Amendment #1
Update to the H-GAC's Multi-Basin FY 2026–2027 Clean Rivers Program QAPP

Prepared by the Houston-Galveston Area Council (H-GAC) in Cooperation with the Texas Commission on Environmental Quality (TCEQ)

Effective: Immediately upon approval by all parties

Questions concerning this QAPP Amendment should be directed to:

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Justification

This document details the changes made to the multi-basin QAPP to update method nomenclature to ensure the QAPP matches the accreditations for each partner laboratory. Other minor changes include a bottle size update and the addition of Chlorophyll-a and Flow Estimate as parameters collected by TRIES. The Bias % Recovery of LCS for HCPCS for parameters Ammonia, Nitrite + nitrate, and Total Phosphorus was changed to match the other partner laboratories. Clarifying language was added regarding bacteria dilutions. Finally, an updated field datasheet for RCUD with depth units of measurement changed from feet to meters.

Red font = change by TCEQ CRP Project QA Specialist
Green highlighting = change by Houston-Galveston Area Council
~~Strikethrough font~~ = deletion of text from previous QAPP document (highlighted green for change by Houston-Galveston Area Council/red text for change by TCEQ CRP Project QA Specialist)

Summary of Changes

Section	Sub-section/ Figure/Table	Page(s) in Basin-wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
A2 Approval Page	TCEQ	2	Replace Cathy Anderson with Jason Godeaux as Acting Team Leader of the Data Management and Analysis (DM&A) Team	Change of personnel at TCEQ.	TCEQ	13
A2 Approval Page	Harris County Pollution Control Services (HCPCS)	4	Replace Vanessa de Vera, HCPCS CRP Manager-Laboratory Services with Latrice Babin as “Acting” HCPCS CRP Manager-Laboratory Services	Change of personnel at HCPCS	HCPCS	15

Section	Sub-section/ Figure/Table	Page(s) in Basin-wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
A6 Quality Objectives and Criteria	Ambient Water Reporting Limits (AWRLs)	18-19	Add clarifying language for exceptions to the LOQs being at or below the AWRL related to *E. coli* dilutions.	Per SWQM Procedures Vol 1, Page 4-6, Section-Selecting Sample Dilutions: The laboratory may dilute the E. coli sample in order to produce a quantifiable result.	Eastex, HHD, RCUD	23
A7 Distribution List	TCEQ	20	Replace Cathy Anderson with Jason Godeaux as Acting Team Leader of the DM&A Team	Change of personnel at TCEQ.	TCEQ	24
A8 Project/Task Organization	TCEQ	21-22	Replace Cathy Anderson with Jason Godeaux as Acting Team Leader of the DM&A Team Replace Scott Delgado with Samantha Trexler as CRP Data Manager	Change of personnel at TCEQ	TCEQ	25-26
A8 Project/Task Organization	Harris County Pollution Control Services (HCPCS)	23-24	Replace Vanessa de Vera, HCPCS CRP Manager-Laboratory Services with Latrice Babin as “Acting” HCPCS CRP Manager-Laboratory Services	Change of personnel at HCPCS	HCPCS	27

Section	Sub-section/ Figure/Table	Page(s) in Basin-wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
A8 Project/Task Organization	Eastex Environmental Laboratory (Eastex)	28	Add language to Kari Jordan's Roles and Responsibilities	Clarify that the QAO is the backup for final data packet review and submittal to H-GAC in the case that the Technical Director/Project Manager is out or unavailable.	Eastex	28
A10 Project Organization Chart	Figure A10.1	29	Replace Cathy Anderson with Jason Godeaux as Acting Team Leader of the DM&A Team Replace Scott Delgado with Samantha Trexler as CRP Data Manager	Change of personnel at TCEQ	TCEQ	29
A10 Project Organization Chart	Figure A10.1b	31	Replace Vanessa de Vera, HCPCS CRP Manager-Laboratory Services with Latrice Babin as "Acting" HCPCS CRP Manager-Laboratory Services	Change of personnel at HCPCS	HCPCS	30

Section	Sub-section/ Figure/Table	Page(s) in Basin-wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
B2 Sampling Methods	TABLE B2.1a Sample Storage, Preservation, and Handling Requirements for H-GAC Samples Analyzed by Eastex Environmental Laboratory	43	Change the container size from 1 L to 500 mL for the parameters: TKN, Ammonia-N, and Nitrite + Nitrate-N in the table and footnotes. Update TP holding time from 28 days to 6 months for Eastex laboratory	The sample volumes allow for a smaller container, which will reduce cost and acid used. Per section 8 of EPA 200.7 method, holding time for TP when preserved with nitric acid is 6 months. While the need for this long holding time is rare, the results meet all methods requirements.	H-GAC and Eastex	31
B2 Sampling Methods	Table B2.1f Sample Storage, Preservation, and Handling Requirements for SJRA Samples collected from Lake Woodlands and analyzed by Eastex Environmental Laboratory	45-46	Update TP holding time from 28 days to 6 months for Eastex laboratory	Per section 8 of EPA 200.7 method, holding time for TP when preserved with nitric acid is 6 months. While the need for this long holding time is rare, the results meet all methods requirements.	Eastex	32

Section	Sub-section/ Figure/Table	Page(s) in Basin-wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
B2 Sampling Methods	Table B2.1g Sample Storage, Preservation, and Handling Requirements for EIH and analyzed by Eastex Environmental Laboratory	46	Update TP holding time from 28 days to 6 months for Eastex laboratory	Per section 8 of EPA 200.7 method, holding time for TP when preserved with nitric acid is 6 months. While the need for this long holding time is rare, the results meet all methods requirements.	Eastex	33
B2 Sampling Methods	Table B2.1h Sample Storage, Preservation, and Handling Requirements for TRIES	47	Add the parameter Chlorophyll-a. Update TP holding time from 28 days to 6 months for TRIES laboratory	New site added in FY26 has Chlorophyll-a included as a parameter in the CMS. Per section 8 of EPA 200.7 method, holding time for TP when preserved with nitric acid is 6 months. While the need for this long holding time is rare, the results meet all methods requirements.	TRIES and Eastex	34
Appendix A Measurement Performance Specifications	TABLE A6.1c Measurement Performance Specifications for Houston-Galveston Area Council (H-GAC). Conventional Parameters in Water.	77	Method name format corrections for Parameters: TSS, Ammonia, TKN, and Nitrite+Nitrate. Update Total Phosphorus LOQ from 0.06 to 0.02.	Align the method name and format with the laboratory accreditation records. Update LOQ based on the TCEQ requested TP LOQ study.	H-GAC and Eastex	35

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Appendix A Measurement Performance Specifications	TABLE A6.1d Measurement Performance Specifications for Houston-Galveston Area Council (H-GAC). Bacteriological Parameters in Water.	78	Method name format corrections for Parameter *E. coli* (method SM 9223 B). Addition of method Colilert. Footnote added for backup method and to the LOQ for *E. coli* regarding dilutions.	Align the method name and format with the laboratory accreditation records. Reiterate the SWQM Procedures Manual Volume 1, pages 4-6 Section – Selecting Sample Dilutions regarding *E. coli* samples suspected of being greater than the upper detection limit of the method when not diluted.	H-GAC and Eastex	36
Appendix A Measurement Performance Specifications	TABLE A6.2b Measurement Performance Specifications for Harris County Pollution Control Services (HCPCS). Conventional Parameters in Water	81	Method name format corrections for Parameters: TSS, Ammonia, TKN, and Nitrite+Nitrate. Update of Bias % Recovery of LCS to 80-120 for Parameters: Ammonia, Nitrite+Nitrate, and Total Phosphorus.	Align the method name and format with the laboratory accreditation records. Update Bias % Recovery of LCS to match the values for the other partner laboratories.	HCPCS and Eastex	37
Appendix A Measurement Performance Specifications	TABLE A6.2c Measurement Performance Specifications for Harris County Pollution Control Services (HCPCS). Bacteriological Parameters in Water.	81	Method name format corrections for Parameter Enterococci.	Align the method name and format with the laboratory accreditation records.	HCPCS	37

