

Proposal

February 10, 2014

Ohio Department of Health
Office of Financial Affairs
Contract Unit
246 North High Street, 4th Floor
Columbus, OH 43215

Dear Mr. Maragos:

The Northeast Ohio Regional Sewer District (NEORS) is pleased to submit this proposal for participation in the Ohio Department of Health's Bathing Beach Monitoring Project.

NEORS is a regional sewer district as provided for by Chapter 6119 of the Ohio Revised Code, and as such it is a political subdivision of the State of Ohio. The principal place of business is at 3900 Euclid Avenue in Cleveland, Ohio 44115. The tax identification number for NEORS is 34-1128332. Section 6119.06 provides adequate authority to perform testing and research described in the attached proposal.

The proposal consists of collecting samples and performing the analysis of *E. coli* by SM 9223 Colilert QuantiTray for bathing beach samples collected at Edgewater, Euclid and Villa Angela beaches seven days a week from May 19, 2014 through September 4, 2014. Additional work includes running the "Nowcast" model at Edgewater and Villa Angela beaches and using qPCR methodology to determine the density of *E. coli* at these beaches. NEORS is assuming all responsibility for all the costs associated with the qPCR analyses and the cost for model development and refinement.

NEORS does not take exception to the terms of the proposed contract and has further made no assumptions in the preparation of this RFP. To the best of our knowledge, this proposal meets the requirements of RFP Prev-31196 for the 2014 Ohio Bathing Beach Monitoring Project. This proposal was prepared by Mr. Mark Citriglia, Manager of Analytical Services for NEORS. Questions regarding this proposal should be directed to Mark Citriglia at 216-641-6000 ext. 2514 or CitrigliaM@neorsd.org.

Realizing the uncertainty in your available budget for the contracted beach management activities, I am available to discuss adjustment to our proposal. Thank you for the opportunity to submit this proposal.

Sincerely,

Mark Citriglia
Manager of Analytical Services
NEORS

Ohio Department of Health 2014 Bathing Beach Monitoring Proposal

ODH RFP #: DOH-PREV31196
Project: Bathing Beach Monitoring Project 2014

Project Cost: \$10,095

Contractor Information

Billing Information

The Northeast Ohio Regional Sewer District (NEORS D)
3900 Euclid Avenue
Cleveland Ohio 44115
Federal Tax Identification Number 34-1128332
DUNS Number: 074554098
Cage # 1Y5Z3

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Binder Sections

- Section 1: Proposal
- Section 2: Vendor Information/W-9
- Section 3: NELAC Accreditation
- Section 4: Sampling SOP
- Section 5: Quality System
- Section 6: 2013 ODH Report
- Section 7: Edgewater ERP
- Section 8: Staff Qualifications

1.0 Project Narrative

- 1.1 The Northeast Ohio Regional Sewer District (NEORSD) Bathing Beach Monitoring and Public Notification Program has been in existence since 1995. This program has been designed to protect public health and investigate water quality impacts from point source and non-point source pollution. Since 2005 the program has expanded to include research on rapid identification methods for fecal indicator bacteria and the development of predictive models. NEORSD would like to continue this work at three Lake Erie beaches: Edgewater, Euclid and Villa Angela Beaches.
- 1.2 The NEORSD monitoring program is very extensive and has multiple objectives that are beneficial for NEORSD, the Ohio Department of Health, Ohio Department of Natural Resources (ODNR), the Cleveland Metroparks, and the patrons visiting the beaches monitored by NEORSD. The purpose of this proposal is to discuss the aspects of the monitoring program which is directly related to the scope of work and deliverables outline in DOH RFP- DOH-PREV31196.

