Memorandum of Agreement
between
The State of North Carolina's Division of Water Resources
and
The Lower Cape Fear River Program Permittees

Effective:
July 1, 2016 through June 30, 2021

Revision Date: June 29, 2018

DWR
Division of Water Resources

LOWER CAPE FEAR RIVER PROGRAM
UNCW

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MEMORANDUM OF AGREEMENT

This Memorandum of Agreement (MOA) is made by and between the NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY'S DIVISION OF WATER RESOURCES (DWR), the NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) DISCHARGERS in the Lower Cape Fear River basin who have voluntarily executed this MOA (the LCFRP PERMITTEES), and the LOWER CAPE FEAR RIVER BASIN PROGRAM (the LCFRP), a non-profit corporation whose members include the LCFRP PERMITTEES. The MOA includes all the attached tables and appendices. This MOA does not affect any influent or effluent monitoring requirement or any other NPDES permit requirements of individual permit holders with the one exception of performing upstream and downstream water quality monitoring. The LCFRP PERMITTEES are exempted from instream monitoring for certain parameters as specified in their individual NPDES permits beginning on the effective date of this MOA and continuing for the duration of each permittee's participation in this MOA. Subsequent to the execution of this MOA, the DWR will issue a letter to the LCFRP PERMITTEEs notifying them that the instream monitoring requirements for certain parameters as specified in their individual NPDES permits are not effective for as long as this MOA is in place and the permittee remains a party to this MOA.

The purpose of this MOA is to establish a formal agreement between the DWR, the LCFRP PERMITTEES, and the LCFRP. This MOA authorizes the LCFRP to act on behalf of the LCFRP PERMITTEES as described herein. This MOA identifies the responsibilities of the LCFRP PERMITTEES and the LCFRP for surface water monitoring and reporting within the Lower Cape Fear River Basin. The water quality monitoring will occur at strategically located surface water sites to obtain information on water quality in the basin. Monitoring sites and parameters, listed in Appendix A, were established by the DWR such that the instream monitoring is efficient, effective, and basin-oriented.

The LCFRP will perform the monitoring activities described herein on behalf of LCFRP PERMITTEES who are members in good standing of the LCFRP. Each LCFRP PERMITTEE agrees to remain a member in good standing of the LCFRP. The LCFRP will contract for the performance of the monitoring activities described herein and in Appendix B with a laboratory appropriately certified by the DWR for the required laboratory and field analyses. Sample collection and field measurements will be made by the LCFRP PERMITTEES, the LCFRP, or a sub-contractor who will act as agent(s) of the LCFRP PERMITTEES for the sole purpose of performing monitoring services required by this MOA. It will be the responsibility of the LCFRP to coordinate the collection and analyses of the water quality monitoring data for the locations, parameters, and frequencies specified in Appendix A of this MOA. Sample collection, field measurement, and target reporting limits are specified in Appendix B of this MOA. Monthly and annual reporting requirements, including data format and data summaries are described in Appendix C of this MOA.

The LCFRP shall submit the water quality data to the DWR using the format documented in Appendix C of this MOA preferably in Microsoft® Excel, or the equivalent. The LCFRP shall submit the water quality data to the DWR within 90 days of the end of the month in which the sampling was performed. All data shall be archived by the LCFRP for a period of 5 years. Each

LCFRP PERMITTEE has the right to review and comment on work, data or reports prepared by any contractor on behalf of the LCFRP PERMITTEES and to notify the DWR of any objection or disagreement with any portion of the work, data, or reports. Unless such notice is made within thirty (30) days of submission of data or other reports to the DWR, it shall be deemed to be waived and the work, data and reports submitted shall be deemed to be approved by the LCFRP PERMITTEES. Failure by the LCFRP PERMITTEES or the LCFRP to collect or analyze the water quality data as described in this MOA, or to provide the data to the DWR in the required format, may result in the revocation of this MOA by the DWR and the return to individual upstream and downstream monitoring requirements, as specified in the individual NPDES permits of the LCFRP PERMITTEES.

The LCFRP shall submit an annual written report that summarizes the previous calendar year's sampling activities and formally finalizes the water quality data. The report shall be submitted no later than April 30th each year that this MOA is in effect. The annual report shall include the NPDES permit number of each actively participating permit holder and a contact name, email address and phone number for each member. Appendix C of this MOA describes the required annual report content. One hard-copy or electronic copy, signed by the LCFRP chairman, of these and any other reports required herein shall be submitted to the DWR Coalition Coordinator at 1621 Mail Service Center, Raleigh, NC 27699-1621.