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Appendix A Measurement Performance Specifications	TABLE A6.3c Measurement Performance Specifications for City of Houston, Health Department (HHD). Conventional Parameters in Water.	84	Method name format corrections for Parameters: TSS and TKN.	Align the method name and format with the laboratory accreditation records.	HHD and Eastex	38
Appendix A Measurement Performance Specifications	TABLE A6.3d Measurement Performance Specifications for City of Houston, Health Department (HHD). Bacteriological Parameters in Water.	85	Method name format corrections for Parameters *E. coli* and Enterococci. Footnote added to the LOQ for *E. coli* regarding dilutions.	Align the method name and format with the laboratory accreditation records. Reiterate the SWQM Procedures Manual Volume 1, pages 4-6 Section – Selecting Sample Dilutions regarding *E. coli* samples suspected of being greater than the upper detection limit of the method when not diluted.	HHD	39
Appendix A Measurement Performance Specifications	TABLE A6.4c Measurement Performance Specifications for City of Houston, Regulatory Compliance and Utility Development (RCUD). Conventional Parameters in Water.	88	Method name format corrections for Parameters: Alkalinity, TSS, Ammonia, and TKN. Method change for TP from EPA 365.3 to SM 4500-PE.	Align the method name and format with the laboratory accreditation records. Laboratory is accredited for both the old and new TP method, but requested to use the SM 4500-PE.	RCUD and Eastex	40

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Appendix A Measurement Performance Specifications	TABLE A6.4d Measurement Performance Specifications for City of Houston, Regulatory Compliance and Utility Development (RCUD). Bacteriological Parameters in Water.	89	Method name format corrections for Parameter *E. coli* (method SM 9223 B). Addition of method SM 9923 B (Colilert-18-Quanti-Tray). Footnote added for backup method and to the LOQ for *E. coli* regarding dilutions.	Align the method name and format with the laboratory accreditation records. Reiterate the SWQM Procedures Manual Volume 1, pages 4-6 Section – Selecting Sample Dilutions regarding *E. coli* samples suspected of being greater than the upper detection limit of the method when not diluted.	RCUD	41
Appendix A Measurement Performance Specifications	TABLE A6.5c Measurement Performance Specifications for San Jacinto River Authority (SJRA). Conventional Parameters in Water.	92	Method name format corrections for Parameters: Alkalinity, TSS, Ammonia, Nitrite+Nitrate, and TKN. Update Total Phosphorus LOQ from 0.06 to 0.02. Method change for TP from EPA 365.3 to SM 4500-PE for RCUD laboratory.	Align the method name and format with the laboratory accreditation records. laboratories. Update LOQ based on the TCEQ requested TP LOQ study. RCUD Laboratory is accredited for both the old and new TP method, but requested to use the SM 4500-PE.	SJRA, RCUD, and Eastex	42

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Appendix A Measurement Performance Specifications	TABLE A6.5d Measurement Performance Specifications for San Jacinto River Authority (SJRA). Bacteriological Parameters in Water.	93	Method name format corrections for Parameter *E. coli* (method SM 9223 B). Addition of method SM 9923 B (Colilert-18-Quanti-Tray) and method Colilert. Footnote added for backup method and to the LOQ for *E. coli* regarding dilutions.	Align the method name and format with the laboratory accreditation records. Reiterate the SWQM Procedures Manual Volume 1, pages 4-6 Section – Selecting Sample Dilutions regarding *E. coli* samples suspected of being greater than the upper detection limit of the method when not diluted.	RCUD and Eastex	43
Appendix A Measurement Performance Specifications	TABLE A6.6c Measurement Performance Specifications for Environmental Institute of Houston (EIH). Conventional Parameters in Water.	95-96	Method name format corrections for Parameters: TSS, Ammonia, TKN, and Nitrite+Nitrate. Update Total Phosphorus LOQ from 0.06 to 0.02.	Align the method name and format with the laboratory accreditation records. Update LOQ based on the TCEQ requested TP LOQ study.	EIH and Eastex	44

Section	Sub-section/ Figure/Table	Page(s) in Basin-wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
Appendix A Measurement Performance Specifications	TABLE A6.6d Measurement Performance Specifications for Environmental Institute of Houston (EIH). Bacteriological Parameters in Water.	97	Method name format corrections for Parameters *E. coli* (method SM 9223 B), and Enterococci. Addition of method Colilert. Footnote added for backup method and to the LOQ for *E. coli* regarding dilutions.	Align the method name and format with the laboratory accreditation records. Reiterate the SWQM Procedures Manual Volume 1, pages 4-6 Section – Selecting Sample Dilutions regarding *E. coli* samples suspected of being greater than the upper detection limit of the method when not diluted.	EIH and Eastex	45
Appendix A Measurement Performance Specifications	TABLE A6.7b Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES). Flow Parameters.	100	Addition of Parameter: Stream Flow Estimate (CFS).	When conditions do not allow traditional instantaneous discharge measurement, a stream flow estimate can be collected and reported.	TRIES	46

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Appendix A Measurement Performance Specifications	TABLE A6.7c Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES). Conventional Parameters in Water.	101	Method name format corrections for Parameters: TSS, Ammonia, TKN, and Nitrite+Nitrate. Addition of parameter Chlorophyll-a. Update Total Phosphorus LOQ from 0.06 to 0.02.	Align the method name and format with the laboratory accreditation records. Adding Chlorophyll-a as a parameter collected by TRIES. Update LOQ based on the TCEQ requested TP LOQ study.	TRIES and Eastex	47-48
Appendix A Measurement Performance Specifications	TABLE A6.7d Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES). Bacteriological Parameters in Water.	102	Method name format corrections for Parameters *E. coli* (method SM 9223 B and Colilert). Addition of method Colilert. Footnote added for backup method and to the LOQ for *E. coli* regarding dilutions.	Align the method name and format with the laboratory accreditation records. Reiterate the SWQM Procedures Manual Volume 1, pages 4-6 Section – Selecting Sample Dilutions regarding *E. coli* samples suspected of being greater than the upper detection limit of the method when not diluted.	TRIES and Eastex	49
Appendix D: Field Data Sheets and Appendix E: Chain of Custody Forms	City of Houston Drinking Water Regulatory Compliance Laboratory Field Sheet	143 and 152	Replace the datasheet to change the units for total depth and sample depth from ft to m. Also updates the effective date and version number.	Remove the need to convert depth measurements from ft to meters before submitting the data to SWQMIS.	RCUD	50

Distribution

This QAPP amendment will be distributed by the Houston-Galveston Area Council (H-GAC) via email to all personnel on the distribution list (section A7 of the QAPP to which this amendment pertains).

These changes will be incorporated into the QAPP document and TCEQ and the H-GAC will acknowledge and accept these changes by approving the final amendment draft electronically via email. H-GAC will distribute the approved amendment electronically to all local partners and secure acknowledgement of receipt.

Texas Commission on Environmental Quality

Water Quality Planning Division

Electronically Approved 1/14/2025

Sarah Whitley, Team Leader Date
Water Quality Standards
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Electronically Approved 1/14/2025

Sunshyne Hendrix Date
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Electronically Approved 1/14/2025

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Detail of Changes

The following replacement pages include the corrections to the original QAPP approved on 08-29-2025.

A6 Quality Objectives and Criteria

The purpose of routine water quality monitoring is to collect surface water quality data that can be used to characterize water quality conditions, identify significant long-term water quality trends, support water quality standards development, support the permitting process, and conduct water quality assessments in accordance with TCEQ's Guidance for Assessing and Reporting Surface Water Quality in Texas, February 2024 or most recent version (https://www.tceq.texas.gov/downloads/water-quality/assessment/integrated-report-2024/2024-guidance.pdf). These water quality data, and data collected by other organizations (e.g., United States Geological Survey [USGS], TCEQ, etc.), will be subsequently reconciled for use and assessed by the TCEQ. The purpose of 24-hour monitoring is to collect data that can be used to address DO impairments.

The measurement performance specifications to support the project purpose for a minimum data set are specified in Appendix A.

Ambient Water Reporting Limits (AWRLs)

For surface water to be evaluated for compliance with Texas Surface Water Quality Standards (TSWQS) and screening levels, data must be reported at or below specified reporting limits. To ensure data are collected at or below these reporting limits, required ambient water reporting limits (AWRLs) have been established. A full listing of AWRLs can be found at https://www.tceq.texas.gov/assets/public/waterquality/crp/QA/awrlmaster.pdf.

The limit of quantitation (LOQ) is the minimum reporting limit, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence by the lab analyzing the sample. Analytical results shall be reported down to the lab's LOQ (i.e., the lab's LOQ for a given parameter is its reporting limit) as specified in Appendix A.

The following requirements must be met in order to report results to the CRP:

- The lab's LOQ for each analyte must be set at or below the AWRL. It is the responsibility of H-GAC to ensure that any laboratories used to generate CRP data have satisfactory LOQs.
- Once the LOQ is established in the QAPP, that is the reporting limit for that parameter until such time as the lab amends the QAPP and lists an updated LOQ.
- The lab must demonstrate its ability to quantitate at its LOQ for each analyte by running an LOQ check sample for each analytical batch of CRP samples analyzed.
- Under reasonable circumstances (e.g., the use of a subcontracted lab), data may be reported above or below the LOQ stated in this QAPP, so long as the LOQ remains at or below the AWRL stated in this QAPP.
- Measurement performance specifications for LOQ check samples are found in Appendix A.
- Exceptions to LOQs being at or below the AWRL:
  1. *E. coli* samples may be diluted 1:10 or greater for sites/samples where the greater than detection limit is a concern per SWQM Procedures Vol 1, Page 4-6, Section - Selecting Sample Dilutions.