1.3 Project Summary

- 1.3.1 The monitoring program established by NEORSD encompasses all the objectives outlined by the Beaches Environmental Assessment and Coastal health Act of 2000 (BEACH Act) and specifically address chapters 3, 4 and 5. The program evaluates the data collected at each bathing beach against the water quality standards defined by the Ohio EPA based on the water bodies designated use. Data collected for the purpose is distributed to the Ohio EPA as Level III Credible Data.
- 1.3.2 NEORSD generates annual summaries of the results of their monitoring program in two internal reports. Additionally an external report is generated and delivered to the ODH describing the activities performed under the current contract.
- 1.3.3 Field assessments and sanitary surveys will be conducted at each of the beaches. Observations such as number of swimmers and birds, minimum/maximum wave height (or category), average and maximum wind speed and direction, water color, clarity, odor and surface coating, lake surface conditions, and weather conditions will be recorded at the time of sample collection . Additional parameters will be collected as required by the Beach-Guard system for sanitary survey information. All results from the field assessment and analytical work will be reported to the Ohio Department of Health (ODH) daily using the Beach Guard System.
- 1.3.4 The samples collected from the East locations at Edgewater, Euclid and Villa Angela beaches will be collected between 6:30 am and 9:00 am and immediately transported to the laboratory for analysis of *E. coli* using qPCR technology and by Standard Method 9223 Colilert QuantiTray.

- 1.3.5 The results from the qPCR analysis will be used to predict the water quality at Edgewater, Villa Angela, and Euclid Beaches. The advisory signs will be adjusted to the results of the qPCR analysis to notify the public of the water quality conditions at the beaches. The prediction made using the qPCR results will be entered into the BeachGuard system daily. The *E. coli* results will be entered into the BeachGuard system the following day.
- 1.3.6 The monitoring program instituted by NEORSD is based on a tier one approach which includes monitoring seven-days a week from May 19, 2014 through September 4, 2014. Additional samples will be collected in the afternoon for a specific beach when the *E. coli* density remains over the Single Standard Maximum for five consecutive days. Additional monitoring will also be conducted in the event of a Combined Sewer Overflow (CSO) occurrence at the CSO outfall located at Edgewater Beach.
- 1.3.7 NEORSD will work with the staff at the Cleveland Metroparks to communicate the daily water quality prediction. The advisory signs will be managed by the Cleveland Metroparks. Monitoring results will also be posted on the NEORSD web site and the Ohio Nowcast web site. Additional public notification will occur on the weekends through broadcasts by WKYC and Clear Channel radio along with tweets from Walley the Water Drop.

1.4 Project Time Line

- 1.4.1 Sampling will start May 19, 2014 and end September 4, 2014
- 1.4.2 Weekend broadcasts of beach water quality conditions will begin on Memorial Day and end on Labor Day.
- 1.4.3 Data will be entered on the Ohio Nowcast site starting Monday, May 19, and continue daily through September 4, 2014.
- 1.4.4 A final report and invoices will be issued based on the dates defined in the signed and executed contract.
- 1.4.5 NEORSD will hold a public meeting at EMSC in early May for the public to review and comment on their sampling plan. All comments will be reviewed and answered by the end of May 2014.

1.5 Pricing

1.5.1 Total Project Cost \$10,095

Project Samling Summary		
Sample Collection Start Date	May 19, 2014	
Sample Collection Start Date	September 4, 2014	
Total Number of Days of Sample Collection	105	
Total Number of Samples Analyzed	315	
Total Number of weeks	15	
Project Cost Summary		
Cost for Sample Collection		
Edgewater Beach per sampling event	\$35.00	\$3,675.00
Villa Angela/Euclid Beaches per sampling event	\$30.00	\$3,150.00
Subtotal for Sampling		\$6,825.00
Cost for Sample Analysis		
Analysis Cost per sample SM 9223 Colilert QuantiTray	\$8.00	\$2,520
Cost for Data Entry into the Beach Guard System		
Direct Labor for data entry per week	\$50.00	\$750.00
Total Project Cost		\$10,095

1.6 Evaluation of Data and Project Activities

- 1.6.1 Data validation procedures are defined within the NEORSD Laboratory Quality Manual. Prior to reporting, all samples will go through a three-tier approval which includes approval by the analyst, supervisor and QC Specialist or Laboratory Manager. Analytical data packets will be reviewed by the department supervisor after analysis has been completed. The QA/QC Specialist or Manager of Analytical Services will review data weekly for consistency and accuracy.
- 1.6.2 Data will be entered into the BeachGuard system on a daily basis prior to 3:00 pm. Bacteria data and model predictions will be reviewed by the Analytical Services Project Lead daily. Sanitary survey data entered into BeachGuard will be reviewed on a weekly basis.
- 1.6.3 Sanitary survey data collected in the field will be reviewed by the Analytical Services Project Lead on a daily basis prior to entry into the Beach-Guard system.
- 1.6.4 A detail project sampling schedule will be created prior to the project start date. All sampling and analytical supplies will be purchased and ready for use prior to the first day of sampling on May 19, 2014.