Stream sampling may be discontinued at such times as flow conditions in the receiving waters or extreme weather conditions will result in a substantial risk of injury or death to persons collecting samples. Sampling may also be discontinued when environmental conditions, such as a dry stream, prevent sample collection. In such cases, on each day that sampling is discontinued, the DWR Coalition Coordinator shall be notified within one week of the discontinuance and written justification for the discontinuance shall be submitted with the monthly data submittal. This provision shall not be utilized to avoid the requirements of this MOA when performance of these requirements is attainable. When there is a sampling discontinuance pursuant to this provision, sampling shall be resumed at the first opportunity.

This MOA may be modified by the written consent of the DWR and the LCFRP. The DWR or the LCFRP may determine that it is necessary to request changes in monitoring frequency, parameters or sites to be sampled. Any such changes can only be made by a written amendment to this MOA agreed to by the DWR and the LCFRP. The amendment shall be signed by the LCFRP chairman and by the DWR. Such amendments may be entered into at any time.

Dissolved and total metals data is not being required or requested by the LCFRP at this time. However, the LCFRP may choose to provide dissolved and total metals sampling services to its members should their individual permit require it. The LCFRP may also begin collecting hardness data should permits require it. Special/Additional sampling activities outlined in Table A-1 are not a legal binding part of this MOA and arrangements are made between the LCFRP and the individual permittees. Additional data collection (i.e. emerging contaminants) may be requested by the DWR should specific issues arise in the Lower Cape Fear River.

The following additional dischargers may enter into this MOA subsequent to the effective date hereof:

1) Dischargers who receive a NPDES permit within the Lower Cape Fear River Basin, or
2) Dischargers who have NPDES permits within the Lower Cape Fear River Basin but are not parties to this Agreement.

The addition of such dischargers to this MOA may be made only with the consent of the DWR and the LCFRP and shall require a written amendment to this MOA signed by the LCFRP chairman, by the DWR, and by an authorized representative of any such discharger who wishes to enter into the MOA. The DWR will not unreasonably withhold consent to the addition of a discharger to the MOA. The DWR will consider modification of the existing monitoring program described in this MOA for the addition of a discharger to the MOA. Such amendments may be made at any time that this MOA is in effect. The LCFRP PERMITTEES included in this MOA are listed in Table 1.

This MOA shall be effective until June 30, 2021 unless extended by the consent of both the DWR and the LCFRP. Upon sixty (60) days written notice, the DWR or the LCFRP may terminate this MOA for any reason. Upon termination of this MOA, the monitoring requirements contained in the individual NPDES permit of each LCFRP PERMITTEE shall become effective immediately. An individual permit holder may terminate and cancel its participation in this MOA by providing one-hundred eighty (180) days written notice to the LCFRP, and sixty (60) days written notice to the DWR Coalition Coordinators, the appropriate DWR Regional Office, and the DWR NPDES Unit. The monitoring requirements contained in the individual NPDES permit shall become effective immediately upon such cancellation or termination. In the event a permit holder terminates or cancels its participation in this MOA or its membership in the LCFRP is terminated for any reason, the LCFRP may request that DWR review the monitoring plan described in this MOA for a possible reduction in sampling effort or requirements.

Should any part of this Agreement be declared invalid or unenforceable by a court of competent jurisdiction, invalidation of the affected portion shall not invalidate the remaining portions of the Agreement and they shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have caused the execution of this instrument by authority duly given, to be effective as of the date executed by the DWR.

DIVISION OF WATER RESOURCES	**LOWER CAPE FEAR RIVER PROGRAM**
By: *Original signature is on file*	*By: Original signature is on file*
S. Jay Zimmerman, P.G.	**Chris May**
Director	**Chairman**
Division of Water Resources, DEQ	**Lower Cape Fear River Program**

Table 1
LCFRP PERMITTEES

NPDES Permit Number	Lower Cape Fear River Program Permittees Ownership and Facility	Authorized Representative & Title
NC0001112	Invista S.aR.L.	Mitchell J. Randolph Site Manager
NC0001228	Global Nuclear Fuels	Brad Beard Wilmington Plant Manager
NC0001422	Duke Energy Progress LLC. Sutton Steam Electric Plant	Jesse E. Huntley II Plant Manager
NC0003298	International Paper Riegelwood Mill	Gary Morrow Manager – Environment, Health, Safety & Sustainability
NC0003875	Elementis Chromium LP	Calvin Overcash Regulatory Manager
NC0020117	City of Clinton Clinton WWTP	Jeff Vreugdenhil System Owner
NC0020575	Town of Mount Olive Mount Olive WWTP	Charles Brown Town Manager
NC0021903	Town of Warsaw Warsaw WWTP	Lea Turner Town Manager
NC0023256	Town of Carolina Beach Carolina Beach WWTP	Gil DuBois Director of Operations
NC0023965	Cape Fear Public Utility Authority Northside WWTP	James R. Flechtner CFPUA Executive Director
NC0023973	Cape Fear Public Utility Authority Southside WWTP	James R. Flechtner CFPUA Executive Director
NC0026018	Town of Beulaville Beulaville WWTP	Kenneth Smith Mayor
NC0027065	Archer Daniels Midland Company	Eric S. Warner Plant Manager
NC0039527	Cape Fear Public Utility Authority Walnut Hills S/D WWTP	James R. Flechtner CFPUA Executive Director
NC0075540	Brunswick Regional Water & Sewer H2GO Belville WWTP	Bob Walker Director
NC0082295	Fortron Industries, LLC	Luis Mendoza Site Director
NC0086819	Brunswick County NE Brunswick Regional WWTP	Jerry W. Pierce Director of Public Utilities
NC0081736	Pender County US 421 Wastewater Treatment Facility	Bryan McCabe Director