Lab Measurement Quality Control (QC) Requirements and Acceptability Criteria are provided in Section B4.

A7 Distribution List

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The TCEQ CRP PM will provide the approved QAPP and any amendments and appendices to TCEQ staff listed in A7 and the HGAC. The H-GAC QAO will provide copies of this project plan and any amendments or appendices of this plan to all other signatories on this QAPP. The H-GAC will document distribution of the plan and any amendments and appendices, maintain this documentation as part of the project's quality assurance records, and ensure the documentation is available for review.

A8 Project/Task Organization

Description of Responsibilities

TCEQ

Jason Godeaux
Manager, Monitoring and Assessment Section
Responsible for oversight of the implementation of CRP QAPPs, directs the day-to-day management of the section.

Sarah Whitley
Team Leader, Water Quality Standards and Clean Rivers Program
Responsible for TCEQ activities supporting the development and implementation of the Texas CRP. Responsible for verifying that the TCEQ QMP is followed by TCEQ CRP staff. Supervises TCEQ CRP staff. Reviews and responds to any deficiencies, corrective actions, or findings related to the area of responsibility. Oversees the development of QA guidance for the CRP. Reviews and approves all QA audits, corrective actions, reports, work plans, contracts, QAPPs, and TCEQ QMP. Enforces corrective action, as required, where QA protocols are not met. Ensures CRP personnel are fully trained.

Sunshyne Hendrix
CRP Project Quality Assurance Specialist
Serves as liaison between CRP management and TCEQ QA management. Participates in the development, approval, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP). Serves on planning team for CRP special projects. Reviews and approves CRP QAPPs in coordination with other CRP staff. Coordinates documentation and monitors implementation of corrective actions for the CRP.

Jenna Wadman
CRP Project Manager
Responsible for the development, implementation, and maintenance of CRP contracts. Tracks, reviews, and approves deliverables. Participates in the development, approval, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP). Coordinates the review and approval of CRP QAPPs in coordination with the TCEQ CRP Project QAS. Ensures maintenance of QAPPs. Assists TCEQ CRP Lead QAS in conducting Basin Planning Agency audits. Verifies QAPPs are being followed by contractors and that projects are producing data of known quality. Coordinates project planning with the Basin Planning Agency PM. Reviews and approves data and reports produced by contractors. Notifies TCEQ CRP QA Specialists of circumstances that may adversely affect the quality of data derived from the collection and analysis of samples. Develops, enforces, and monitors corrective action measures to ensure contractors meet deadlines and scheduled commitments.

~~Cathy Anderson~~ Jason Godeaux
Acting Team Leader, Data Management and Analysis Team
Participates in the development, approval, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP). Ensures DM&A staff perform data management-related tasks.

~~Scott Delgado~~ Samantha Trexler
CRP Data Manager, Data Management and Analysis Team
Responsible for coordination and tracking of CRP data sets from initial submittal through TCEQ CRP PM review and approval. Ensures that data are reported following instructions in the Data Management Reference Guide (DMRG), July 2019 or most current version. Runs automated data validation checks in SWQMIS and coordinates data verification and error correction with TCEQ CRP PMs. Generates SWQMIS summary reports to assist CRP PMs' data review. Identifies data anomalies and inconsistencies. Provides training and guidance to CRP and planning agencies on technical data issues to ensure that data are submitted according to documented procedures. Reviews QAPPs for valid stream monitoring stations. Checks validity of parameter

codes, submitting entity (SE) code(s), collecting entity (CE) code(s), and monitoring type (MT) code(s). Develops and maintains data management-related SOPs for CRP data management. Coordinates and processes data correction requests. Participates in the development, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP).

D. Jody Koehler
TCEQ Quality Assurance Manager
Responsible for coordinating development and implementation of TCEQ's QA program. Provides oversight and guidance for TCEQ's QA program. Responsible for the development and maintenance of the TCEQ QMP. TCEQ's QA Manager, or designated QA staff in the Laboratory and Quality Assurance Section of the Air Monitoring Division, is responsible for review and approval of program/project QAPPs to ensure QAPPs conform to applicable requirements as detailed in TCEQ's QMP.

Loren Walker
CRP Lead Quality Assurance Specialist
Participates in the development, approval, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP). Assists program manager and TCEQ CRP Project QAS in developing and implementing the quality system. Reviews and approves CRP QAPPs, QAPP amendments, and QAPP special appendices. Prepares and distributes annual audit plans. Conducts monitoring systems audits of planning agencies. Concurs with corrective actions. Conveys QA problems to appropriate management. Recommends that work be stopped in order to safeguard programmatic objectives, worker safety, public health, or environmental protection. Ensures maintenance of audit records for the CRP.

Harris County Pollution Control Services (HCPCS)

Latrice Babin
HCPCS CRP Project Manager
Ensures overall performance and administration of the QAPP requirements performed by HCPCS are properly reported to H-GAC. Responsible for ensuring that CRP requirements in QAPPs and QAPP amendments and appendices are implemented and monitored.

Latrice Babin ~~Vanessa de Vera~~
Acting HCPCS CRP Manager-Laboratory Services
Coordinates basin planning activities with the H-GAC Project Manager and/or QAO. Ensures H-GAC QAO is notified of deficiencies and corrective actions, and that issues are resolved. Responsible for overall performance, administration, and reporting of analyses performed by HCPCS Laboratory. Responsible for supervision of laboratory personnel involved in generating analytical data for the project. Ensures that laboratory personnel have adequate training and a thorough knowledge of this QAPP and related SOPs. Responsible for oversight of all laboratory operations ensuring that all QA/QC requirements are met, documentation is complete and adequately maintained, and results are reported accurately. Additionally, the lab manager will review and verify all laboratory data for integrity and continuity, reasonableness and conformance to project requirements, and will confirm data are validated against the data quality objectives of this QAPP.

Jane Ngari
HCPCS CRP Laboratory Quality Assurance Officer
Responsible for monitoring the activities of HCPCS laboratory personnel. Responsible for the overall quality control and quality assurance of analyses performed by HCPCS Laboratory. Monitors the implementation of the QM within the laboratory to ensure complete compliance with QA data quality objectives, as defined by this QAPP. Conducts in-house audits to ensure compliance with written SOPs and to identify potential problems. Responsible for supervising and verifying all aspects of the QA/QC in the laboratory. Responsible for coordinating the implementation of the QA program. Responsible for identifying, receiving, and maintaining project QA records. Coordinates and monitors deficiencies and corrective actions.

Ericka Jackson
HCPCS CRP Data Manager
Ensures that all data collected meet the data quality objectives of the project. Ensures both field and laboratory data are entered into appropriate spreadsheets and data bases and are reviewed and validated as required. Monitors the implementation of the QAPP within the laboratory to ensure complete compliance with QA data quality objectives, as defined by this QAPP. Responsible for identifying, receiving, and maintaining project QA records. Responsible for coordinating with the Laboratory QAO to resolve QA-related issues. Notifies the Laboratory QAO of circumstances which may adversely affect the quality of data. Coordinates and monitors deficiencies and corrective action with the Laboratory QAO. Responsible for ensuring that field and laboratory data submitted to H-GAC CRP are properly reviewed, verified, and validated. Formats and delivers data in the format described in the DMRG, most recent version, to H-GAC CRP Data Manager. Responsible for sending scanned copies of field data sheets, calibration sheets, and COC forms to H-GAC CRP Data Manager.

Bryan Kosler
HCPCS CRP Field Quality Assurance Officer and Field Supervisor
Responsible for monitoring the activities of HCPCS field personnel, ensuring that all data collected meet the data quality objectives of the project. Responsible for supervising the collection, preservation, handling and delivery of samples. Responsible for ensuring that field measurements, sample custody, and documentation follow procedures described in this QAPP. Notifies the HCPCS lab QA staff of particular circumstances which may adversely affect the quality of data. Responsible for coordinating with H-GAC QAO to resolve field related issues. Trains all field monitoring personnel.