1.7 Contractor Profile

- 1.7.1 The Northeast Ohio Regional Sewer District (NEORSD) serves most of the Greater Cleveland area. NEORSD is governed by a board of trustees appointed by city, county, and suburban governments. Operation is funded by local sewer use charges. NEORSD owns and operates three wastewater treatment plants that treat, on average, approximately 250 million gallons of wastewater on a daily basis. NEORSD also owns and operates combined-sewer overflow facilities and major intercepting sewers. NEORSD acts as the pretreatment control authority in the entire service area, encompassing more than 350 square miles.

- 1.7.2 Within the Greater Cleveland area there are three widely utilized bathing beaches: Edgewater, Euclid and Villa Angela Beaches. All three beaches are in close proximity of a publicly owned wastewater treatment facility. In previous years NEORSD has worked cooperatively with the Ohio Department of Health (ODH), the Cuyahoga County Board of Health (CCBH), and the United States Geological Survey (USGS) to monitor the water quality at various beaches within Northeast Ohio for public health notification. NEORSD has a vested interest in utilizing technology that will assist in identifying water quality issues quickly and accurately for the protection of public health. Additionally, NEORSD is taking a proactive approach with method development and advances with technology to assist in our mission of protecting the environment.
- 1.7.3 Through cooperative efforts, NEORSD has compiled 19 years of water quality data regarding bacteria concentrations at the various bathing beaches within its service area. NEORSD would like to continue work cooperatively with the ODH, CCBH, and USGS to become a regional laboratory that has the technical expertise and capacity to perform water quality monitoring at bathing beaches located in Northeast Ohio. Additionally, NEORSD would like to continue its research on piloting rapid method technology along with creating a more expansive data set to determine the effectiveness of existing rapid methods.
- 1.7.4 NEORSD has worked on cooperative grants with the USGS Office of Water Science in Columbus, Ohio since 2006 dealing with research on predictive modeling, the use of rapid methods and source tracking. Currently, the NEORSD collects samples and analyzes environmental parameters at Edgewater and Villa Angela Beaches for use in the Nowcast predictive model, which was developed by the USGS. NEORSD uses staff to collect samples, run the predictive model and update information on the Nowcast website.
- 1.7.5 The District also participated in research of two open file reports for work performed in 2006 and 2007 in cooperation with the USGS. The first project was the Evaluation of IMS/ATP Methods for the Rapid Determination of Escherichia coli Concentrations at two Lake Erie Beaches by Amie M.G. Brady, Rebecca N. Bushon, and Erin Bertke. The second cooperative research project included work on qPCR methods and was titled, Evaluation of Real-Time Quantitative Polymerase Chain Reaction (qPCR) to Determine Escherichia coli Concentrations at two Lake Erie Beaches. This report was authored by Christopher M. Kephart and Rebecca N. Bushon.
- 1.7.6 Most recently the NEORSD was awarded two grants as part of the Great Lakes Restorative Initiative (GLRI) in 2010. The first grant dealt with comparing rapid methods at samples collected from four (4) bathing beaches in Northeast Ohio. The second allowed NEORSD to perform monitoring at and around Villa Angela beach to create a predictive model. The work for this second grant was completed in December of 2012.

- 1.7.7 NEORSD has qualified field staff and laboratory staff that will be performing the work under this proposal. The sampling will be conducted by the Northeast Ohio Regional Sewer District's (NEORSD) Water Quality and Industrial Surveillance (WQIS) division. All sampling activities including training and data review will be supervised by Level 3 Qualified Data Collectors (QDC) certified by Ohio EPA in Chemical Water Quality Assessment. All analytical work will be performed certified Wastewater Analysts. Additionally the NEORSD laboratory is accredited by the National Environmental Laboratory Accreditation Program (NELAP), and certified by the Ohio EPA Division of Drinking Water. A level 3 Project Study Plan has been submitted to the Ohio EPA for approval.
- 1.7.8 NEORSD has been partnering with the various agencies performing research related to bathing beaches. NEORSD currently performs the sampling and analysis for E. coli at Edgewater, Villa Angela and Euclid beaches on a daily basis. NEORSD has worked cooperatively with the USGS Office of Water Science on collaborative grants to generate and test a predictive model (Nowcast) and to test rapid methods. NEORSD is also involved with sharing the information and data generated as part of the Northeast Ohio Beach Conference that is coordinated by Cuyahoga County Board of Health (CCBH) and NEORSD.

