Title

QUALITY ASSURANCE PROJECT PLAN

Prepared by:

Address

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DISTRIBUTION LIST

MISSOURI DEPARTMENT OF NATURAL RESOURCES (MDNR)

Overall Project Coordinator: _____

Sampling Operations Manager: _____

Lab Quality Assurance Manager _____

DNR Data Review Coordinator _____

DNR Quality Assurance Coord. _____

SIGNATURES

Overall Project Coordinator: _____
Signature Date

Lab Quality Assurance Manager _____
Signature Date

DNR Quality Assurance Coordinator _____
Signature Date

PROJECT ORGANIZATION AND RESPONSIBILITY

The following list identifies key program personnel and their areas of responsibility:

1. Sampling Operations Quality Assurance Coordinator: *name, organization, phone no, email and mailing address.* Is responsible for all aspects of sampling operations including training of sample collectors, assuring proper maintenance and calibration of field meters, reviewing and storing field data and forwarding data to the Overall Project Coordinator

2. Laboratory Quality Assurance Manager: *name, organization, phone no, email and mailing address.* Is responsible for all aspects of laboratory performance, auditing data and reporting data to the Overall Project Coordinator

3. Overall Project Coordinator: *name, organization, phone no, email and mailing address.*
   Is responsible for insuring that any problems arising with field or laboratory measurements are resolved in a timely manner and that data completeness goals are met. Forwards final data report to the DNR Data Review Coordinator.

4. DNR Data Review Coordinator: *name, organization, phone no, email and mailing address.*
   Receive final data report, coordinate with DNR Quality Assurance Coordinator on a final data an audit, and use data to establish anti-degradation tier and/or establish a recommendation for permit limits.

5. DNR Quality Assurance Coordinator: *name, organization, phone no, email and mailing address.*
   Coordinate with the Overall Project Coordinator and others involved with sampling and analysis to resolve any problems related to sampling or analysis in a timely manner. Conduct a data audit on the final data report, resolve any outstanding issues and discuss usability of the data with the DNR Data Review Coordinator.

A. Project Management

1. Project/Task Organization

The individuals directly involved with the water sampling project and their specific responsibilities are outlined below:

2. Problem Definition/Background

Inadequate water quality data exists to establish existing water quality and/or additional water quality data is needed in order to establish appropriate effluent limits for the *xxxxx* wastewater treatment plant.

3. Project/Task Description

Describe the locations, analytes and frequency of sampling.

Duplicate field measurements and duplicate samples for lab analysis will be taken at 10% of the sites sampled. If heavy metals, trace organic compounds or bacteria are being monitored, one field blank sample should be processed for every ten samples taken.

4. Quality Objectives and Criteria for Measurement Data

Purpose and Background

Data will be used to define "background" water quality (existing water quality). Knowledge of this "background" level of water quality is important for implementation of the antidegradation requirements in Missouri's Water Quality Standards (10CSR20-7.031).

The following sections document the data quality objectives (DQOs) of the project and establish performance criteria for the planning process and measurement systems to be used in generating the data.

Type of Data Needed

Chemical concentrations of selected water quality parameters in water are needed (see Appendix I, Analyte Table.)

Conditions of Data Collection

Describe conditions under which sampling is to be done, such as time of day, month or season, specific flow conditions, other.

Detection Limits, Accuracy and Precision requirements are given in Appendix II.

Data Representativeness

All water samples should be taken from the flowing portion of the stream or if in a pool at least one foot from shore and at least 6 inches below the surface. Dissolved oxygen samples should be taken from a flowing portion of the stream if possible, but should avoid areas of turbulence where atmospheric gases may be entrained in the water column.

Data Comparability

All data should be comparable to all other data in terms of methods used and reporting units.

Data Completeness

At least 95% of all requested data must be provided to meet the completeness requirement.

5. Special Training Requirements/Certifications

Describe all training/certifications received by those collecting samples and making field measurements.

6. Documentation and Records

The laboratory should provide to the Overall Project Coordinator analytical results of all field samples, including field duplicate samples and field blanks which would include accompanying sample numbers and sample location identification. All analytical data should be reported to the Overall Project Coordinator within 60 days of sample collection. Records of these chemical analyses should be retained by the laboratory.

B. Measurement/Data Acquisition

1. Sampling Methods Requirements

   If only grab samples from the water column will be taken, state this. If other types of sample collection such as composite water samples, sediment samples will be taken, describe the sample collection method and the location, and circumstances under which these samples will be taken.

2. Sample Handling and Custody Requirements

   Describe the type(s) of sample containers to be used, sample preservation and sample holding times. This information should be provided by the contract laboratory. When in doubt, please refer to: MDNR-FSS-001 "Required/Recommended Containers, Volumes, Preservatives, Holding Times, and Special Sampling Considerations", samples will be tagged according to MDNR-FSS-003 "Sample Numbering and Labeling", chain-of-custody and field documentation will be in accordance with MDNR-FSS-002 "Field Sheet and Chain-of-Custody Record", and MDNR-FSS-004 respectively. Handling of samples in the field and upon return to the laboratory are outlined in MDNR-FSS-018 "Sample Handling: Field Handling, Transportation and Delivery to the ESP Lab. These documents are available on the DNR web site at: http://www.dnr.mo.gov/env/esp/sop/index.html.

3. Analytical Methods Requirements.

   Samples will be analyzed using EPA approved methods, or methods included in AWWA, APHA "Standard Methods for the Examination of Water and Wastewater" 20th edition or a later edition.

4. Quality Control Requirements

   Duplicate samples will be collected at a frequency of approximately 10% of the total number of samples collected for chemical analysis.