Eastex Environmental Laboratory (Eastex) (Coldspring, TX, facility only)

Tiffany Harrison
Eastex Laboratory Technical Director and CRP Project Manager

Responsible for the overall performance, administration, and reporting of analyses performed by Eastex Environmental Laboratory (Coldspring, TX). Responsible for supervision of laboratory personnel involved in generating analytical data for the project. Ensures that laboratory personnel have adequate training and a thorough knowledge of this QAPP and related SOPs. Responsible for oversight of all laboratory operations ensuring that all QA/QC requirements are met, documentation is complete and adequately maintained, and results are reported accurately. The Technical Director reviews the final data packet after the Data Manager finishes their activities and then completes the Data Review checklist before emailing to H-GAC.

Kari Jordan
Eastex Laboratory CRP Quality Assurance Officer

Responsible for the overall quality control and quality assurance of analyses performed by Eastex Environmental Laboratory (Coldspring, TX). Monitors the implementation of the QM/QAPP within the laboratory to ensure complete compliance with QA data quality objectives, as defined by this QAPP. Coordinates and monitors deficiencies and corrective actions. Conducts in-house audits to ensure compliance with written SOPs and to identify potential problems. Responsible for supervising and verifying all aspects of the QA/QC in the laboratory. The QAO serves as an alternate to the Technical Director in reviewing the final data packet once the Data Manager has completed their activities. The QAO may also complete the Data Review Checklist prior to the report being emailed to H-GAC.

Natalia Bondar
Eastex Laboratory CRP Data Manager

The Data Manager reviews data entry into Laboratory Information Management System (LIMS) for accuracy, then validates the data after reviewing for validity and QA/QC requirements. Notifies the Technical Director of data pending final review and distribution.

A10 Project Organizational Chart and Communication

Project Organization Chart

Figure A10.1. Organization Chart with Lines of Communication

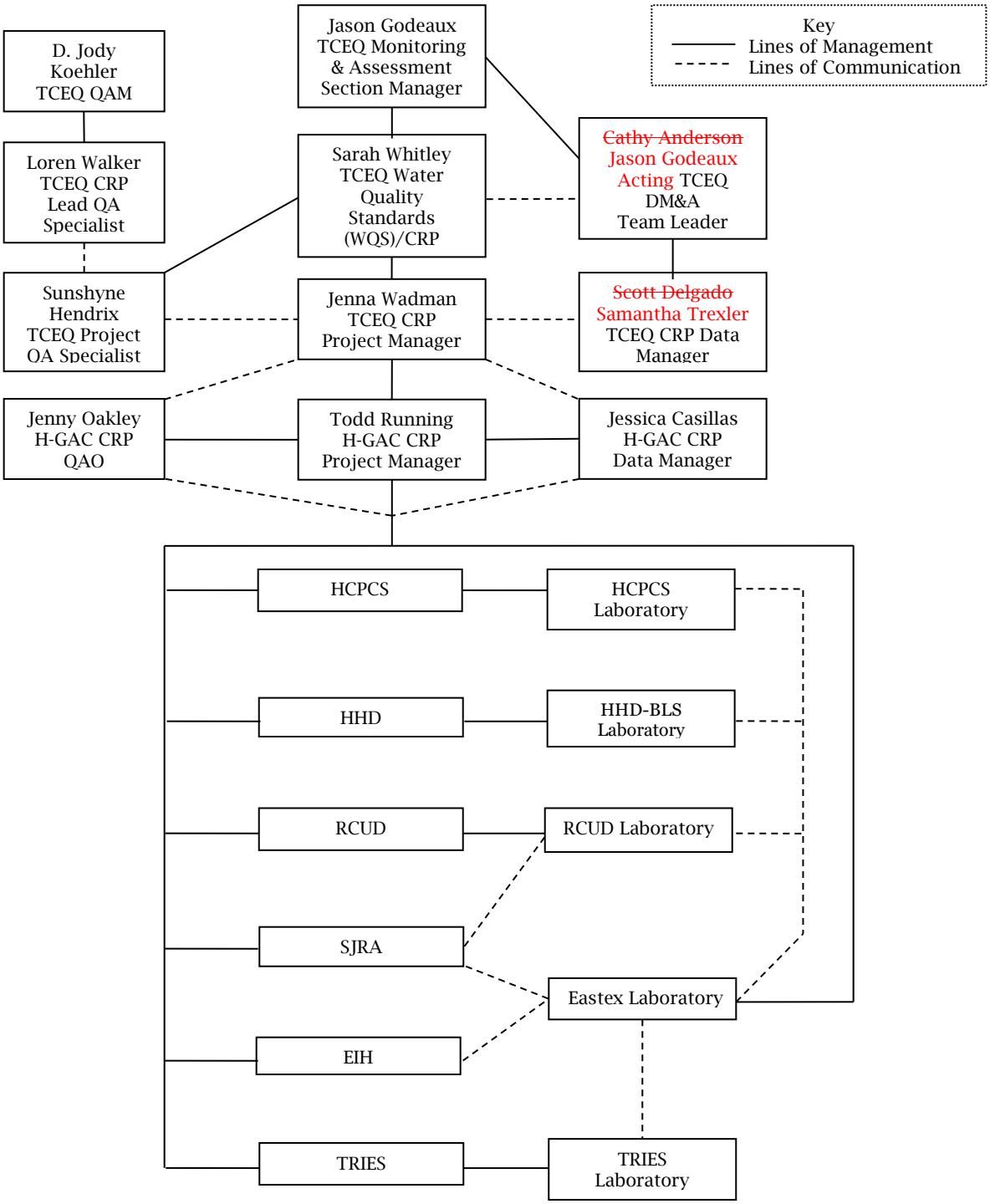

Figure A10.1b. CRP Organizational Chart - HCPCS

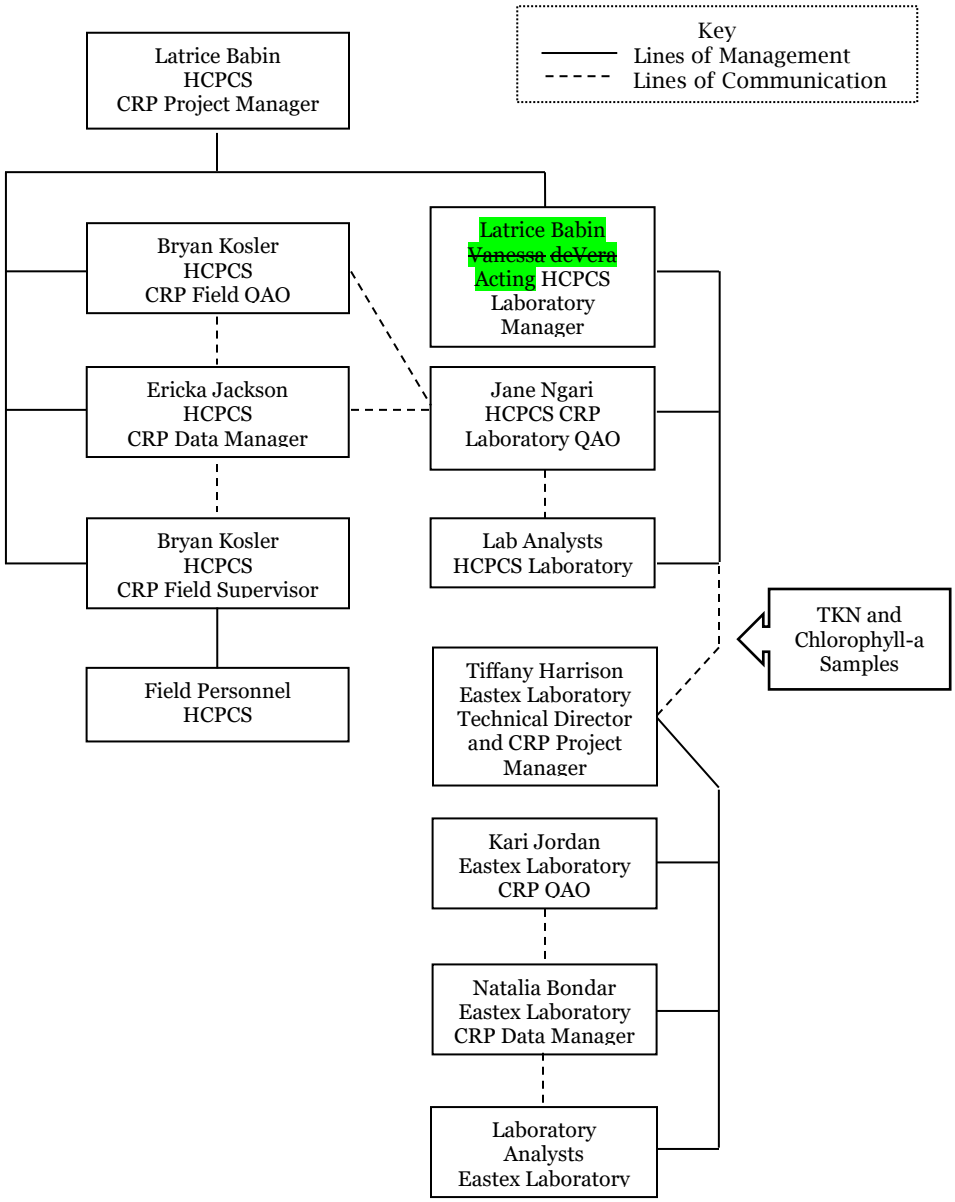

Table B2.1a Sample Storage, Preservation, and Handling Requirements for H-GAC Samples Analyzed by Eastex Environmental Laboratory