LCFRP PERMITEE SIGNATURES

NPDES Permit Number	Permittee	Signature
NC0001112	Invista S.ar.L.	*Original signature is on file* Mitchell J. Randolph Site Manager
NC0001228	Global Nuclear Fuels	*Original signature is on file* Adam Hilton Wilmington Plant Manager
NC0001422	Duke Energy Progress LLC Sutton Steam Electric Plant	*Original signature is on file* Jesse E. Huntley II Plant Manager
NC0003298	International Paper Riegelwood Mill	*Original signature is on file* Gary Morrow Manager – Environment, Health, Safety & Sustainability
NC0003875	Elementis Chromium LP	*Original signature is on file* Calvin Overcash Regulatory Manager
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NC0039527	Cape Fear Public Utility Walnut Hills Subdivision WWTP	*Original signature is on file* James R. Flechtner CFPUA Executive Director
NC0075540	Brunswick Regional Water and Sewer H2Go Belville WWTP	*Original signature is on file* Bob Walker Director
NC0082295	Fortron Industries, LLC	*Original signature is on file* Luis Mendoza Site Director
NC0086819	Brunswick County NE Brunswick Regional WWTP	*Original signature is on file* Jerry W. Pierce Director of Public Utilities
NC0081736	Pender County US 421 WWTP	*Original signature is on file* Brian McCabe Director

APPENDIX A

LCFRP MONITORING PROGRAM

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Table A-1 LCFRP Sampling Stations, Parameters and Sampling Frequency

Station Number	Location Description	Station Comments	Latitude (dd.dddd)	Longitude (dd.dddd)	County	Region	Index	8 Digit HUC	Stream Class	[1]Field Measurements	[2]Nutrients	Metals	Lab Turbidity	TSS	Chl-*a*	Entero-cocci	Fecal Coliform	[3]Special/ Additional
B8340050	Browns Creek at NC87 nr Elizabethtown	hog farm area	34.6136	-78.5848	Bladen	FRO	18-45	3030005	C	M	M		M				M	
B8340200	Hammond Creek at SR 1704 nr Mt. Olive	hog farm area	34.5685	-78.5515	Bladen	FRO	18-50	3030005	C	M	M		M				M	
B8360000	Cape Fear River at NC 11 nr East Arcadia	just dns of Lock and Dam #1	34.3969	-78.2675	Bladen	WIRO	18-(59)	3030005	WS-IV Sw	M+2SM	M		M	M	M		M	
B8450000	Cape Fear River at Neils Eddy Landing nr Acme	1 mile below IP, DWQ ambient stn	34.3555	-78.1794	Columbus	WIRO	18-(63)	3030005	C Sw	M+2SM	M			M			M	
B8465000	Cape Fear River at Intake nr Hooper Hill	At DAK intake, just ups of Black River	34.3358	-78.0534	Brunswick	WIRO	18-(63)	3030005	C Sw	M+2SM	M			M			M	S/A[b]
B8470000	South River at US 13 nr Cooper	dns Dunn runoff	35.156	-78.6401	Sampson	FRO	18-68-12-(0.5)	3030006	C Sw	M	M		M				M	
B8604000	Great Coharie Creek at SR 1214 nr Butler Crossroads	8 miles dns Clinton WWTP, nonpoint impacts	34.9186	-78.3887	Sampson	FRO	18-68-1	3030006	C Sw	M	M			M			M	
B8610001	Little Coharie Creek at SR 1207 nr Ingold	Just ups Great Coharie Ck, hog ops in watershed	34.8347	-78.3709	Sampson	FRO	18-68-1-17	3030006	C Sw	M	M		M				M	
B8740000	Six Runs Creek at SR 1003 nr Ingold	Just ups Black River, hog operations in watershed	34.7933	-78.3113	Sampson	FRO	18-68-2-(11.5)	3030006	C Sw ORW+	M	M		M				M	
B8920000	South River at SR 1007 nr Kerr	Ups of Black River	34.6402	-78.3116	Sampson	FRO	18-68-12-(8.5)	3030006	C Sw ORW+	M	M		M				M	
B8981000	Colly Creek at NC 53 at Colly	Hog operations in watershed	34.4641	-78.2569	Bladen	FRO	18-68-17	3030006	C Sw	M	M		M				M	
B9000000	Black River at NC 210 at Still Bluff	1st bridge ups of Cape Fear River	34.4312	-78.1441	Pender	WIRO	18-68	3030006	C Sw ORW+	M	M			M			M	

