

LEVEL 3 PROJECT STUDY PLAN  
FOR THE  
CLERMONT COUNTY, OHIO



EDGE OF FIELD SAMPLING

MAY, 2018

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## 1. OBJECTIVES

In 2015, Clermont SWCD received a Resource Conservation Partnership Program (RCP) Grant through the USDA Natural Resources Conservation Service (NRCS) for a project that aimed to determine the effectiveness of agricultural best management practices (BMPs) such as cover crops and nutrient management plans in a tributary to the East Fork of the Little Miami River (EFLMR) by conducting Edge of Field Monitoring (EOF).

Clermont County Office of Environmental Quality (OEQ) is leading efforts to conduct EOF monitoring at a farm field that will have best management practices implemented in 2018. Monitoring stations with H-flumes and flow meters and automatic samplers have been installed at two locations draining side by side watersheds. A before-after-control-impact (BACI) study design is being implemented. Cover crops will be planted in the treatment watershed starting in 2018 after a two year background period. Time paced and flow paced sampling will occur following as many rain events as project participants can schedule. Stream stage, flow rate, and precipitation (at one location) will be continuously logged every 5 minutes at the two locations.

Data will be used to ascertain contaminant concentrations and loadings at the two locations to determine the effectiveness of the agricultural BMPs. According to the latest U.S. EPA guidelines, projects generating newly-collected data require a set of performance criteria that are of sufficient quality and quantity to address the project's goals (EPA/240/B-06/001). Clermont County OEQ has developed such performance criteria in the form of Data Quality Objectives for laboratory accuracy, laboratory precision, field accuracy, and field precision (See attached Quality Assurance Project Plan).

## 2. POINT AND NONPOINT SOURCE ISSUES

The sites are located on a tributary to the East Fork of the Little Miami River (EFLMR), upstream of where two tributaries join into one channel. The drainages were formed in the 1970's as part of an extant conservation practice called a "W-ditch". The tributaries to the East Fork of the Little Miami River (EFLMR) have a predominantly agricultural land use and therefore receives runoff from row-crops and any failing HSTSs. The EOFWN site drains a house with a chicken coop on the property. There are no known point sources of pollution in the study watersheds. This study will be investigating the impact of agricultural BMPs on nutrient and sediment loads downstream of the farm field.

### 3. PARAMETERS FOR EACH SAMPLING LOCATION

The two monitoring stations (Figure 1) will record stage at both sites and rainfall at one site every 5 minutes. Discharge will also be recorded as a product of the flume rating curves programmed into the autosamplers. Discharge data will be used to calculate pollutant loads entering and leaving the system. Rainfall data will assist in getting relevant hydrological data during the event based sampling study. Flow or time paced, wet weather sampling and ambient sampling will occur at both locations.

A list of field measurements and analytes for each sampling location is presented in Table 1.

**Table 1. Site ID's & Analytes.**

Location	Sample ID	Field Parameters	Laboratory Parameters
Northern branch of tributary to EFLMR	EOFWN	level	ortho-P, TP, NH <sub>3</sub> , NO <sub>2</sub> NO <sub>3</sub> , TKN, SS, atrazine, simazine alachlor, glyphosate, chlorinated herbicides
Southern branch of tributary to EFLMR	EOFWS	level	ortho-P, TP, NH <sub>3</sub> , NO <sub>2</sub> NO <sub>3</sub> , TKN, SS, atrazine, simazine alachlor, glyphosate, chlorinated herbicides

### 4. IDENTIFICATION OF FIELD AND LABORATORY METHODS

Standard Operating Procedure (SOP) documents have been developed for all of the field sampling and data collection activities associated with this study. These SOPs are included in Appendices B, C, D, & E of this Study Plan, along with a Quality Assurance Plan that lists all of the analytical methods used by the contract laboratory, including detection limits (Appendices A, D, & E). Field measurements and sample collection techniques were developed in accordance with the "Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices".

