industry outnumbers all other sectors, comprising well over 70% of facilities permitted or otherwise regulated. Louisiana has over 43,000 active wells and thousands of facilities that produce, process and transport oil and natural gas. This large population has presented its share of environmental problems for both permitting and compliance. LDEQ recognizes that there is a need to work more closely with the oil and gas industry because so many of these facilities may be unpermitted and may be operating without proper monitoring, record keeping and best management practices. Concerns have been raised over the resources involved with these facilities and their effectiveness in achieving environmental improvement. Hurricanes Katrina and Rita impacted the state economy such that the department's resources will decline and continue to do so for the foreseeable future. There is also a strong industry interest in having LDEQ adopt a comprehensive multimedia approach to environmental regulation, and a strong residential community interest in improving facility tracking and regulation. All these

circumstances provide a strong incentive for the development of innovative and effective environmental improvement tools.

A5. Project/Task Description

Project overview

This project will allow LDEQ to explore whether an approach modeled upon the Environmental Results Program (ERP) can help achieve these goals, while improving regulatory cost-effectiveness. The Environmental Results Program (ERP) is an innovative approach to solving high-priority environmental problems in industry sectors largely comprised of small businesses. The ERP concept combines technical assistance, self-certification, inspections, and statistically based performance measurement in order to reduce environmental impacts of business.

The promise of ERP is that it will cost-effectively reduce environmental impacts of small businesses that may present a substantial cumulative environmental risk. Businesses targeted so far by ERP include gas stations, auto salvage yards, auto body and mechanical repair shops, dry cleaners, and printers. ERP can help environmental agencies identify previously unknown facilities, measure performance, increase regulatory efficiency, and help improve overall environmental performance. ERP is in part designed to help facilities that want to comply but don't understand their requirements, and evidence suggests that ERP can motivate firms to comprehensively review their environmental performance and take needed action to come into compliance and adopt best practices.

Project Summary and work schedule

This project's major tasks and timeline are outlined in the table below:

Table 2: Schedule of Major Project Tasks

Task Name	Task Description	Start Date	End Date
Final Grant Proposal	LA will work in a cooperative fashion with EPA to refine and more fully develop a work plan as a first step after the grant is approved, and periodically throughout as milestones are met and reviewed.	7/10/06	Upon grant award
Outreach	Outreach to internal and external stakeholders (including targeted facilities) about the project. Milestones: production of mailing list; letters; e-mails/phone follow-up.	Upon grant award	2nd qtr 2009
QAP submission	Development and submission of QAP to EPA for approval Milestones: QAP submission and	Upon grant award	60 days after grant

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Task Name	Task Description	Start Date	End Date
	approval		award
Facility Identification	Compile a list of oil and gas production facilities from reliable sources. Milestones: Development of initial and final list.	4th qtr 2006	3rd qtr 2007
Statistical Methodology	Finalize the methodology to drive performance measurement and analytical tasks. Milestones: Meetings, reviews, and finalized methodologies including stratification strategy for samples by stakeholder/reviewers.	3rd qtr 2006	1st qtr 2007
Data Input and Management	Data system modifications and data input processes to cost-effectively input and manage the ERP information Milestones: development initiation, database testing	3rd qtr 2006	2nd qtr 2007
Performance Tracking	Environmental Business Performance Indicators (EBPI's) and Best Management Practices (BMP's) developed Milestones: EBPI's and BMP's	3rd qtr 2006	2nd qtr 2007
Develop Inspection Forms	Multi-media inspection forms and training provided to Inspectors. Milestones: Development of draft forms, review completion, final form production	3rd qtr 2006	2nd qtr 2007
Assistance Materials	Develop workbooks, informational/assistance materials, and workshop curriculum. Milestones: Review of materials, draft workbook and materials, final product available for distribution.	3rd qtr 2006	2nd qtr 2007
Baseline Inspections (establishing a performance measures baseline)	Inspections at facilities to establish a baseline for performance measures. Milestones: Training of inspectors and selection process for conducting baseline.	3rd qtr 2007	4th qtr 2008
Baseline Assessment	Assessment of inspection data to establish a baseline for the project's performance measures. Milestones: Review of assessment protocol and efficacy of data, and	1st qtr 2008	3rd qtr 2008