Station Number	Location Description	Station Comments	Latitude (dd.dddd)	Longitude (dd.dddd)	County	Region	Index	8 Digit HUC	Stream Class	[1]Field Measurements	[2]Nutrients	Metals	Lab Turbidity	TSS	Chl-*a*	Entero-cocci	Fecal Coliform	[3]Special/ Additional
B9030000	Cape Fear River ups Indian Creek nr Phoenix	Dns DAK, BASF, and Fortron	34.3021	-78.0137	Brunswick	WIRO	18-(63)	3030005	C Sw	M+2SM	M			M			M	S/A[a]
B9050025	Cape Fear River at Navassa dns of RR bridge	dns Progress Energy and Leland Ind. Pk	34.2594	-77.9877	Brunswick	WIRO	18-(71)	3030005	SC	M+2SM	M		M	M			M	S/A[a]
B9050100	Cape Fear River at S. end of Horseshoe Bend nr Wilmington	Ups NE Cape Fear River	34.2437	-77.9698	Brunswick	WIRO	18-(71)	3030005	SC	M+2SM	M			M			M	
B9090000	NE Cape Fear River at NC 403 nr Williams	Dns Mt. Olive WWTP, DWQ ambient stn	35.1784	-77.9807	Duplin	WIRO	18-74-(1)	3030007	C Sw	M	M			M			M	
B9130000	Panther Branch (Creek) nr Faison	Sample from Bay Valley access Rd, dns Bay Valley WWTP	35.1345	-78.1363	Duplin	WIRO	18-74-19-3	3030007	C Sw	M	M			M			M	
B9191000	Goshen Swamp at NC 11 and NC 903 nr Kornegay	Major trib to NE CFR, Ag. and Hog ops in watershed	35.0281	-77.8516	Duplin	WIRO	18-74-19	3030007	C Sw	M	M		M				M	
B9191500	NE Cape Fear River SR 1700 nr Sarecta	Dns Guilford Mills and Cogentrix WWTPs	34.9801	-77.8622	Duplin	WIRO	18-74-1	3030007	C Sw	M	M			M			M	
B9430000	Rockfish Creek at US 117 nr Wallace	Ups Wallace WWTP2	34.7168	-77.9795	Duplin	WIRO	18-74-29	3030007	C Sw	M	M			M			M	
B9460000	Little Rockfish Creek at NC 11 nr Wallace	Ups Wallace WWTP1, benthic stn	34.7224	-77.9814	Duplin	WIRO	18-74-29-6	3030007	C Sw	M	M		M	M			M	
B9490000	Angola Creek at NC 53 nr Maple Hill	benthic stn	34.6562	-77.7351	Pender	WIRO	18-74-33-3	3030007	C Sw	M	M		M				M	
B9580000	NE Cape Fear River at US 117 at Castle Hayne	DWQ ambient stn, dns Elementis Chromium WWTP	34.3637	-77.8965	New Hanover	WIRO	18-74-(47.5)	3030007	B Sw	M	M			M			M	S/A[d]

Station Number	Location Description	Station Comments	Latitude (dd.dddd)	Longitude (dd.dddd)	County	Region	Index	8 Digit HUC	Stream Class	[1]Field Measurements	[2]Nutrients	Metals	Lab Turbidity	TSS	Chl-*a*	Entero-cocci	Fecal Coliform	[3]Special/ Additional
B9670000	NE Cape Fear River Nr Wrightsboro	Below GNF and Arteva WWTPs	34.3171	-77.9538	New Hanover	WIRO	18-74-(52.5)	3030007	C Sw	M+2SM	M			M			M	
B9720000	Smith Creek at US 117 and NC 133 at Wilmington	Dns Smith Ck WWTP, urban runoff	34.2586	-77.9391	New Hanover	WIRO	18-74-63	3030007	C Sw	M	M		M	M			M	
B9790000	Brunswick River dns NC 17 at park nr Belville	Park access from SR 133, dns Belville WWTP	34.2214	-77.9787	Brunswick	WIRO	18-77	3030005	SC	M	M			M		M		
B9795000	Cape Fear River at Channel Marker 54	Dns Wilmington Southside WWTP	34.1393	-77.946	New Hanover	WIRO	18-(71)	3030005	SC	M+2SM	M			M		M		
B9800000	Cape Fear River at Channel Marker 61 at Wilmington	Dns Wilmington Northside WWTP, DWQ ambient stn	34.1938	-77.9573	New Hanover	WIRO	18-(71)	3030005	SC	M+2SM	M		M	M	M	M		
B9850100	Cape Fear River at Channel Marker 35	Ups Carolina Beach WWTP	34.0335	-77.937	Brunswick	WIRO	18-(71)	3030005	SC	M+2SM	M			M		M		
B9910000	Cape Fear River at Channel Marker 23	Dns Carolina Beach WWTP	33.9456	-77.9696	Brunswick	WIRO	18-(87.5)	3030005	SA HQW	M+2SM	M			M		M		S/A[c]
B9921000	Cape Fear River at Channel Marker 18	Nr Mouth of Cape Fear River	33.913	-78.017	Brunswick	WIRO	18-88-3.5	3030005	SC	M+2SM	M		M	M	M	M		S/A[c]