The Clermont County Wastewater laboratory, which is also responsible for NPDES permit testing for all of the County's Waste Water Treatment Plants, will be analyzing ortho-phosphorus, total phosphorus suspended solids, ammonia samples. Pace Analytical, Englewood, Ohio is accredited by the New Jersey Department of Environmental Protection NELAC Program (See QAP in Appendix D), and will be analyzing nitrite-nitrate, chlorinated herbicides and TKN. Additionally, In the event the wastewater laboratory is short staffed or have an abnormally high work load, total phosphorus testing may be sent out to Pace for analysis. Brookside Laboratories, Inc., New Bremen, Ohio (See QAP in Appendix E), will be analyzing for glyphosate, alachlor, atrazine, and simazine and is certified for these parameters by Ohio EPA. All laboratories have a complete set of SOPs on file for all laboratory procedures (Clermont SOP: Appendix B; Pace QAM/SOP: Appendix D; Brookside QAM/SOP: Appendix E). Analytical procedures were developed from either the 18<sup>th</sup>, 20<sup>th</sup> or 22<sup>nd</sup> Edition of the Standard Methods for the Examination of Water and Wastewater, Methods for Chemical Analysis of Water and Waste (USEPA, 1983), or Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (USEPA 2008).

## 5. STREAM FLOW MEASUREMENT METHODOLOGY

No instream flow measurements are taken as part of this study.

## 6. EXPLANATION OF PLANNED SAMPLING LOCATIONS

There is limited to no information on BMP effectiveness in southwest Ohio. In an effort to get local water quality data on BMP effectiveness, EOF monitoring stations with H-flumes and flow meters and automatic samplers have been installed at two locations draining side by side watersheds. A BACI study design is being implemented to look at the effectiveness of cover crops and nutrient management as BMPs. The BMPs will be implemented in the treatment watershed starting in 2018 after a two year background period.

A detailed explanation of the planned sampling locations is provided in Section 3 and Table 2.

Clermont County chose this site as the location for edge of field monitoring for a variety of reasons. The property owner was one of three people that signed up to participate in the study and the site lent itself well to a B-A-C-T study design with the two drainages being of similar drainage area and in close proximity. It is geologically similar to other agricultural tributaries to the EFLMR, the watershed lies within Clermont County, and OEQ observed high nutrient concentrations in Grassy Fork in 2009.

## 7. SCHEDULE OF PLANNED SAMPLING ACTIVITIES

There are two water quality monitoring stations on the farm where the AgBMPs will be implemented. These stations each contain a 6712 Avalanche sampler with a 730 flow module. The 730 bubbler level sensors record level and the EOFWS site has a tipping bucket rain gage. The flow meters and autosamplers are programmed to collect stage, discharge and rainfall data every 5 minutes. All data from the station are downloaded biweekly directly or every 3 hours via a cellular modem to a computer using ISCO's Flowlink software. The data will then be used to schedule sampling events and calculate nutrient loads.

The monitoring stations have ISCO auto-samplers which can be triggered by the flow module to sample when programmed thresholds of discharge, stage or rainfall have been exceeded. Each sampler will be programmed to trigger during a rain event. This sampler "enable" threshold will be different for each station and will fluctuate throughout the year depending on the current water level or base flow conditions. This "enable" trigger will be modified monthly during autosampler inspections and/or directly before an expected rain event via remote connection. The samplers are typically programmed to run if the current stage increases by 0.07' and there is greater than half an inch of rain expected. Samples will be collected at any time during the year, pending hydrological conditions are met. The number of events sampled per year will vary depending on data necessity, lab personnel availability, and weather conditions; on average samples are collected every two weeks during the wet period (October through June/July).

Glyphosate, chlorinated herbicides (dicamba), alachlor, atrazine, and simazine may be tested but only in April-June (dependent on agricultural management practices and weather).

## 8. QUALITY ASSURANCE/QUALITY CONTROL PLAN OR MANUAL

A detailed Quality Assurance Plan for OEQ, which applies to all chemical and physical sampling and all analytes being processed in the Clermont County Wastewater Lab, is included in Appendix A of this Study Plan. A QAP for Pace Analytical, which covers samples being analyzed for NO<sub>2</sub>NO<sub>3</sub>, TKN, and chlorinated herbicides is included in Appendix D. A QAP for Brookside labs, which covers samples being analyzed for glyphosate, alachlor, atrazine, and simazine, is included in Appendix E.