Matrix	Parameter	Container	Sample Volume	Preservation	Holding Time
water	TSS	1 L Plastic	1 L	Cool to 4˚C ± 2˚C	7 days
	Phosphorus-P, total	500 mL Plastic[1,2]	125 mL	Cool to 4˚C ± 2˚C, HNO_3 to pH <2 at lab	~~28 days~~ 6 months
	Sulfate		75 mL	Cool to 4˚C ± 2˚C	28 days
	Chloride		75 mL		28 days
	Nitrite-N[4]		75 mL		48 hours
	Nitrate-N[4]		75 mL		48 hours
	E.coli IDEXX Colilert	100 mL Sterile Plastic w/ sodium thiosulfate	100 mL[5]	Cool to 4˚C ± 2˚C	8 hours[6]
	TKN[7]	~~500 mL 1 L~~ Plastic[3]	250 mL	Cool to 4˚C ± 2˚C, H_2SO_4 to pH <2	28 days
	Ammonia-N		125 mL		28 days
	Nitrite + nitrate-N[4]		125 mL		28 days

1. Total phosphorus sample taken out of ion chromatography 500 mL and preserved at the lab with Nitric Acid (HNO3) in separate bottle.
2. One 500 mL plastic container is used to collect these five parameters.
3. One ~~500 mL 1 L~~ plastic bottle is used to collect these three parameters.
4. Eastex will run IC speciation (75 mL samples) but will analyze Nitrite+Nitrate (125 mL sample) by cadmium reduction method if IC equipment is down or if there are issues with interference due to high ionic compounds in the sample.
5. Maximum volume analyzed for *E.coli* is 50 ml allowing duplicate analyses from 1 container.
6. *E.coli* samples should always be processed as soon as possible and incubated no later than 8 hours from time of collection. When transport conditions necessitate sample incubation after 8 hours from time of collection, the holding time may be extended, and samples must be processed as soon as possible and within 30 hours.
7. Eastex Environmental Lab will analyze sample(s) only at sites where TKN is included in the coordinated monitoring schedule (CMS).

Table B2.1f Sample Storage, Preservation, and Handling Requirements for SJRA Samples collected from Lake Woodlands and analyzed by Eastex Environmental Laboratory

Matrix	Parameter	Container	Sample Volume	Preservation	Holding Time
water	TSS	1 L Plastic	1 L	Cool to 4˚C ± 2˚C	7 days
	Phosphorus-P, total	500 mL Plastic[1,2]	125 mL	Cool to 4˚C ± 2˚C, HNO_3 to pH <2 at lab	~~28 days~~ 6 months
	Sulfate		75 mL	Cool to 4˚C ± 2˚C	28 days
	Chloride		75 mL		28 days
	Nitrite-N[4]		75 mL		48 hours
	Nitrate-N[4]		75 mL		48 hours
	E.coli IDEXX Colilert	100 mL Sterile Plastic w/ sodium thiosulfate	100 mL[5]	Cool to 4˚C ± 2˚C	8 hours[6]
	Chlorophyll-*a*[7]	4 L Brown plastic	4 L	Cool to 4˚C ± 2˚C and dark before filtration; dark & frozen after filtration	Filtered w/in 48 hours; then frozen up to 24 days
	TKN[7]	1 L Plastic[3]	250 mL	Cool to 4˚C ± 2˚C, H_2SO_4 to pH <2	28 days
	Ammonia-N		125 mL		28 days
	Nitrite + nitrate-N[4]		125 mL		28 days

1. Total phosphorus sample taken out of ion chromatography 500 mL and preserved at the lab with Nitric Acid (HNO3) in separate bottle.
2. One 500 mL plastic container is used to collect these five parameters.
3. One 1 L plastic bottle is used to collect these three parameters.
4. Eastex will run IC speciation (75 mL samples) but will analyze Nitrite+Nitrate (125 mL sample) by cadmium reduction method if IC equipment is down or if there are issues with interference due to high ionic compounds in the sample.
5. Maximum volume analyzed for *E.coli* is 50 ml allowing duplicate analyses from 1 container.
6. *E.coli* samples should always be processed as soon as possible and incubated no later than 8 hours from time of collection. When transport conditions necessitate sample incubation after 8 hours from time of collection, the holding time may be extended, and samples must be processed as soon as possible and within 30 hours.
7. Eastex Environmental Lab will analyze sample(s) only at sites where the parameter is included in the CMS.

Table B2.1g Sample Storage, Preservation, and Handling Requirements for EIH and analyzed by Eastex Environmental Laboratory

Matrix	Parameter	Container	Sample Volume	Preservation	Holding Time
water	TSS	1 L Plastic	1 L	Cool to 4˚C ± 2˚C	7 days
	Phosphorus-P, total	500 mL Plastic[1,2]	125 mL	Cool to 4˚C ± 2˚C, HNO_3 to pH <2 at lab	~~28 days~~ 6 months
	Sulfate		75 mL	Cool to 4˚C ± 2˚C	28 days
	Chloride		75 mL		28 days
	Nitrite-N[4]		75 mL		48 hours
	Nitrate-N[4]		75 mL		48 hours
	Ammonia-N	500 mL Plastic[3]	125 mL	Cool to 4˚C ± 2˚C, H_2SO_4 to pH <2	28 days
	Nitrite + nitrate-N[4]		125 mL		28 days
	E.coli IDEXX Colilert	100 mL Sterile Plastic w/ sodium thiosulfate	100 mL[5]	Cool to 4˚C ± 2˚C	8 hours[6]
	Enterococci IDEXX Enterolert	100 mL Sterile Plastic w/ sodium thiosulfate	100 mL[5]	Cool to 4˚C ± 2˚C	8 hours
	TKN[7]	500 mL Plastic	250 mL	Cool to 4˚C ± 2˚C, H_2SO_4 to pH <2	28 days
	Chlorophyll-*a*[7]	4 L Brown plastic	4 L	Cool to 4˚C ± 2˚C and dark before filtration; dark & frozen after filtration	Filtered w/in 48 hours; then frozen up to 24 days

1. Total phosphorus sample taken out of ion chromatography 500 mL and preserved at the lab with Nitric Acid (HNO3) in separate bottle.
2. One 500 mL plastic container is used to collect these five parameters.
3. One 500 mL plastic bottle is used to collect these two parameters.
4. Eastex will run IC speciation (75 mL samples) but will analyze Nitrite+Nitrate (125 mL sample) by cadmium reduction method if IC equipment is down or if there are issues with interference due to high ionic compounds in the sample (e.g. Tidal sites).
5. Maximum volume analyzed is 50 ml allowing duplicate analyses from 1 container.
6. *E.coli* samples should always be processed as soon as possible and incubated no later than 8 hours from time of collection. When transport conditions necessitate sample incubation after 8 hours from time of collection, the holding time may be extended, and samples must be processed as soon as possible and within 30 hours.
7. Eastex Environmental Lab will analyze sample(s) only at sites where the parameter is included in the CMS.

Table B2.1h Sample Storage, Preservation, and Handling Requirements for TRIES

Matrix	Parameter*	Container	Sample Volume	Preservation	Holding Time
water	TSS	1 L Plastic	1 L	Cool to 4˚C ± 2˚C	7 days
	Sulfate	125 mL Plastic[1]	20 mL	Cool to 4˚C ± 2˚C	28 days
	Chloride		20 mL		28 days
	Nitrite-N		20 mL		48 hours
	Nitrate-N		20 mL		48 hours
	E.coli IDEXX Colilert	200 mL Sterile Plastic w/ sodium thiosulfate[2]	200 mL	Cool to 4˚C ± 2˚C	8 hours[3]
	TKN[4]	500 mL Plastic	250 mL	Cool to 4˚C ± 2˚C, H_2SO_4 to pH <2	28 days
	Nitrite + Nitrate-N[5]		125 mL		28 days
	Ammonia-N	125 mL Plastic	125 mL	Cool to 4˚C ± 2˚C, H_2SO_4 to pH <2	28 days
	Phosphorus-P, total	250 mL Plastic	150 mL	Cool to 4˚C ± 2˚C, HNO_3 to pH <2 in field	~~28 days~~ 6 months
	Chlorophyll-*a*[6]	4 L Brown plastic	4 L	Cool to 4˚C ± 2˚C and dark before filtration; dark & frozen after filtration	Filtered w/in 48 hours; then frozen up to 24 days

* If TRIES does not have accreditation or they have an issue with equipment, TRIES will subcontract affected parameters to Eastex as necessary.