1. Field measurement includes: Temperature, Dissolved Oxygen, pH, and Conductivity. M=Monthly, M+2SM=Monthly with twice monthly summer sampling. Summer includes the months of May, June, July August and September. Twice monthly samples are to be collected at least ten days apart except when extenuating conditions arise.

2. Nutrient sampling includes: Ammonia as N (NH3), Nitrate/Nitrite as N (NO2/NO3), Total Kjeldahl Nitrogen (TKN), and Total Phosphorus as P (TP).

3. Special/Additional: Sampling performed specific to an individual permit

Special/Additional[a]- Collected semi-annually including Total Arsenic (As), Total Selenium (Se), Total Mercury (Hg), Total Chromium (Cr), Dissolved Lead (Pb), Dissolved Cadnium (Ca), Dissolved Copper (Cu), and Dissolved Zinc (Zn), Chloride, Total Hardness (asCaCO3) as required by the Duke Energy Progress Sutton Plant NPDES Permit #NC0001422.

Special/Additional[b]- Collected quarterly Total Hardness (as CaCO3) as required by the Pender County NPDES Permit #NC0081736.

Special/Additional[c]- Collected twice per month April - October: Fecal Coliform, Enterococcus and TSS as required by the instream monitoring section of the Archer Daniels Midland Company NPDES Permit #NC0027065.

Special/Additional[d]- Collected quarterly Total Hardness (as CaCO3) as required by the GNF-A NPDES Permit #NC0001228.

APPENDIX B

SAMPLE COLLECTION AND ANALYSIS

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Sample Collection Procedures

Sample collection shall be performed by trained personnel employed with NC DWR certified laboratories in accordance with the DWR NPDES Discharge Monitoring Coalition Program Field Monitoring Guidance Document (December 2012) and subsequent documents. The Field Monitoring Guidance Document can be found on the web at: http://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/ecosystems-branch/monitoring-coalition-program. Alternate collection procedures require the approval of the DWR coalition coordinator prior to use.

Laboratory Analysis

All laboratory analyses shall be performed at a DWR certified laboratory using approved methods as prescribed by section 40 of the Code of Federal Regulations part 136 (40CFR136) or other methods certified by the DWR Laboratory Certification Branch (http://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch) or the Director of DWR. 40CFR136 can be accessed on the web at http://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/rules-regulations.

Reporting levels will be at least as stringent as the reporting levels used by the DWR Laboratory. For guidance purposes Table B-1 lists target reporting levels for each parameter based on the reporting levels of the DWR Laboratory. The lowest possible analytical limits for all the parameters should be pursued.

TABLE B-1
DWR Laboratory Reporting Limits

Water Temperature		Resolution to 0.1 degree Celsius
Dissolved Oxygen		Report results to the nearest 0.1 mg/L.
pH		Report results to the nearest 0.1 pH units.
Specific Conductivity		Report results to the nearest whole µmho/cm at 25 ºC.
Turbidity	1.0 NTU	
TSS	6.2 mg/L	
Fecal Coliform	1 colony/100 mL	At least 3 dilutions should be used to achieve optimum colony counts per membrane filter of 20-60 colonies.
Chlorophyll *a*	1 µg/L	Report Chlorophyll *a* values free from pheophytin and other chlorophyll pigments. Analysis by HPLC is not approved by DWR.
Ammonia (NH3 as N)	0.02 mg/L	Address distillation requirement. See 40CFR136 Table II footnote.
Nitrate + Nitrite as N	0.02 mg/L	
Total Kjeldahl Nitrogen as N	0.20 mg/L	
Total Phosphorus as P	0.02 mg/L	
Total Arsenic	2.0 µg/L	
Total Selenium	1.0 µg/L	
Total Mercury	1.00 ng/L	
Total Chromium	5.0 µg/L	
Dissolved Lead	2.0 µg/L	
Dissolved Cadmium	0.50 µg/L	
Dissolved Copper	2.0 µg/L	
Dissolved Zinc	10 µg/L	
Chloride	1.0 mg/L	
Hardness	1.0 mg/L	

Data Qualification Codes

When reporting data, the DWR's data qualifier codes must be used to provide additional information regarding data quality and interpretation. The current set of qualifier codes to be used is provided in Table B-2. Review the data remark codes at least annually and utilize the most current set, as codes are subject to change. A copy of this table can be found at http://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/microbiology-inorganics-branch/methods-pqls-qa.