## 9. WORK PRODUCTS

Data summaries are generally presented at quarterly East Fork Water Quality Cooperative Meetings. Edge of field data will be summarized in a final report upon the closing of the Resource Conservation Program Partnership grant. Chemistry data will be entered into the Credible Data database. Exceptions to database entry include continuous (5 minute interval) monitoring data.

## 10. LIST OF QUALITY DATA COLLECTORS AND OTHER PERSONNEL

Hannah Lubbers, Project Manager for the Clermont County Office of Environmental Quality, has been certified by the Ohio EPA as a Level 3 Quality Data Collector (QDC) for Chemical Water Quality Assessment (QDC No. 274), effective December 31, 2012. She will also be responsible for all data collection activities associated with Clermont County's Edge of Field Monitoring Program, either by personally collecting samples or supervising those individuals involved in sample collection activities. These individuals may include personnel from the Clermont County Soil and Water Conservation District, the Clermont County Sewer District Laboratory, the Clermont County General

Health District, and/or the Clermont County Stormwater Department. Contact information for Ms. Lubbers is provided below:

Hannah Lubbers, Project Manager  
Clermont County Office of Environmental Quality  
4400 Haskell Lane  
Batavia, Ohio 45103  
Phone: (513) 732-7894 ext. 3  
Email: [hlubbers@clermontcountyohio.gov](mailto:hlubbers@clermontcountyohio.gov)

**Supervision of non-Level 3 QDCs will include the following:**

- A thorough review of the Project Study Plan and the sampling locations prior to any sample collection activities. Each sample site will be visited once before sampling by both the Level 3 QDC project manager and any non-level 3 QDC sample collectors.
- A thorough review of all relevant Standard Operating Procedures and Ohio EPA references by the Level 3 QDC project manager with any non-level 3 QDC sample collectors prior to any sample collection activities
- Training of the non-level 3 QDCs by the Level 3 QDC project manager in the use of all sampling equipment, including, but not limited to, the YSI data sondes and current meter prior to any sample collection activities. One training will be conducted in the office and one in the field.
- Direct supervision by the Level 3 QDC project manager of the individual's initial sample collection activities during the first sample round to ensure compliance with the SOPs and Study Plan.

## 11. DOCUMENTATION OF LEVEL 3 QDC STATUS

Figure 2 is a copy of the certified letter from OEPA Director Craig Butler to Hannah Lubbers approving her as a Level 3 Quality Data Collector for Stream Chemical Water Quality Assessment.



John R. Kasich, Governor  
 Mary Taylor, Lt. Governor  
 Craig W. Butler, Director

OHIO E.P.A.  
 OCT 16 2015

CERTIFIED MAIL

Effective Date: 10/16/2015  
 Expiration Date: 10/15/2018

I certify this to be a true and accurate copy of the official documents as filed in the records of the Ohio Environmental Protection Agency.

Hannah Lubbers  
 4400 Haskell Lane  
 Batavia, OH 45103

By: *Craig W. Butler* Date: 10-16-15

Re: Qualified Data Collector Renewal, Surface Water Credible Data Program

Dear Hannah:

The Division of Surface Water Credible Data Program has automatically renewed your Qualified Data Collector (QDC) status based on your recent data and project study plan submittals. Pursuant to Ohio Revised Code (ORC) 6111.53 and Ohio Administrative Code (OAC) 3745-4-03, your status as a QDC has been renewed for the following level and specialty:

Level: 3  
 Specialty: Chemical Water Quality Assessment -  
 QDC number: 00274

Please continue to use this QDC number on all correspondence, study plans, etc. submitted to Ohio EPA.

As noted at the top of this letter, this status was effective as of the date of your initial data submittal and expires three years from that date. You may continue to submit data and new study plans to the Program.

As provided in OAC 3745-4-03 (C)(3), renewal of status is contingent upon active participation in the Program at the designated level and specialty. Lack of such participation will prevent you from renewing your status, but you may re-apply for initial QDC status.

As a reminder, your status is contingent upon the absence of any trespassing violation (within the previous five years) by you or any person sampling under your supervision. Always obtain land owner permission prior to sampling.