1. One 125 mL plastic container is used to collect these four samples.
2. One bacteria sample collected in 200 mL sterile container during each sampling run to allow duplicate analysis from 1 container. Otherwise, bacteria samples collected in 120 mL sterile container during the run.
3. *E.coli* samples should always be processed as soon as possible and incubated no later than 8 hours from time of collection. When transport conditions necessitate sample incubation after 8 hours from time of collection, the holding time may be extended, and samples must be processed as soon as possible and within 30 hours.
4. Eastex Environmental Lab will analyze sample(s) only at sites where TKN is included in the CMS.
5. TRIES & Eastex can both run IC speciation but if TRIES IC unit is down, Eastex will analyze Nitrite+Nitrate by cadmium reduction method instead.
6. Eastex Environmental Lab will analyze sample(s) only at sites where the parameter is included in the CMS.

Appendix A: Measurement Performance Specifications

TABLE A6.1c Measurement Performance Specifications for Houston-Galveston Area Council (H-GAC)

Conventional Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (RPD)	Bias %Rec. of LCS	Lab
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540 D	00530	5	1	NA	NA	NA	Eastex
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3 G	00610	0.1	0.1	70-130	20	80-120	Eastex
NITROGEN, AMMONIA, TOTAL (MG/L AS N)*	mg/L	water	SM 4500-NH3 D	00610	0.1	0.1	70–130	20	80-120	Eastex
NITRITE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00615	0.05	0.05	70-130	20	80-120	Eastex
NITRATE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00620	0.05	0.05	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N)	mg/L	water	EPA 351.2	00625	0.2	0.2	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N) *	mg/L	water	SM 4500-NH3 C	00625	0.2	0.2	70-130	20	80-120	Eastex
NITRITE PLUS NITRATE, TOTAL ONE LAB DETERMINED VALUE (MG/L AS N)	mg/L	water	SM 4500-NO3- F	00630	0.05	0.05	70-130	20	80-120	Eastex
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	EPA 200.7	00665	0.06	0.02 ~~0.06~~	70-130	20	80-120	Eastex
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00940	5	5	70-130	20	80-120	Eastex
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00945	5	4	70-130	20	80-120	Eastex

*This method is to be used as a backup should the preferred method be unavailable.

References:
United States Environmental Protection Agency (USEPA), Clean Water Act Analytical Methods
Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.1d Measurement Performance Specifications for Houston-Galveston Area Council (H-GAC)

Bacteriological Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Log Difference of Duplicates	Bias %Rec. of LCS	Lab
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	SM 9223.B (Colilert-18 Quanti-Tray)**	31699	1	1‡	NA	0.50*	NA	Eastex
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML***	MPN/100 mL	water	Colilert**	31699	1	1‡	NA	0.50*	NA	Eastex
E.COLI, COLILERT, IDEXX, HOLDING TIME	Hours	water	NA	31704	NA	NA	NA	NA	NA	Eastex

* This value is not expressed as a relative percent difference. It represents the maximum allowable difference between the logarithm of the result of a sample and the logarithm of the duplicate result. See Section B4.

** *E.coli* samples analyzed by these methods should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.

*** This is a back-up method and can be used interchangeably with the SM 9223 B (Colilert-18 Quanti-Tray) method as needed based on planned availability of laboratory staff to conduct the tray reads either 18 hours or 24 hours after initial incubation.

‡ *E. coli* samples may be diluted 1:10 or greater for sites/samples where the greater than detection limit is a concern per SWQM Procedures Vol 1, Page 4-6, Section - Selecting Sample Dilutions.

References:

Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version

Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.02, Water

TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.2b Measurement Performance Specifications for Harris County Pollution Control Services (HCPCS)

Conventional Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (RPD)	Bias %Rec. of LCS	Lab
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540 D	00530	5	4	NA	NA	NA	HCPCS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3 D	00610	0.1	0.1	70-130	20	80-120 ~~85-115~~	HCPCS
NITROGEN, KJELDAHL, TOTAL (MG/L AS N)	mg/L	water	EPA 351.2	00625	0.2	0.2	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N) *	mg/L	water	SM 4500-NH3 C	00625	0.2	0.2	70-130	20	80-120	Eastex
NITRITE PLUS NITRATE, TOTAL ONE LAB DETERMINED VALUE (MG/L AS N)	mg/L	water	SM 4500-NO3 F	00630	0.05	0.04	70-130	20	80-120 ~~85-115~~	HCPCS
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	SM 4500-P E	00665	0.06	0.02	70-130	20	80-120 ~~85-115~~	HCPCS
CHLOROPHYLL-A UG/L SPECTROPHOTOMETRIC ACID. METH	ug/L	water	EPA 446.0	32211	3	3	NA	20	80-120	Eastex

*Eastex Lab will use this method as a backup should they have issues with lab equipment that would result in a sample going out of hold time.

References:
United States Environmental Protection Agency (USEPA), Clean Water Act Analytical Methods
Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.2c Measurement Performance Specifications for Harris County Pollution Control Services (HCPCS)

Bacteriological Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Log Difference of Duplicates	Bias %Rec. of LCS	Lab
ENTEROCOCCI, ENTEROLERT, IDEXX, (MPN/100 ML)	MPN/100 mL	water	ASTM D6503	31701	10**	10**	NA	0.50*	NA	HCPCS

* This value is not expressed as a relative percent difference. It represents the maximum allowable difference between the logarithm of the result of a sample and the logarithm of the duplicate result. See Section B4.
***Enterococcus* samples should be diluted 1:10 for all waters.

References:
Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version
Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.02, Water
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.3c Measurement Performance Specifications for City of Houston, Health Department (HHD)

Conventional Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (RPD)	Bias %Rec. of LCS	Lab
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540 D	00530	5	4	NA	NA	NA	HHD-BLS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3 H	00610	0.1	0.1	70-130	20	80-120	HHD-BLS
NITRITE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00615	0.05	0.05	70-130	20	80-120	HHD-BLS
NITRATE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00620	0.05	0.02	70-130	20	80-120	HHD-BLS
NITROGEN, KJELDAHL, TOTAL (MG/L AS N)	mg/L	water	EPA 351.2	00625	0.2	0.2	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N) *	mg/L	water	SM 4500-NH3 C	00625	0.2	0.2	70-130	20	80-120	Eastex
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	EPA 365.1	00665	0.06	0.02	70-130	20	80-120	HHD-BLS
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00940	5	5	70-130	20	80-120	HHD-BLS
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00945	5	5	70-130	20	80-120	HHD-BLS

*Eastex Lab will use this method as a backup should they have issues with lab equipment that would result in a sample going out of hold time.

References:
United States Environmental Protection Agency (USEPA), Clean Water Act Analytical Methods
Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.3d Measurement Performance Specifications for City of Houston, Health Department (HHD)										
Bacteriological Parameters in Water										
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Log Difference of Duplicates**	**Bias %Rec. of LCS**	**Lab**
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	SM 9223 B (Colilert-18 Quanti-Tray)**	31699	1	1‡	NA	0.50*	NA	HHD-BLS
ENTEROCOCCI, ENTEROLERT, IDEXX, (MPN/100 ML)	MPN/100 mL	water	~~IDEXX~~ Enterolert	31701	10***	10***	NA	0.50*	NA	HHD-BLS
E.COLI, COLILERT, IDEXX, HOLDING TIME	hours	water	NA	31704	NA	NA	NA	NA	NA	HHD-BLS

* This value is not expressed as a relative percent difference. It represents the maximum allowable difference between the logarithm of the result of a sample and the logarithm of the duplicate result. See Section B4.

** *E.coli* samples analyzed by these methods should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.

****Enterococcus* samples should be diluted 1:10 for all waters.

‡ *E. coli* samples may be diluted 1:10 or greater for sites/samples where the greater than detection limit is a concern per SWQM Procedures Vol 1, Page 4-6, Section - Selecting Sample Dilutions.