Table B-2
Data Remark Codes for Use with Coalition Data

Symbol	Definition
A	Value reported is the mean (average) of two or more determinations. This code is to be used if the results of two or more discrete and separate samples are averaged. These samples shall have been processed and analyzed independently (e.g. field duplicates, different dilutions of the same sample). This code is not required for BOD, coliform or acute/chronic metals reporting since averaging multiple results for these parameters is fundamental to those methods or manner of reporting. 1 The reported value is an average, where at least one result is qualified with a "U". The PQL is used for the qualified result(s) to calculate the average.
B	Results based upon colony counts outside the acceptable range and should be used with caution. This code applies to microbiological tests and specifically to **membrane filter (MF)** colony counts. It is to be used if less than 100% sample was analyzed and the colony count is generated from a plate in which the number of colonies exceeds the ideal ranges indicated by the method. These ideal ranges are defined in the method as: *Fecal coliform or Enterococcus bacteria: 20-60 colonies Total coliform bacteria: 20-80 colonies* 1 Countable membranes with less than 20 colonies. Reported value is estimated or is a total of the counts on all filters reported per 100 ml. 2 Counts from all filters were zero. The value reported is based on the number of colonies per 100 ml that would have been reported if there had been one colony on the filter representing the largest filtration volume (reported as a less than "<" value). 3 Countable membranes with more than 60 or 80 colonies. The value reported is calculated using the count from the smallest volume filtered and reported as a greater than ">" value. 4 Filters have counts of both >60 or 80 and <20. Reported value is estimated or is a total of the counts on all filters reported per 100 ml. 5 Too many colonies were present; too numerous to count (TNTC). TNTC is generally defined as >150 colonies. The numeric value represents the maximum number of counts typically accepted on a filter membrane (60 for fecal or enterococcus and 80 for total), multiplied by 100 and then divided by the smallest filtration volume analyzed. This number is reported as a greater than value. 6 Estimated Value. Blank contamination evident. 7 Many non-coliform or non-enterococcus colonies or interfering non-coliform or non-enterococcus growth present. In this competitive situation, the reported value may under- represent actual density. Note: A "B" value shall be accompanied by justification for its use denoted by the numbers listed above (e.g., B1, B2, etc.). Note: A "J2" should be used for spiking failures.
C	Total residual chlorine was present in sample upon receipt in the laboratory; value is **estimated**. Generally applies to cyanide, phenol, NH3, TKN, coliform, and organics.

Symbol	Definition
G	A single quality control failure occurred during biochemical oxygen demand (BOD) analysis. The sample results should be used with caution. 1 The dissolved oxygen (DO) depletion of the dilution water blank exceeded 0.2 mg/L. 2 The bacterial seed controls did not meet the requirement of a DO depletion of at least 2.0 mg/L and/or a DO residual of at least 1.0 mg/L. 3 No sample dilution met the requirement of a DO depletion of at least 2.0 mg/L and/or a DO residual of at least 1.0 mg/L. 4 Evidence of toxicity was present. This is generally characterized by a significant increase in the BOD value as the sample concentration decreases. The reported value is calculated from the highest dilution representing the maximum loading potential and should be considered an **estimated** value. 5 The glucose/ glutamic acid standard exceeded the range of 198 ± 30.5 mg/L. 6 The calculated seed correction exceeded the range of 0.6 to 1.0 mg/L. 7 Less than 1 mg/L DO remained for all dilutions set. The reported value is an **estimated** greater than value and is calculated for the dilution using the least amount of sample. 8 Oxygen usage is less than 2 mg/L for all dilutions set. The reported value is an **estimated** less than value and is calculated for the dilution using the most amount of sample. 9 The DO depletion of the dilution water blank produced a negative value. The cBOD value is greater than the BOD value. Note: A "G" value shall be accompanied by justification for its use denoted by the numbers listed above (e.g., G1, G2, etc.).
J	**Estimated** value; value may not be accurate. This code is to be used in the following instances: 1 Surrogate recovery limits have been exceeded. 2 The reported value failed to meet the established quality control criteria for either precision or accuracy. 3 The sample matrix interfered with the ability to make any accurate determination. 4 The data is questionable because of improper laboratory or field protocols (e.g., composite sample was collected instead of grab, plastic instead of glass container, etc.). 5 Temperature limits exceeded (samples frozen or >6°C) during transport or not verifiable (e.g., no temperature blank provided): non-reportable for NPDES compliance monitoring. 6 The laboratory analysis was from an unpreserved or improperly chemically preserved sample. The data may not be accurate. 7 This qualifier is used to identify analyte concentration exceeding the upper calibration range of the analytical instrument/method. The reported value should be considered estimated. 8 Temperature limits exceeded (samples frozen or >6ºC) during storage, the data may not be accurate. 9 The reported value is determined by a one-point estimation rather than against a regression equation. The estimated concentration is less than the laboratory PQL and greater than the laboratory method detection limit. 10 Unidentified peak; estimated value. 11 The reported value is determined by a one-point estimation rather than against a regression equation. The estimated concentration is less than the laboratory PQL and greater than the instrument noise level. This code is used when an MDL has not been established for the analyte in question. 12 The calibration verification did not meet the calibration acceptance criterion for field parameters. Note: A "J" value shall be accompanied by justification for its use denoted by the numbers listed above (e.g., J1, J2, etc.). A "J" value shall not be used if another code applies (e.g., N, V, M).
M	Sample and duplicate results are "out of control". The sample is non-homogenous (e.g., VOA soil). The reported value is the lower value of duplicate analyses of a sample.