Additionally, collection (and retention) of aquatic biological samples (this includes fish, macroinvertebrates, mollusks, and shells) requires a collector's permit from the Ohio Department of Natural Resources/Division of Wildlife. Obtain this permit prior to collection of any biological samples.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00, made payable to "Ohio Treasurer Josh Mandel", which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address: Environmental Review Appeals Commission, 77 South High Street, 17th Floor, Columbus, OH 43215.

Sincerely,

*Craig W. Butler*

Craig Butler,  
 Director

Central Office • 50 West Town Street • Suite 700 • P.O. Box 1049 • Columbus, OH 43216-1049  
 epa.ohio.gov • (614) 728-3778 • (614) 728-3898 (fax)

Figure 1.

Documentation for Level 3 Qualified Data Collector  
 Lubbers: Chemical Water Quality Assessment

12. IDENTIFICATION OF CONTRACT LABORATORIES

Ortho-phosphorus, total phosphorus, suspended solids, and ammonia analyses will be performed by the Clermont County Water Resources Sewer laboratory, under the supervision of Mrs. Shannon Risner.

Shannon Risner, Laboratory Manager  
 Clermont County Water Resources  
 1003 U.S. Route 50  
 Milford, Ohio 45150  
 Phone: (513) 965-4800  
 Email: srisner@clermontcountyohio.gov

The analyses for NO2NO3, TKN, and chlorinated herbicides will be conducted by Pace Analytical. These analyses will be conducted under the supervision of Christina Schneider.

Pace Analytical Services, Inc  
 25 Holiday Drive  
 Englewood, Ohio 45322  
 Phone: (937) 832-8242 ext. 28

Fax: (937) 832-2868

The analyses for glyphosate, alachlor, atrazine, and simazine will be conducted by Brookside Laboratories, Inc. under the supervision of Kari Long.

Brookside Laboratories, Inc.  
200 White Mountain Dr.  
New Bremen, OH 45869  
(419) 977-2766  
www.blinc.com

### 13. PERMIT

Not Applicable

### 14. DIGITAL PHOTO CATALOG

A digital photo catalog of all sampling locations will be maintained for ten years including photos of the specific sampling location, riparian zone adjacent to the sampling location, and general land use in the immediate vicinity of the sampling location. See Figure 3 for certification letter.

### 15. VOUCHER SPECIMENS

Not Applicable

### 16. STATEMENT REGARDING CRIMINAL TRESPASSING

Mrs. Lubbers has not been convicted of or pleaded guilty to a violation of section 2911.21 of the Revised Code (criminal trespass) or a substantially similar municipal ordinance within the previous five years. See Figure 3 for the criminal trespassing statement.



September 5<sup>th</sup>, 2017

Ohio EPA, Division of Surface Water  
Standards and Technical Support Section  
P.O. Box 1049  
122 S. Front Street  
Columbus, Ohio 43216-1049

Dear Mr. Reynolds,

The purpose of this letter is to fulfill the requirements outlined in Appendix A of Section 3745-4-06 (13), (14), (15), (16), & (17) of the Ohio Administrative Code describing the requirements of a Level 3 Study Plan.

**This letter certifies that:**

13. The Clermont County Office of Environmental Quality will create a digital photo catalog of all sampling locations in its Project Study Plan, and maintain that catalog for ten years. The catalog will include photos of the specific sampling location, riparian zone adjacent to the sampling location, and general land use in the vicinity of the sampling location.
14. No macroinvertebrate or fish data is being collected as part of this study
15. Ms. Lubbers will maintain and make available to the director, for each sampling location, the name of the water body sampled, the sampling location latitude and longitude, the sampling location river mile where possible or practicable, general location information, the USGS HUC 8 number and name, and the purpose for data collection at each sampling location.
16. Ms. Lubbers is the lead qualified data collector for this study and is approved for all project data types.
17. Ms. Lubbers has never been convicted of or pleaded guilty to a violation of Section 2911.21 of the Ohio Revised Code (criminal trespass) or a substantially similar municipal ordinance.

Sincerely,

Hannah Lubbers, Project Manager  
Clermont County Office of Environmental Quality

Figure 2

Lubbers Trespassing and Digital Photo Catalog Certification Letter