References:
Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version
Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.02, Water
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.4c Measurement Performance Specifications for City of Houston, Regulatory Compliance and Utility Development (RCUD)

Conventional Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (RPD)	Bias %Rec. of LCS	Lab
ALKALINITY, TOTAL (MG/L AS CACO3)	mg/L	water	SM 2320 B	00410	20	20	NA	20	NA	RCUD
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540 D	00530	5	2.5	NA	NA	NA	RCUD
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3 D	00610	0.1	0.1	70-130	20	80-120	RCUD
NITRITE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00615	0.05	0.04	70-130	20	80-120	RCUD
NITRATE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00620	0.05	0.04	70-130	20	80-120	RCUD
NITROGEN, KJELDAHL, TOTAL (MG/L AS N)	mg/L	water	EPA 351.2	00625	0.2	0.2	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N) *	mg/L	water	SM 4500-NH3 C	00625	0.2	0.2	70-130	20	80-120	Eastex
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	~~EPA 365.3~~ SM 4500-PE	00665	0.06	0.02	70-130	20	80-120	RCUD
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00940	5	1	70-130	20	80-120	RCUD
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00945	5	1	70-130	20	80-120	RCUD
CHLOROPHYLL-A UG/L SPECTROPHOTOMETRIC ACID. METH	ug/L	water	EPA 446.0	32211	3	3	NA	20	80-120	Eastex

*Eastex Lab will use this method as a backup should they have issues with lab equipment that would result in a sample going out of hold time.

References:
United States Environmental Protection Agency (USEPA), Clean Water Act Analytical Methods
Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.4d Measurement Performance Specifications for City of Houston, Regulatory Compliance and Utility Development (RCUD)

Bacteriological Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Log Difference of Duplicates	Bias %Rec. of LCS	Lab
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	SM 9223 B (Colilert Quanti-Tray)**	31699	1	1‡	NA	0.50*	NA	RCUD
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML***	MPN/100 mL	water	SM 9223 B (Colilert-18 Quanti-Tray)**	31699	1	1‡	NA	0.50*	NA	RCUD
E.COLI, COLILERT, IDEXX, HOLDING TIME	hours	water	NA	31704	NA	NA	NA	NA	NA	RCUD

* This value is not expressed as a relative percent difference. It represents the maximum allowable difference between the logarithm of the result of a sample and the logarithm of the duplicate result. See Section B4.

** *E.coli* samples analyzed by these methods should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.

*** This is a back-up method and can be used interchangeably with the SM 9223 B (Colilert Quanti-Tray) method as needed based on planned availability of laboratory staff to conduct the tray reads either 18 hours or 24 hours after initial incubation.

‡ *E. coli* samples may be diluted 1:10 or greater for sites/samples where the greater than detection limit is a concern per SWQM Procedures Vol 1, Page 4-6, Section - Selecting Sample Dilutions.

References:

Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version
Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.02, Water
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.5c Measurement Performance Specifications for San Jacinto River Authority (SJRA)

Conventional Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (RPD)	Bias %Rec. of LCS	Lab*
ALKALINITY, TOTAL (MG/L AS CACO3)	mg/L	water	SM 2320 B	00410	20	20	NA	20	NA	RCUD
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540 D	00530	5	2.5	NA	NA	NA	RCUD
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540 D	00530	5	1	NA	NA	NA	Eastex
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3 D	00610	0.1	0.1	70-130	20	80-120	RCUD
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3 G	00610	0.1	0.1	70-130	20	80-120	Eastex
NITROGEN, AMMONIA, TOTAL (MG/L AS N)**	mg/L	water	SM 4500-NH3 D	00610	0.1	0.1	70-130	20	80-120	Eastex
NITRITE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00615	0.05	0.04	70-130	20	80-120	RCUD
NITRITE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00615	0.05	0.05	70-130	20	80-120	Eastex
NITRATE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00620	0.05	0.04	70-130	20	80-120	RCUD
NITRATE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00620	0.05	0.05	70-130	20	80-120	Eastex
NITRITE PLUS NITRATE, TOTAL ONE LAB DETERMINED VALUE (MG/L AS N)	mg/L	water	SM 4500-NO3 F	00630	0.05	0.05	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N)	mg/L	water	EPA 351.2	00625	0.2	0.2	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N) **	mg/L	water	SM 4500-NH3 C	00625	0.2	0.2	70-130	20	80-120	Eastex
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	~~EPA 365.3~~ SM 4500-PE	00665	0.06	0.02	70-130	20	80-120	RCUD
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	EPA 200.7	00665	0.06	0.02 ~~0.06~~	70-130	20	80-120	Eastex
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00940	5	1	70-130	20	80-120	RCUD
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00940	5	5	70-130	20	80-120	Eastex
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00945	5	1	70-130	20	80-120	RCUD
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00945	5	4	70-130	20	80-120	Eastex
CHLOROPHYLL-A UG/L SPECTROPHOTOMETRIC ACID. METH	ug/L	water	EPA 446.0	32211	3	3	NA	20	80-120	Eastex

*Samples collected on Lake Conroe, except for TKN and Chlorophyll-a, are analyzed at the RCUD Laboratory. All other samples are analyzed at Eastex Environmental Laboratory.

**This method is to be used as a backup should the preferred method be unavailable.

References:

United States Environmental Protection Agency (USEPA), Clean Water Act Analytical Methods

Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version

TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.5d Measurement Performance Specifications for San Jacinto River Authority (SJRA)

Bacteriological Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Log Difference of Duplicates	Bias %Rec. of LCS	Lab***
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	SM 9223 B (Colilert Quanti-Tray)**	31699	1	1‡	NA	0.50*	NA	RCUD
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML****	MPN/100 mL	water	SM 9223 B (Colilert-18 Quanti-Tray)**	31699	1	1‡	NA	0.50*	NA	RCUD
E.COLI, COLILERT, IDEXX, HOLDING TIME	hours	water	NA	31704	NA	NA	NA	NA	NA	RCUD
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	SM 9223 B (Colilert-18 Quanti-Tray)**	31699	1	1‡	NA	0.50*	NA	Eastex
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML****	MPN/100 mL	water	Colilert**	31699	1	1‡	NA	0.50*	NA	Eastex
E.COLI, COLILERT, IDEXX, HOLDING TIME	hours	water	NA	31704	NA	NA	NA	NA	NA	Eastex

* This value is not expressed as a relative percent difference. It represents the maximum allowable difference between the logarithm of the result of a sample and the logarithm of the duplicate result. See Section B4.

** *E.coli* samples analyzed by these methods should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.

*** Samples collected on Lake Conroe are analyzed at the RCUD Laboratory. All other samples are analyzed at Eastex Environmental Laboratory.

**** This is a back-up method. The SM 9223 B (Colilert Quanti-Tray) and the SM 9223 B (Colilert-18 Quanti-Tray) methods can be used interchangeably as needed based on planned availability of laboratory staff to conduct the tray reads either 18 hours or 24 hours after initial incubation.

‡ *E. coli* samples may be diluted 1:10 or greater for sites/samples where the greater than detection limit is a concern per SWQM Procedures Vol 1, Page 4-6, Section - Selecting Sample Dilutions.

References:

Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version

Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.02, Water

TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.6c Measurement Performance Specifications for Environmental Institute of Houston (EIH)

Conventional Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (RPD)	Bias %Rec. of LCS	Lab
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540 D	00530	5	1	NA	NA	NA	Eastex
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3 G	00610	0.1	0.1	70-130	20	80-120	Eastex
NITROGEN, AMMONIA, TOTAL (MG/L AS N)*	mg/L	water	SM 4500-NH3 D	00610	0.1	0.1	70-130	20	80-120	Eastex
NITRITE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00615	0.05	0.05	70-130	20	80-120	Eastex
NITRATE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00620	0.05	0.05	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N)	mg/L	water	EPA 351.2	00625	0.2	0.2	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N) *	mg/L	water	SM 4500-NH3 C	00625	0.2	0.2	70-130	20	80-120	Eastex
NITRITE PLUS NITRATE, TOTAL ONE LAB DETERMINED VALUE (MG/L AS N)	mg/L	water	SM 4500-NO3 F	00630	0.05	0.05	70-130	20	80-120	Eastex
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	EPA 200.7	00665	0.06	0.02 ~~0.06~~	70-130	20	80-120	Eastex
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00940	5	5	70-130	20	80-120	Eastex
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00945	5	4	70-130	20	80-120	Eastex
CHLOROPHYLL-A UG/L SPECTROPHOTOMETRIC ACID. METH	ug/L	water	EPA 446.0	32211	3	3	NA	20	80-120	Eastex

*This method is to be used as a backup should the preferred method be unavailable

References:
United States Environmental Protection Agency (USEPA), Clean Water Act Analytical Methods
Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.6d Measurement Performance Specifications for Environmental Institute of Houston (EIH)

Bacteriological Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Log Difference of Duplicates	Bias %Rec. of LCS	Lab
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	SM 9223 B (Colilert-18 Quanti-Tray)**	31699	1	1‡	NA	0.50*	NA	Eastex
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML****	MPN/100 mL	water	Colilert**	31699	1	1‡	NA	0.50*	NA	Eastex
ENTEROCOCCI, ENTEROLERT, IDEXX, (MPN/100 ML)	MPN/100 mL	water	~~IDEXX~~ Enterolert	31701	10***	10***	NA	0.50*	NA	Eastex
E.COLI, COLILERT, IDEXX, HOLDING TIME	hours	water	NA	31704	NA	NA	NA	NA	NA	Eastex

* This value is not expressed as a relative percent difference. It represents the maximum allowable difference between the logarithm of the result of a sample and the logarithm of the duplicate result. See Section B5.