1.8 Key Project Personnel

- 1.8.1 The management staff of Analytical Services is committed to operating the laboratory in a safe, professional, and proficient manner. To attain these goals, management is committed to and has adopted policies and procedures in accordance with the National Environmental Laboratory Accreditation Program (NELAP). The laboratory is NELAP accredited through the PADEP, laboratory number 68-03670.
- 1.8.2 The goal of management is to generate data and information of the highest quality that is legally defensible and presents the laboratory and its employees as ethical and competent. The management staff is responsible for ensuring that policies and objectives are communicated to, understood, and implemented by all laboratory personnel.
- 1.8.3 Employees from NEORSD Environmental Services department, located in Cuyahoga Heights, Ohio, will collect water samples at Edgewater, Villa Angela, and Euclid Beaches and Euclid Creek as defined in the sampling schedule. Laboratory Manager Mark Citriglia will oversee and coordinate project activities. Kristen Greenwood will oversee daily lab activities and John Rhoades will oversee sampling activities. Table 1 defines the employees that will be involved in the project.
- 1.8.4 All laboratory analysis will be performed by OWEA Certified Wastewater Analysts. All analysts are required to complete an initial DOC and an annual DOC to demonstrate proficiency on methods. Details on the requirements of DOC are defined in the SOP 5001 Quality Assurance Manual.
- 1.8.5 Section 8 of the binder contains a list of the staff's qualifications

NEORSR Proposal for Bathing Beach Monitoring State Fiscal Year 2014

Table 1: Key Project Personnel

Mark Citriglia ¹	Manager of Analytical Services	Oversees daily operation of the analytical laboratory. Assists in daily review and dissemination of data as needed.	Twenty-five years of progressive laboratory experience and management. Worked cooperatively with the USGS beach sampling program.
John Rhoades ³	Supervisor of Environmental Assessment in WQIS	Oversees sampling and reporting done by the WQIS department.	Twenty-three years of experience in environmental sampling and reporting of data. Certified QDC Level 3 by the Ohio EPA QDC – 00008 CWQA
Carol Turner	QA/QC Specialist	Overview of the QA/QC requirements of the laboratory	Twenty years of experience working in support of laboratory Quality Control and Assurance. Five years working in hazardous waste management
Cheryl Soltis-Muth	Supervising Chemist	Performs technical review of the project. Assists in daily review and dissemination of data.	Twenty years of progressive analytical experience. Supervisor in Analytical Services.
Kristen Greenwood ^{2b}	Supervising Biologist	Assists in daily review and dissemination of data.	Nineteen years of progressive analytical laboratory experience. Supervisor in Analytical Services.
Nichole Schafer	Biologist	Primary Analyst for the qPCR method. Performs daily and weekend microbiological analyses as needed.	Eight years of work experience as a microbiologist in the research, environmental and manufacturing industries.
Jillian Novak ^{2a}	Senior Investigator	Oversees daily scheduling and sampling activities. Reviews field data collection.	Five years of progressive investigator experience with a QDC Level 3 for Water Chemistry – 00512 CWQA
¹ Project Manger ^{2a} Project Lead Water Quality and Industrial Surveillance ^{2b} Project Lead Analytical Services ³ Chemical Water Quality Assessment (CWQA) Project Manager			

1.9 References

- Cuyahoga County Board of Health
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1.10 Affirmative Action

1.11 The NEORSD affirmative action policy is included in the section 2 of the binder.

1.12 Sample Final Report

1.13 A copy of the NEORSD 2013 ODH Bathing Beach Monitoring Final Report is included in section 6 of this binder.

1.14 Documentation of Financial Soundness

1.15 NEORSD currently has a contract with CCBH to perform their beach monitoring analytical work. Additionally NEORSD must monitor *E. coli* and fecal coliform as part NEORSD's NPDES permits and CSO consent decree. NEORSD has purchased the supplies for these programs. The e