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Task Name	Task Description	Start Date	End Date
	completion of assessment and documented		
Facility Assistance	Delivery of compliance/technical assistance to facilities, which is expected to take the form of workbooks, fact sheets, workshops, and on-site assistance. Milestones: Information mailings, kickoff and completion of workshops, follow-up of on-site assistance requests.	1st qtr 2008	1st qtr 2009
Self-certification	Implementation of a voluntary facility self-certification approach. Milestones: System design, testing and implementation Return of self-certification, follow-up reminders, tally at deadline.	3rd qtr 2006	1st qtr 2009
Assessment of Self-certification Results	Assessment of self-certification data, with primary purpose of identifying opportunities for selective follow-up (next step). Milestones: Summary of assessment produced, citation of issues/problems, and plan for follow-up.	4th qtr 2008	1st qtr 2009
Follow-up Inspections	Inspections at facilities to establish whether sector performance measures (and other measures) have changed since the baseline. Inspection data also used to cross-check self-certification data at inspected facilities. Milestones: Inspection sites verification, inspection summary documented.	1st qtr 2009	2nd qtr 2009
Data Assessment	Assessment of baseline, self-certification, and follow-up inspection data to understand change in facility performance and overall outcomes of interest. Milestones: Compilation of findings, status of data documented	2nd qtr 2009	3rd qtr 2009
ERP material availability	ERP documentation provided on website and to interested parties Milestone: website postings	3rd qtr 2006	3rd qtr 2009

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Task Name	Task Description	Start Date	End Date
Reporting to the USEPA	Reporting shall include quarterly, annual, and final reports. Milestones: Draft report for review, final report ready for distribution.	3rd qtr 2006	3rd qtr 2009

Geographic focus

The facilities involved in this ERP are located state-wide.

Resource and time constraints

This project will involve resources from multiple divisions and agencies over a relatively short time frame of three years.

A6. Quality Objectives and Criteria

Detailed performance measurements

This project is primarily interested in the following list of likely performance measures. Note that one of the tasks of this project involves revisiting and reaffirming/revising these draft performance measures. The final list will be submitted in a QAPP amendment.

Project Goals	Measures
Public Involvement	# of external stakeholders involved in ERP development
	# of public meetings and communications
Provide compliance assistance for oil and gas production industry	# of outreach materials
	# of compliance assistance documents provided to regulated community
	# of attendees at workshops
Increased Compliance Rates and Adoption of BMP's	# of facilities implementing BMP's
	# of facilities identified as not permitted
	# of "beyond compliance" retrofits of control technology
	# of facilities assessing flow line integrity on a given frequency
	# of facilities performing leak detection on fugitive components
	# of facilities with spill containment

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Project Goals	Measures
	Reduction in stack testing emissions upon ERP implementation
	Pollution reduction per media for each BMP/regulation
	# of previously unpermitted facilities participating in ERP
	# of facilities out of compliance for specific requirement
	# of new facilities not originally tracked by department
	% of facilities that changed their source status from major to minor

Quality Objectives

Quality objectives for these performance measures will be developed as part of the Measures Identification and Statistical Methodology tasks. The majority of data collection and analysis will focus on the facility identification and inspections.

In the compilation of the oil and gas production facility universe, LDEQ will rely heavily on its multimedia facility repository that houses all of its permitting, surveillance and enforcement data for both air and water programs. Across program lines facility information will be reviewed and integrated, if needed. LDEQ will also integrate data with that of LDNR on two levels. First, certain key data elements such as oil and gas field and operator will be cross-referenced. Second, facilities will be reviewed in a GIS interface.

The data collected in the baseline and follow-up inspections will be entered into the multimedia facility repository. This information will undergo the same supervisory and peer review similar to other inspections. Detailed information such as compliance with individual state and federal requirements can be maintained in the repository.

The QAPP will ensure that the quality objectives for these performance measures are appropriate for the regulatory and non-regulatory decisions to be made based upon those measures. This determination will take into account both the best practices for similar projects and the resources available for this project. In part, the Project Manager will rely upon *Generic Guide to Statistical Aspects of Developing an Environmental Results Program* (2003) for advice in making decisions related to the optimizing of the following aspects of data quality for this project:

- Precision
- Bias
- Representativeness

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- Completeness
- Comparability
- Sensitivity (if applicable)

A7. Special Training/Certification

The LDEQ will develop and deliver mandatory and voluntary training sessions to key parties to ensure quality data collection, to the extent practicable.

Mandatory intensive in-person training sessions will be delivered to the following individuals to ensure quality data collection:

- Inspectors who will be collecting baseline and post-certification data
- QA/QC personnel (if any additional training is needed to familiarize them with the project)

Each session will cover proper data collection and QA procedures. Training will be augmented by debriefing personnel shortly after their tasks have begun, to correct and clarify appropriate practices.

Voluntary intensive in-person training sessions will be offered to the self-certifying facilities. Facilities will also be provided with clear written instructions on how to prepare and submit data, and they will be able to call a phone number to ask anonymous questions if they wish.