Symbol	Definition
N	Presumptive evidence of presence of material; estimated value. This code is to be used if: 1 The component has been tentatively identified based on mass spectral library search. 2 There is an indication that the analyte is present, but quality control requirements for confirmation were not met (i.e., presence of analyte was not confirmed by alternate procedures). 3 This code shall be used if the level is too low to permit accurate quantification, but the estimated concentration is less than the laboratory PQL and greater than the laboratory method detection limit. This code is not routinely used for most analyses. 4 This code shall be used if the level is too low to permit accurate quantification, but the estimated concentration is less than the laboratory practical quantitation limit and greater than the instrument noise level. This code is used when an MDL has not been established for the analyte in question. 5 The component has been tentatively identified based on a retention time standard.
Q	Holding time exceeded. These codes shall be used if the value is derived from a sample that was received, prepared and/or analyzed after the approved holding time restrictions for sample preparation and analysis. The value does not meet NPDES requirements. 1 Holding time exceeded prior to receipt by lab. 2 Holding time exceeded following receipt by lab.
P	Elevated PQL due to matrix interference and/or sample dilution.
S	Not enough sample provided to prepare and/or analyze a method-required matrix spike (MS) and/or matrix spike duplicate (MSD).
U	Indicates that the analyte was analyzed for, but not detected above the reported PQL. The number value reported with the "U" qualifier is equal to the laboratory's PQL*.
UU	Indicates that the analyte was not detected by a screen analysis. The number value reported with the "UU" qualifier is equal to the laboratory's PQL. The number value was determined by a one-point estimation at the PQL, rather than against a regression equation.
V	Indicates the analyte was detected in both the sample and the associated blank. Note: The value in the blank shall not be subtracted from the associated samples. 1 The analyte was detected in both the sample and the method blank. 2 The analyte was detected in both the sample and the field blank.
X	Sample not analyzed for this constituent. This code is to be used if: 1 Sample not screened for this compound. 2 Sampled, but analysis lost or not performed-field error. 3 Sampled, but analysis lost or not performed-lab error. Note: an "X" value shall be accompanied by justification for its use by the numbers listed.
Y	Elevated PQL due to insufficient sample size.
Z	The sample analysis/results are not reported due to: 1 Inability to analyze the sample. 2 Questions concerning data reliability. Note: The presence or absence of the analyte cannot be verified.
Supporting Definitions listed below	
MDL	A Method Detection Limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the true value is greater than zero and is determined in accordance with 40 CFR Part 136, Appendix B.
ML	Minimum Levels are used in some EPA methods. A Minimum Level (ML) is the lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that all method - specified sample weights, volumes, and cleanup procedures have been employed. The ML is calculated by multiplying the MDL by 3.18 and rounding the result to the nearest factor of 10 multiple (i.e., 1, 2, or 5). For example, MDL = 1.4 mg/L; ML = 1.4 mg/L x 3.18 = 4.45 rounded to the nearest factor of 10 multiple (i.e., 5) = 5.0 mg/L.