2.0 Project Description and Implementation

2.1 Microorganisms from urban runoff, illicit discharges, combined sewer overflows (CSOs), wildlife, bather shedding, and nonpoint sources are potential contributors to illness in individuals swimming in contaminated waters. Three of the most utilized public beaches in Cleveland Ohio (Edgewater, Euclid and Villa Angela) are known to be greatly impacted by these sources. Notifications of water quality advisories for these beaches have been based on predictive models

- developed by the USGS and NEORSD. The majority of bathing beaches along the Lake Erie shoreline are base water quality advisories based on the *E. coli* density from the previous day.
- 2.2 NEORSD would like to continue their research efforts, modeling work, and daily analytical work performed at three Lake Erie beaches: Edgewater, Euclid and Villa Angela Beaches, and one tributary, Euclid Creek. Items XX through XX describe the activities that will be performed by NEORSD as part of this proposal.
 - 2.3 All analytical work and data review will be performed at the NEORSD, Environmental Services Center (EMSC) located at 4747 East 49th Street, Cuyahoga Hts., Ohio 44125. This building houses the two departments which will be performing all the work related to the proposal. The Water Quality and Industrial Surveillance (WQIS) will be responsible for collecting the samples and the Analytical Service department will be responsible for performing all the analytical work, public notification, and modeling.
 - 2.4 The project manager expects to spend a minimum of four hours a week reviewing data and monitoring the project objectives. The projects leads will spend a minimum of 2 hours a day managing sampling activities and analytical activities for this project.
 - 2.5 NEORSD does not anticipate any difficulties performing the work for this project. The WQIS department and Analytical Services departments supplement their staff with students to assist with the additional work of this project. The Analytical Services department is also performing similar work for the Cuyahoga County Board of Health and has plenty supplies. Additionally the laboratory has a backup method and instrument in place if the qPCR instrument should fail. The laboratory also performs daily monitoring for *E. coli* for compliance monitoring, and has backup methods in place.

3.0 Project Objectives and Details

- 3.1 NEORSD will perform a detailed field assessment of the conditions of the beach and bathing water on a daily basis. The assessment will capture parameters identical to those requested during a sanitary survey.
 - 3.1.1 Data collected during the assessment will be compared to the density of Fecal Indicating Bacteria (FIB) present in the sample (s) collected from the bathing beach water. The documentation of the conditions at the beach will allow the samplers to identify point and nonpoint sources of pollutions. Identify how storms and storm water influences the water quality at the beach.
 - 3.1.2 Information collected during the assessment will also be used for the refinement of the predictive model used at Edgewater and Villa Angela beaches. The development and refinement of predictive models is not included in the cost of this proposal since this work occurs outside the contract period.

- 3.1.3 All samples collected from at Edgewater, Euclid and Villa Angela Beaches will be analyzed for E. coli. Sample results will be reported before 3:00 PM on a daily basis. Sampling seven days a week creates a comprehensive data set that encompass all possible conditions at the beach. The results from the analysis of FIB along with the field assessment will allow NEORSD to understand how various conditions influence bathing beach water quality.

4.0 Sampling locations

- 4.1 Samples for this project will be collected from the locations identified in the table below. The sites are all located in Cuyahoga County, Ohio. All analysis will occur at the Northeast Ohio Regional Sewer District’s Environmental and Maintenance Services Center located at 4747 East 49th Street, Cuyahoga Heights, Ohio 44125.

Table 2: Sampling Locations

Location	Latitude	Longitude	HUC Code
Edgewater East	N41.4897°	W81.7391°	04110002060
Euclid East	N41.5842°	W81.5687°	04110003010
Euclid Creek	N41.5835°	W81.5595°	04110003010
Villa Angela East	N41.5862°	W81.5667°	04110003010

5.0 Sampling Plan

- 5.1 One location at Edgewater, Villa Angela and Euclid Beaches in Cleveland will be sampled for the duration of the study. Additional samples will be taken at one location on Euclid Creek at River Mile (RM) 0.55. Beach monitoring for this proposal will begin on May 19, 2014 and end on September 5, 2014. Water quality samples will be collected seven days a week from all beach locations listed in Table 2, Sampling Locations.