The Project Manager is responsible for ensuring that all personnel involved with data generation (including state personnel, contractors, and partners) have the necessary training to successfully complete their tasks and functions. The Project Manager will document attendance at all training sessions. Attendance records for voluntary trainings may not include names, given privacy/confidentiality concerns.

The Project Manager is also responsible for ensuring the self-certification materials sent to facilities clearly document how facilities should properly prepare and submit their data.

A8. Documents and Records

Report format/information

The format for all data reporting packages will be consistent with the requirements and procedures used for data validation and data assessment described in this QAPP.

Document/record control

The LDEQ Quality Assurance Representative shall retain all updated versions of the QAPP and be responsible for distribution of the current version of the QAPP. The LDEQ

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Quality Assurance Representative and the LDEQ Project Manager will approve annual updates. The Project Manager shall retain copies of all management reports, memorandums, and all correspondence between the LDEQ and all project personnel identified in A3.

Other records/documents

Other records and documents that will be produced in conjunction with this project include:

- Inspection checklists and reports
- Self-certification forms
- Return-to-compliance forms
- Non-applicability forms
- Enforcement documentation
- Facility outreach materials, including workbook, fact sheets, brochures, etc.
- Amended QAPP
- Readiness reviews (see below)
- Data handling reports
- Quarterly and annual progress reports to EPA
- Project final report (to include discussion of QA issues encountered, and how they were resolved)

Backup of electronic files

LDEQ will utilize its electronic document management system for paper record management and centralized facility database. Both systems have Oracle databases and are backed up on a regular basis.

B DATA GENERATION AND ACQUISITION

B1. Sampling Process Design (Experimental Design)

A key task in this project will be to develop a sound statistical methodology for collecting and analyzing facility data, in order to draw inferences related to the selected performance measures. The major quality objectives will be to collect representative data that truly reflect the conditions of the universe of facilities that this ERP focuses upon. Facility data is of two types: (1) inspection data, which will be collected by trained LDEQ inspectors from randomly sampled facilities, and (2) self-certification data, which will be collected from facilities through an online web submission with validation.

B2. Sampling Methods

As mentioned above, the primary data collected and used by this ERP will come from a survey data collection process. This section of the QAPP will be amended upon completion of the project-specific statistical methodology, which will detail the statistical sampling methods to be used. As mentioned elsewhere, that methodology will be

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prepared consistent with the principles identified in the EPA's *Generic Guide to Statistical Aspects of Developing an Environmental Results Program* (2003).

Preparation of data collection instruments

All data collection instruments will be subject to multiple rounds of review by relevant internal and external stakeholders to help assure the collection of high-quality and representative data. Data collection instruments will be prepared in accordance with the guidance on data collection instruments provided in EPA's *Generic Guide to Statistical Aspects of Developing an Environmental Results Program* (2003). Specifically, preparation will follow the checklist for data collection instruments provided in an appendix of that guide.

B3. Sample Handling and Custody

Chain of custody is not relevant to this project.

Data entry QA procedures

Procedures for entering hand-written data into the database will follow standard quality assurance procedures (e.g. 10% error check), consistent with LDEQ's Quality Management Plan. Detailed quality assurance procedures for data entry and acceptance will be prepared during the development and implementation of a data management strategy. The final QAPP will reflect this strategy.

B4. Analytical Methods

This project will follow well-recognized statistical analytical methods for survey samples. This section will be amended upon completion of the detailed statistical methodology. No physical tests or chemical analyses are anticipated for this project.

B5. Quality Control

This project will undertake the following specific steps to measure/estimate the effect of data errors, consistent with LDEQ's Quality Management Plan.

Crosschecking data

Primary data collection forms will be designed in such a way to allow internal crosschecking of data by comparing answers of different questions to each other, and such crosschecking will be automatic for electronically entered data. Further, post-certification inspections will offer the opportunity to compare inspection results with self-certification results, if the facilities sampled have submitted self-certification forms.

Data anomalies

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Procedures for handling data anomalies (such as outliers and missing data) will be handled based on guidance prepared in the project-specific statistical methodology.

Quality control statistics

The quality control statistics to be used in this project are described in more detail in section D3.

B6. Instrument/Equipment Testing, Inspection and Maintenance

This section is not relevant to this project. The project will not involve such scientific instruments and equipment.

B7. Instrument/Equipment Calibration and Frequency

This section is not relevant to this project. The project will not involve such scientific instruments and equipment.

B8. Inspection/Acceptance for Supplies and Consumable

This section is not relevant to the project. The project will not involve such supplies and consumables.

B9. Non-direct measurements (i.e., Secondary Data)

This project will not rely upon secondary data.

Key resources/support facilities needed

LDEQ will require access to the data sources mentioned above, and this information will be managed within the database utilized for the overall project. LDEQ does not anticipate any obstacles to this approach.