Supporting Definitions listed below	
PQL	The Practical Quantitation Limit (PQL) is defined as the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. PQLs are subjectively set at some multiple of typical MDLs for reagent water (generally 3 to 10 times the MDL depending upon the parameter or analyte and based on the analyst's best professional judgement, the quality and age of the instrument and the nature of the samples) rather than explicitly determined. PQLs may be nominally chosen within these guidelines to simplify data reporting and, where applicable, are generally equal to the concentration of the lowest non-zero standard in the calibration curve. PQLs are adjusted for sample size, dilution and % moisture. For parameters that are not amenable to MDL studies, the PQL may be defined by the sample volume and buret graduations for titrations or by minimum measurement values set by the method for method-defined parameters (e.g., BOD requires a minimum DO depletion of 2.0 mg/L, fecal coliform requires a minimum plate count of 20 cfu, total suspended residue requires a minimum weight gain of 2.5 mg, etc.). Additionally, some EPA methods prescribe Minimum Levels (MLs) and the lab may set the PQL equal to this method-stated ML. Determination of PQL is fully described in the laboratory's analytical Standard Operating Procedure (SOP) document.

Data remark codes are current February 27, 2018

APPENDIX C

DATA FORMAT AND REPORTING REQUIREMENTS

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Data Format for Monthly submittals

Table C-1 provides the required data submittal spreadsheet format. Do not use commas, tabs, pipes or other common file delimiters anywhere in the table. Do not add, delete or hide rows or columns. The first row should contain the column headings only. Column headings must include appropriate information on measurement units (mg/L, µg/L, cfu/100mL, etc.). The second row must contain the method code. It is very important that the format of the headings and the number and order of columns is consistent among all monthly submissions. The DWR station number (e.g. B6140000) must be provided as identified in the MOA. The comment column is used for describing pertinent information related to the sampling event or specific samples. Ensure that there are no missing values for station, date, time, and depth. Place all remark codes in a separate column as demonstrated in Table C-1. If there is no result for a particular parameter, leave the cell blank. Delete duplicate rows for stations that were not sampled (e.g. stations sampled twice in summer months). Screen all data for inappropriate or improbable values, such as a pH of 21.2 SU.

Annual Report

The LCFRP will be required to submit an annual report by April 30th for each year the MOA is in effect. The annual report will summarize all data collection activities in the past calendar year and contain at least the following elements:

- Monitoring Station List to include station number, station description, county, accurate coordinates (in decimal degrees to 4 decimal places), stream classification, and 8 digit hydrologic unit code (HUC).
- List of all certified laboratories that conducted work for the coalition in the past year, identify time frames for all laboratories and analysis methods used during the year and summarize any laboratory certification issues for individual parameters.
- A list of active LCFRP members with authorized representative updates, contact names, email addresses and phone numbers. Identify the facility name and permit number.
- A list of members whom became inactive during the year and their permit number.
- A list of changes in members' names, ownerships, and discharge locations.
- A summary of all quality assurance and quality control issues and any field audits conducted.
- A summary of any significant issues, special studies, or projects.
- Description of any required data collection that was missed with an explanation.
- Suggested changes to the monitoring program and/or MOA modifications.
- The LCFRP's website address.

Table C-1
File Format for Coalition Data Reporting

				Temp (ºC)	Temp_rmk	DO (mg/L)	DOrmk	pH (su)	pH_rmk	Conductivity (umhos/cm)	Conductivity_rmk	Fecal Coliform	Fecal Coliform	Enterococcus (cfu/100mL)	Enterococcus_rmk	Suspended Residue (mg/L)	Suspended Residue_rmk	Turbidity (NTU)	Turbidity_rmk	Chlorophyll_a (ug/L)	Chlorophyll_rmk	NH3_N (mg/L)	NH3_N_rmk	TKN_N (mg/L)
Station	Date (m/d/yyyy)	Time (hh:mm)	Depth (m)	10	10rmk	300	300rmk	400	400rmk	94	94rmk	31616	31616rmk	61211	61211rmk	530	530rmk	82079	82079rmk	32209	32209rmk	610	610rmk	625

TKN_N (mg/L)	TKN_N_rmk	NO2_NO3_N (mg/L)	NO2_NO3_N_rmk	TP (mg/L)	TP_rmk	Chloride_Cl Total (mg/L)	Chloride_Cl Total_rmk	Arsenic_As Total (ug/L)	Arsenic_As Total_rmk	Cadmium_Cd Dissolved (ug/L)	Cadmium_Cd Dissolved_rmk	Chromium_Cr Total (ug/L)	Chromium_Cr Total_rmk	Copper_Cu Dissolved (ug/L)	Copper_Cu Dissolved_rmk	Lead_Pb Dissolved (ug/L)	Lead_Pb Dissolved_rmk	Zinc_Zn Dissolved (ug/L)	Zinc_Zn Dissolved_rmk	Selenium_Se Total (ug/L)	Selenium_Se Total_rmk	Mercury_Hg Total (ug/L)	Mercury_Hg Total_rmk	Hardness (ug/L)	Hardness_rmk	
625	625rmk	630	630rmk	665	665rmk	940	940rmk	1002	1002rmk	1025	1025rmk	1034	1034rmk	1040	1040rmk	1049	1049rmk	1090	1090rmk	1147	1147rmk	71900	71900rmk	900	900rmk	Comments