6.0 Sample Collection Techniques

- 6.1 Sample collection will consist of one team member wading out into the water at each location to a depth of three feet. The sampler will then remove the cap from the sterile sampling container and with the mouth of the container facing downward, the container will be plunged approximately 6-12 inches below the surface of the water. The mouth of the bottle will then be tilted upward to allow the bottle to fill with water. The sampler will collect enough water to fill the container between 75% and 90% full. After collection, the sample will be placed on ice for transport back to the NEORSD laboratory. All water samples and field parameters will be collected as specified in The Ohio Department of Health, Ohio Bathing Beach Monitoring Program Quality Assurance Project Plan, and Ohio EPA’s Surface Water Field Sampling Manual (for water column chemistry, bacteria and flows), 2013.

- 6.2 Turbidity samples will be collected with a 327-milliliter bottle and measured using one of the following portable field turbidity meters: the Hach 2100Q or Hach 2100P Turbidimeters.
- 6.3 If weather conditions prevent the sampler from safely wading out to a depth of three feet, a sampling pole will be used to collect a bacteriological sample and turbidity sample from Lake Erie. If weather conditions do not permit the use of a sampling pole, no samples will be collected. Additionally, if sampling at the Euclid Creek site is deemed unsafe due to high flow, samples will not be collected.

7.0 Field Measurements

- 7.1 Field parameters to be measured during the study will include pH, water temperature, conductivity, and turbidity. In addition, a field assessment of the beach will be conducted. Observations such as number of swimmers and birds, minimum/maximum wave height (or category), average and maximum wind speed and direction, water color, clarity, odor and surface coating, lake surface conditions, and weather conditions will be recorded. At the time of collection, field parameters will be measured directly in the lake or creek. Field analyses will include the use of a Hanna HI 98129 meter to measure pH, water temperature and conductivity.
- 7.2 Notes and observations pertaining to the beach and water conditions will be recorded using the NEORSD Beach Sampling Field Data Form. All water samples and field parameters will be collected as specified in the most current WQIS Beach Sampling SOP and Ohio EPA's Surface Water Field Sampling Manual (for water column chemistry, bacteria and flows) (2013).

8.0 Laboratory Activities

- 8.1 The NEORSD laboratory will perform the following analyses on each sample collected: analysis of *E. coli* by SM 9223 Colilert and qPCR. All samples submitted for *E. coli* analysis by SM 9223 Colilert and qPCR will be analyzed daily within method specified holding time.
- 8.2 All field equipment and laboratory instrumentation utilized throughout the project will be calibrated, verified, and maintained as defined within the standard operating procedures referenced below. Routine calibration or maintenance will be recorded in the appropriate logbook, and equipment malfunction will be noted.
- 8.3 All microbiological testing and Quality Control guidelines will be met according to those specified in USEPA: Microbiological Methods for Monitoring the Environment (EPA 600/8-78-017), NEORSD Standard Operating Procedures (SOP-2016 Bacteria Counting SOP 2109 Colilert and standards outlined by the National Environmental Laboratory Accreditation Committee (NELAC) Chapter 5.0 "Quality Systems."

9.0 Documentation and Records

- 9.1 Maintenance and management of the document control system is the responsibility of the Quality Assurance Specialist. Documents related to analysis, calibration, calculations and reports are maintained to allow for historical reconstruction of data. Details regarding the laboratory's document control procedures are outlined in SOP 5001, Quality Assurance Manual.
- 9.2 A complete list of all supporting Quality System operating procedures and analytical methods performed are included for review. Pictures will be taken during each sampling event by the samplers to document the conditions at the beach. These pictures will be stored electronically on a file server. Copies of the field observation sheets, daily reports, and pictures will be also stored electronically. Field observations will also be entered into the Laboratory Information Management Systems (LIMS).
- 9.3 Samples are collected in designated containers, labeled with the date and delivered to the laboratory. Chain of Custody procedures are defined in SOP-5005, Chain of Custody. Laboratory personnel track samples by the sampling location, sample ID and the sampling date. A unique sample identifier is assigned by the Laboratory Information Management System.
- 9.4 All data generated is stored in the laboratory's LIMS system for reporting and querying. The LIMS stores data on an Oracle database that is secured. Data changes are documented through an extensive audit trail system.
- 9.5 Electronic data files, quality system documents and reports are stored on secure file servers. Reports will clearly reflect the sample identification; date sampled, results obtained and reporting units.
- 9.6 All analytical reports generated by the NEORSD shall be certified by their Quality Assurance Officer, or the Manager of Analytical Services. The report format shall include the name, address and telephone number of the facility performing the analyses along with the name and address of the data recipient and sampling location. The report shall include an unambiguous identification of the sample and the date and time the sample was collected. The report shall reflect the method used for analysis and shall be uniquely identified with an identifier such as a laboratory number and reflect the number of pages included in the report.
- 9.7 Any anomalies or data qualifiers must be clearly reflected with the results or narrative. The Quality Assurance Officer or Manager of Analytical Service shall call the client if there are any errors or problems with analysis. All abnormalities shall be documented on the Certificate of Analysis. These may include but or not limited to:
 - Estimated results due to holding time violations.
 - Estimated results above the method calibration.
 - Estimated results due to matrix effects.
 - Estimated results due to out of specifications of the analytical method.
 - Estimated results due to deviations of the analytical method.
 - The report shall be signed and dated.