Determining limits to validity and operating conditions

Database containing the list of targeted facilities is designed such that original source for all facility data is marked, and procedures will be in place such that only the Project Manager can officially remove a facility from the targeted population. In such cases, facility entry will not be deleted from the database but will be marked as nonapplicable, and corrective data will be provided in fields parallel to the original data.

B10. Data Management

As part of this project, LDEQ will develop a data management strategy, and amend the QAPP based upon the strategy. The Project Manager is responsible for ensuring that the strategy is developed and that the QAPP is amended to reflect that strategy. The strategy

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will be consistent with the existing LDEQ Quality Management Plan. Once amended, the QAPP section on data management will provide information on the following issues:

- Data management scheme, from field to final use and storage
- Standard recordkeeping and tracking practices, and document control system (citing relevant agency documentation)
- Data handling equipment/procedures that will be used to process, compile, analyze, and transmit data reliably and accurately
- Individuals responsible for elements of the data management scheme
- Process for data archival and retrieval

C ASSESSMENT/OVERSIGHT

C1. Assessment and Response Actions

The Quality Assurance Representative will conduct a Readiness Review immediately prior to the five major data collection tasks: identifying targeted facilities, baseline inspections, self-certification, targeted follow-up and post-certification inspections. The QA Representative will report findings to the Project Manager, who will take corrections action (if any is necessary) before the data collection process begins. Further, the Project Manager and the QA Representative will thoroughly debrief project implementation staff a short time after beginning their respective implementation tasks to identify emerging/unanticipated problems and take corrective action, if necessary.

C2. Reports to Management

Three kinds of reports will be prepared: readiness reviews (described above), regular quarterly and annual progress reports, and project final report. Progress reports will note the status of project activities and identify whether any QA problems were encountered (and, if so, how they were handled). Project final report will analyze and interpret data, present observations, draw conclusions, identify data gaps, and describe any limitations in the way the data should be used.

Table 3: Project QA Status Reports

Type of Report	Frequency	Preparer	Recipients
Amended QAPP	Once, before primary data collection begins	LDEQ Project Manager	All recipients of original QAPP
Readiness Review	Before each major data collection task	LDEQ QA Representative	LDEQ Project Manager
Progress Report	Quarterly	LDEQ	U.S. EPA Project Officer (Copying U.S. EPA OPEI

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Progress Report	Annually	LDEQ	U.S. EPA Project Officer (Copying U.S. EPA OPEI, stakeholders
Progress Report	Quarterly	LDEQ	U.S. EPA Project Officer (Copying U.S. EPA OPEI, stakeholders

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D DATA REVIEW AND EVALUATION

D1. Data Review, Verification and Validation

This QAPP shall govern the operation of the project at all times. Each responsible party listed in Section A3 shall adhere to the procedural requirements of the QAPP and ensure that subordinate personnel do likewise.

This QAPP shall be reviewed at least annually to ensure that the project will achieve all intended purposes. All the responsible persons listed in Section A4 shall participate in the review of the QAPP. The Project Manager and the Quality Assurance Representative are responsible for determining that data are of adequate quality to support this project. The project will be modified as directed by the Project Manager. The Project Manager shall be responsible for the implementation of changes to the project and shall document the effective date of all changes made.

It is expected that from time to time ongoing and perhaps unexpected changes will need to be made to the project. The Project Manager shall authorize all changes or deviations in the operation of the project. Any significant changes will be noted in the next report to EPA, and shall be considered an amendment to the QAPP. All verification and validation methods will be noted in the analysis provided in the final project report.

D2. Verification and Validation Methods

To confirm that QA/QC steps have been handled in accordance with the QAPP, a readiness review will be conducted before key data collection/analysis steps, and data handling reports will be prepared after each step. These reviews and reports will be consistent with LDEQ's Quality Management Plan. Standard statistical tests (described below in Section D3) will be used to determine the extent to which inferences can be drawn from the sample data.

D3 Evaluating Data in Terms of User Needs

This section will be written and finalized after completion of the project-specific statistical methodology, which will be developed consistent with LDEQ's Quality Management Plan and EPA's *Generic Guide to Statistical Aspects of Developing an*

Environmental Results Program (2003). This section will present the following information:

Meeting and reporting needs of your project

This section shall contain a description of how the results of the study will be analyzed and evaluated to determine whether the needs of the project were met and then reported.

Mathematical and statistical formulae

This section shall contain details of formulae that will be used to calculate precision, accuracy/bias, completeness, comparability and sensitivity (if applicable) of the project data.

Approach to managing unusable data

This section shall contain a description of what will happen if data are unusable, with particular emphasis on the impact of such unusability on data representativeness.

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