5. Instrument/Equipment Testing, Inspection and Maintenance

   All major laboratory instrumentation must follow maintenance procedures in accordance with the manufacturer's instrument manuals and appropriate approved analytical methods.

   Field instruments or equipment (dissolved oxygen, pH, conductivity, temperature) used for this project will be maintained according to instructions provided by the instrument manufacturer and the following ESP SOPs: MDNR-FSS-100, 101, 102, and 103.

6. Instrument Calibration and Frequency

   All major laboratory instrumentation must follow calibration procedures in accordance with the manufacturer's instrument manuals and appropriate EPA or Standard Methods approved analytical methods.

   Field instruments are calibrated daily according to manufacturer instructions and the following ESP SOPs: MDNR-FSS-100, 101, 102, and 103 where applicable.

7. Data Management

All laboratory data will be reviewed by the lab quality assurance manager. The lab quality assurance manager will identify and attempt to resolve any issues with anomalous data, missing data or any confusing or questionable statements or data displays prior to release of the data.
the sampling operations manager will review all field measurements within five days of collection to identify and attempt to resolve any issues with anomalous or any confusing or questionable data. All laboratory and field data will be forwarded to the Overall Project Coordinator within 60 days of sample collection.

C. Assessment/Oversight

1. Assessments and Response Actions

If any problems arise with sampling that cannot be easily resolved by the Overall Project Coodinator, the Overall Project Coordinator will contact the DNR Quality Assurance Coordinator and discuss resolution of this problem.

The Department of Natural Resources will, upon receipt of final data report, perform a data quality assessment by looking for anomalous data, missing data or any confusing or questionable statements or data displays. If any of these kinds of problems are found the department will request either the lab quality assurance manager or the sampling coordinator, to perform a data audit and report the results to the DNR Quality Assurance Coordinator within 15 days.

2. Reports

A report containing all required data will be provided to the DNR Data Review Coordinator.

D. Data Validation and Usability

1. Data Review, Validation and Verification Requirements

Any data outside the ranges given below will require a data audit:

Kjeldahl N, NH3N, NO2+NO3N,: 0-25 mg/l. Total Phosphorus 0-10 mg/L.
Alkalinity: 0-400 mg/l, CBOD5: 0-60 mg/L.
Ca: 10-200 mg/l, Mg, Na, K, Cl: 0-200 mg/L
SO4: 3-1500, HCO3: 50-700 mg/L

Any duplicate sample difference greater than 200% of the smaller of the two values, if the smaller value is less than 0.5 mg/l, will require a data audit.

Any duplicate sample difference greater than 100% of the smaller of the two values, if the smaller value is between 0.5 and 2 mg/l, will require a data audit.

Any duplicate sample difference greater than 50% of the smaller of the two values, if the smaller value is greater than 2 mg/l, will require a data audit.

2. Validation and Verification Methods

A. Documentation, Data Reduction and Reporting

If difficulties are encountered during sample analyses, a brief description of the problem will be provided. Sample data and documentation will be provided to the Overall Project Coordinator.

3. Reconciliation With Data Quality Objectives

Once the data results are compiled, the Overall Project Coordinator will review the field duplicates to determine if they fall within the acceptance limits as defined in this QAPP. Completeness will also be evaluated to determine if the completeness goal for this project has been met. If data quality indicators do not meet the project's requirements as outlined in this QAPP, the data may be discarded and re-sampling may occur. The Overall Project Coordinator will determine the cause of the failure (if possible), and make the decision to discard the data and re-sample. If the failure is tied to the analyses, calibration and maintenance techniques will be reassessed as identified by the appropriate lab personnel. If the failure is associated with the sample collection, the sampling methods and procedures will be reassessed and re-sampling performed, if necessary.

Corrective action will be undertaken by all parties to address specific problems as they arise. Corrective action required will be identified through the use of control charts for chemical analyses, precision and accuracy data, through performance auditing, and through systems audits.

APPENDIX I:
Analyte Table

Matrix	Parameter Test	Method	# of Samples Including Duplicates, Trip Blanks, etc.

APPENDIX II:
Detection Limits, Accuracy, and Precision Table

Parameter	Detection Limits		Accuracy		Precision	
	Req'd.	Achieved	Req'd.	Achieved	Req'd.	Achieved

APPENDIX III
Field Services Section
Water Quality Monitoring Section
and
Chemical Analysis Section
Standard Operating Procedures

SOP Number	TITLE
MDNR-FSS-001	Containers, Volumes, Preservatives, Holding Times, and Special Considerations
MDNR-FSS-002	Field Sheet and Chain-of-Custody Record
MDNR-FSS-003	Sample Numbering and Tagging
MDNR-FSS-004	Field Documentation
MDNR-FSS-018	Handling of Samples in the Field
MDNR-FSS-100	Field Analysis for pH
MDNR-FSS-101	Field Measurement of Water Temperature
MDNR-FSS-102	Field Analysis of Specific Conductance
MDNR-FSS-103	Sample Collection and Field Analysis for Dissolved Oxygen Using a Membrane Electrode Meter
MDNR-FSS-210	Quality Assurance/Quality Control for Environmental Data Collection
ESP-CAS-2000	Chain of Custody-Review and Correction
ESP-CAS-2005	Sample Numbering and Tagging
ESP-CAS-2020	Data Review, Reduction and Transfer to LIMS
ESP-CAS-2090	Quality Control Charts
ESP-CAS-2100	Quality Control Procedures
ESP-CAS-2130	Sample Receipt, Storage and Disposal
ESP-CAS-2140	Supplies Procurement, Inspection and Acceptance

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