10.0 Data Validation and Reporting

- 10.1 Data validation procedures are defined within the NEORSD Laboratory Quality Manual. Prior to reporting, all samples will go through a three-tier approval which includes approval by the analyst, supervisor and QC Specialist or Laboratory Manager. Analytical data packets will be reviewed by the department supervisor after analysis has been completed. The QA/QC Specialist or Manager of Analytical Services will review data weekly for consistency and accuracy.
- 10.2 Data will be entered in the Beach Guard system on a daily basis prior to 3:00 pm for reporting to the ODH.
- 10.3 At the end of the project a final report will be written describing the sampling activities throughout the project and a summarization of the monitoring results. Additionally the report will include statistics on performance of the Edgewater and the Villa Angela qPCR models.

11.0 Data Quality Objective for Measurement Data

- 11.1 The goal of management is to generate information of the highest quality that is legally defensible and presents the NEORSD staff as ethical and competent. The management staff is responsible for ensuring that policies and objectives are communicated to, understood and implemented by all Environmental Services personnel. Employees are required to read and understand all sampling procedures and demonstrate competence prior to performing any sampling or analysis.
- 11.2 All samples are collected as specified in Ohio EPA's Surface Water Field Sampling Manual (for water column chemistry, bacteria and flows) (2013).
- 11.3 All samples will be analyzed using approved EPA methods as specified by Analytical Services SOP 5001, Quality Manual, and by specific requirements as outlined in the 2003 NELAC Standard.
- 11.4 All samples collected will follow proper sample handling and chain of custody procedures outlined in SOP 5001 Quality Manual, and SOP 5005 Sample Chain of Custody.
- 11.5 Data review and reporting for all samples collected will follow guidelines outlined in SOP 5001 Quality Manual, and SOP 5012 Data Reporting, and SOP 5023 Data Verification.
- 11.6 Data validation procedures are defined within the NEORSD Laboratory Quality Manual. Prior to reporting, all samples will go through a three-tier approval which includes approval by the analyst, supervisor and QC Specialist or Manager of Analytical Services. Analytical data packets will be reviewed by the department supervisor after analysis has been completed.
- 11.7 All operating procedures referenced in this proposal will be release up request.

12.0 Special Training Requirements / Certifications

- 12.1 Except for the project manager, where necessary, Level 3 Qualified Data Collectors (Table 2) will be the sample coordinators. The sample coordinators will be responsible for training, scheduling, sampling and data review of field parameters.
- 12.2 All samplers will receive extensive training. Training consists of review of all pertinent SOPs; and completion of all required demonstrations of capabilities for parameters measured in the field. Training on sampling techniques and field analysis is conducted by having the samplers shadow a Level 3 QDC at the sites while the techniques are being demonstrated. Proficiency with the techniques will be determined by a Level 3 QDC while observing sampling being performed and by assessing the sampler's techniques. All samplers must meet and complete all requirements satisfactorily to be permitted to sample.
- 12.3 A complete checklist of training is provided in section 4 of the binder. This SOP will be attached for review. Once samplers have met the outlined criteria, they will be permitted to sample. The sample coordinators will perform monthly audits of the sampling and correct deficiencies through re-training. Re-training will consist of accompaniment to the sampling site, instruction and observation by a Level 3 QDC until deficiencies are no longer noted.
- 12.4 All laboratory analysis will be performed by OWEA Certified Wastewater Analysts. All analysts are required to complete an initial DOC and an annual DOC to demonstrate proficiency on methods. Details on the requirements of DOC are defined in the SOP 5001 Quality Assurance Manual.