** *E.coli* samples analyzed by these methods should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.

****Enterococcus* samples should be diluted 1:10 for all waters.

**** This is a back-up method and can be used interchangeably with the SM 9223 B (Colilert-18 Quanti-Tray) method as needed based on planned availability of laboratory staff to conduct the tray reads either 18 hours or 24 hours after receipt of samples.

‡ *E. coli* samples may be diluted 1:10 or greater for sites/samples where the greater than detection limit is a concern per SWQM Procedures Vol 1, Page 4-6, Section - Selecting Sample Dilutions.

References:

Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version

Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.02, Water

TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TABLE A6.7b Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES)					
Flow Parameters					
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
FLOW STREAM, INSTANTANEOUS (CUBIC FEET PER SEC)	cfs	water	TCEQ SOP V1	00061	Field
FLOW SEVERITY:1=No Flow,2=Low,3=Normal,4=Flood,5=High,6=Dry	NU	water	TCEQ SOP V1	01351	Field
STREAM FLOW ESTIMATE (CFS)	cfs	water	TCEQ SOP V1	74069	Field
FLOW MTH 1=GAGE 2=ELEC 3=MECH 4=WEIR/FLU 5=DOPPLER	NU	other	TCEQ SOP V1	89835	Field
References: TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).					

TABLE A6.7c Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES)										
Conventional Parameters in Water										
Parameter*	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Precision (RPD)**	**Bias %Rec. of LCS**	**Lab**
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540 D	00530	5	2.5	NA	NA	NA	TRIES
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540 D	00530	5	1	NA	NA	NA	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N)	mg/L	water	EPA 351.2	00625	0.2	0.2	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N) **	mg/L	water	SM 4500-NH3 C	00625	0.2	0.2	70-130	20	80-120	Eastex
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3 D	00610	0.1	0.1	70-130	20	80-120	TRIES
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3 G	00610	0.1	0.1	70-130	20	80-120	Eastex
NITROGEN, AMMONIA, TOTAL (MG/L AS N)**	mg/L	water	SM 4500-NH3 D	00610	0.1	0.1	70–130	20	80-120	Eastex
NITRITE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00615	0.05	0.04	70-130	20	80-120	TRIES
NITRITE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00615	0.05	0.05	70-130	20	80-120	Eastex
NITRATE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00620	0.05	0.04	70-130	20	80-120	TRIES
NITRATE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00620	0.05	0.05	70-130	20	80-120	Eastex
NITRITE PLUS NITRATE, TOTAL ONE LAB DETERMINED VALUE (MG/L AS N)	mg/L	water	SM 4500-NO3 F	00630	0.05	0.05	70-130	20	80-120	Eastex
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	EPA 200.7	00665	0.06	~~0.06~~ 0.02	70-130	20	80-120	TRIES
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	EPA 200.7	00665	0.06	~~0.06~~ 0.02	70-130	20	80-120	Eastex
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00940	5	4	70-130	20	80-120	TRIES
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00940	5	5	70-130	20	80-120	Eastex
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00945	5	4	70-130	20	80-120	TRIES
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300.0 Rev. 2.1 (1993)	00945	5	4	70-130	20	80-120	Eastex
CHLOROPHYLL-A UG/L SPECTROPHOTOMETRIC ACID. METH	ug/L	water	EPA 446.0	32211	3	3	NA	20	80-120	Eastex

* If TRIES does not have accreditation for a parameter or they have an issue with lab equipment, TRIES will subcontract to Eastex Lab the affected parameter(s) to get results for all the parameters they committed to collect and submit to H-GAC.

TABLE A6.7c Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES)										
Conventional Parameters in Water										
Parameter*	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Precision (RPD)**	**Bias %Rec. of LCS**	**Lab**
**This method is to be used as a backup should the preferred method be unavailable References: United States Environmental Protection Agency (USEPA), Clean Water Act Analytical Methods Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version										

TABLE A6.7d Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES)

Bacteriological Parameters in Water

Parameter*	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Log Difference of Duplicates	Bias %Rec. of LCS	Lab
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	~~IDEXX~~ Colilert ***	31699	1	1‡	NA	0.50**	NA	TRIES
E.COLI, COLILERT, IDEXX, HOLDING TIME	hours	water	NA	31704	NA	NA	NA	NA	NA	TRIES
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	SM 9223 B (Colilert-18 Quanti-Tray)***	31699	1	1‡	NA	0.50**	NA	Eastex
E.COLI, COLILERT, IDEXX METHOD, MPN/100ML****	MPN/100 mL	water	Colilert***	31699	1	1‡	NA	0.50**	NA	Eastex
E.COLI, COLILERT, IDEXX, HOLDING TIME	hours	water	NA	31704	NA	NA	NA	NA	NA	Eastex

* If TRIES does not have accreditation for a parameter or they have an issue with lab equipment, TRIES will subcontract to Eastex Lab the affected parameter(s) to get results for all the parameters they committed to collect and submit to H-GAC.

** This value is not expressed as a relative percent difference. It represents the maximum allowable difference between the logarithm of the result of a sample and the logarithm of the duplicate result. See Section B4.

*** *E.coli* samples analyzed by these methods should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.

**** This is a back-up method and can be used interchangeably with the SM 9223 B (Colilert-18 Quanti-Tray) method as needed based on planned availability of laboratory staff to conduct the tray reads either 18 hours or 24 hours after initial incubation.

‡ *E. coli* samples may be diluted 1:10 or greater for sites/samples where the greater than detection limit is a concern per SWQM Procedures Vol 1, Page 4-6, Section - Selecting Sample Dilutions.

References:

Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022 or applicable version
Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.02, Water
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

CITY OF HOUSTON DRINKING WATER REGULATORY COMPLIANCE LABORATORY

1770 Sidney street, Houston, TX 77023

LAKE HOUSTON WATERSHED SITE MONITORING

FIELD SHEET & CHAIN OF CUSTODY

Effective Date: 1 09/01/25 **Document ID: 150** **Version:** 1.14

Date of Sampling:_____ **Air Temperature :**_____ **Days Since Last Significant Rainfall :**_____ Samples Collected By: _____

Sample Run Collected Bi-Monthly **Note: All samples taken at a one foot depth by plastic bucket unless specifically designated in 'Sample Depth' column below.**

Sample No.	Station Name	TCEQ ID	Time	Sample Depth (m)	Total Depth (m)	Water Temp ºC	Sp. Cond. µs/cm	pH	DO mg/L	Secchi Depth (m)	Flow Severity	Obser. Turb.	Water Color	Water Odor	Present Weather	Wind Intensity	Water Surface
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
											1-no flow	1-low	1-brownish	1-sewage	1-clear	1-calm	1-calm
											2-low	2-medium	2-reddish	2-oily/chemica	2-p.cloudy	2-slight	2-ripple
											3-normal	3-high	3-greenish	3-rotten egg	3-cloudy	3-mod.	3-wave
											4-flood		4-blackish	4-musty	4-rain	4-strong	4-whitecap
											5-high		5-clear	5-fishy	5-other		
											6-dry		6-other	6-none			
														7-other			

Comments:

Analysis Required: VOC, WQP*, T-phos, Ammonia, Total Coliform, E. coli Matrix: Surface Water

Bottles used: 1-120mL sterilized bottle from each site and one 250mL sterilized bottle from one site with each sampling even for Bacti, 1-500ml plastic bottle for WQP analysis, 2-40ml VOA bottles with 1:1 HCl, 1-500 mL plastic bottle acidified with H_2SO_4 for NH_3 analysis, 1-250ml amber bottle acidified with H2SO4 for T-phos. & TOC analysis. 1-1000mL plastic bottle for TSS

*** WQP analysis includes:** pH, Cond., TSS, Alk, Hard, NO_2-N, NO_3-N, F, Cl, Br, SO_4

Temperature of Samples when Received at Lab:_____

Biol. Samples Relinquished By :_____ **Date:**_____ **Time :**_____ **Chem. Samples Relinquished By :**_____ **Date:**_____ **Time :**_____

Biol. Samples Received By :_____ **Date:**_____ **Time :**_____ **Chem. Samples Received By :**_____ **Date:**_____ **Time :**_____