Houston-Galveston Area Council Multi-Basin FY 2026–2027 Clean Rivers Program Quality Assurance Project Plan

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Clean Rivers Program
Water Quality Planning Division
Texas Commission on Environmental Quality
P.O. Box 13087, MC 234
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Effective Period: FY 2026 to FY 2027

Questions concerning this QAPP should be directed to:

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Texas Commission on Environmental Quality

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Shane Simpson 8/18/25

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Eastex Laboratory Technical Director
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Kari Jordan Date
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Eastex Laboratory CRP Data Manager

A3 Table of Contents

List of Acronyms

AWRL	Ambient Water Reporting Limit
BTLIMS	Bin Technology Laboratory Information Management System
CAP	Corrective Action Plan
CE	Collecting Entity
CFR	Code of Federal Regulations
CMS	Coordinated Monitoring Schedule
COC	Chain of Custody
CRP	Clean Rivers Program
DI	Deionized Water
DM	Data Manager
DMRG	Surface Water Quality Monitoring Data Management Reference Guide
DM&A	Data Management and Analysis
Eastex	Eastex Environmental Laboratory (Facility in Coldspring, TX only)
EPA	United States Environmental Protection Agency
FY	Fiscal Year
EIH	Environmental Institute of Houston
GDMP	Geospatial Data Management Plan
GIS	Geographical Information System
GPS	Global Positioning System
H-GAC	Houston- Galveston Area Council
HCPCS	Harris County Pollution Control Services
HHD	City of Houston Health Department
HHD-BLS	Houston Health Department – Bureau of Laboratory Services
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LIMS	Laboratory Information Management System
LOQ	Limit of Quantitation
MT	Monitoring Type
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NELAP	National Environmental Laboratory Accreditation Program
NELAC	National Environmental Laboratories Accreditation Conference
PM	Project Manager
QA	Quality Assurance
QM	Quality Manual
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QAS	Quality Assurance Specialist
QC	Quality Control
QMP	Quality Management Plan
RCUD	Regulatory Compliance and Utility Development
RPD	Relative Percent Difference
RT	Routine Monitoring
RMW	Regional Monitoring Workgroup
SAS	Statistical Analysis Software
SE	Submitting Entity
SJRA	San Jacinto River Authority
SLOC	Station Location
SOP	Standard Operating Procedure
SWQM	Surface Water Quality Monitoring
SWQMIS	Surface Water Quality Monitoring Information System
TMDL	Total Maximum Daily Load
TCEQ	Texas Commission on Environmental Quality
TKN	Total Kjeldahl Nitrogen

TNI	The NELAC Institute
TRIES	Texas Research Institute for Environmental Studies
TSWQS	Texas Surface Water Quality Standards
WQS	Water Quality Standards

A4 Problem Definition/Background

In 1991, the Texas Legislature passed the Texas Clean River Act (Senate Bill 818) in response to growing concerns that water resource issues were not being pursued in an integrated, systematic manner. The act requires that ongoing water quality assessments be conducted for each river basin in Texas, an approach that integrates water quality issues within the watershed. The Clean Rivers Program (CRP) legislation mandates that each river authority (or local governing entity) shall submit quality-assured data collected in the river basin to the commission. Quality-assured data in the context of the legislation means data that comply with Texas Commission on Environmental Quality (TCEQ) rules for surface water quality monitoring (SWQM) programs, including rules governing the methods under which water samples are collected and analyzed and data from those samples are assessed and maintained. This QAPP addresses the program developed between the Houston-Galveston Area Council (H-GAC) and the TCEQ to carry out the activities mandated by the legislation. The QAPP was developed and will be implemented in accordance with provisions of the TCEQ Quality Management Plan (QMP), Revision 30 or most recent version.

The purpose of this QAPP is to clearly delineate H-GAC Quality Assurance (QA) policy, management structure, and procedures which will be used to implement the QA requirements necessary to verify and validate the surface water quality data collected. The QAPP is reviewed by the TCEQ to help ensure that data generated for the purposes described above are of known and documented quality and deemed acceptable for their intended use. This process will ensure that data collected under this QAPP and submitted to the Surface Water Quality Monitoring Information System (SWQMIS) have been collected and managed in a way that guarantees its reliability and therefore can be used in water quality assessments, total maximum daily load (TMDL) projects, water quality standards development, permit decisions, and other program activities deemed appropriate by the TCEQ. Project results will be used to support the achievement of CRP objectives, as contained in the *Guidance for Partners in the Texas Clean Rivers Program FY 2026–2027.*

H-GAC is the coordinating agency for the CRP in the San Jacinto River Basin and three associated coastal basins: the Trinity-San Jacinto, the San Jacinto-Brazos and the Brazos-Colorado. In many of the state's major river basins, a legislatively created river authority leads the monitoring effort for its basin as intended by the Texas Legislature through the Clean Rivers Act. In areas not covered by a particular river authority, either a neighboring authority or some other logical regional entity is designated to coordinate monitoring. H-GAC is a Council of Governments, the regional authority for the Gulf Coast State Planning Region, and has been actively involved in regional water quality planning and public outreach activities since the 1970's. In addition, many of the key agencies and individuals involved in water quality matters in the region already participate in environmental committees and programs initiated by H-GAC.

In addition to promoting water quality data collection, the CRP aims to develop and maintain a multi-basin water quality monitoring program that minimizes duplicative monitoring, facilitates the assessment process, and targets monitoring to support the permitting and standards process.

H-GAC's regional surface water quality monitoring program is a voluntary association of local monitoring agencies, coordinated through H-GAC, under the auspices of the Texas CRP. Federal, state, and local agencies that conduct routine surface water quality monitoring programs within the San Jacinto River, Trinity-San Jacinto Coastal, San Jacinto-Brazos Coastal and Brazos-Colorado Coastal Basins collect surface water quality monitoring information that is used not only by the individual agencies and the TCEQ but is also shared publicly through a data clearinghouse maintained by H-GAC. The agencies that submit data through the H-GAC CRP are Harris County Pollution Control Services (HCPCS), City of Houston Health Department (HHD), City of Houston Regulatory Compliance and Utility Development (RCUD), San Jacinto River Authority (SJRA), the Environmental Institute of Houston (EIH), the Texas Research Institute on Environmental Studies (TRIES), and the Houston-Galveston Area Council (H-GAC).

The coordinated program routinely collects surface water quality data from around 319 sites throughout the region. Sampling includes collection of physicochemical, bacteriological, and hydrological data at varying frequencies. The program was established to collect, store, and make available water quality data, which the participating agencies require to carry out their assigned functions. The H-GAC collects these data and use it for evaluations of water quality under the CRP. These data are also widely used by state water quality managers, cities, counties, consultants, students, and the general public. Routine samples are collected from classified stream, reservoir, and bay segments to monitor for the attainment of uses and numerical criteria. Numerous unclassified water bodies are also monitored

for attainment of designated and presumed uses, in response to perceived risk for pollution and/or to define water quality. A map showing the locations of all fixed monitoring locations is included in Appendix C.

A5 Project/Task Description

In the absence of a single, regional entity that comprehensively monitors water quality across the San Jacinto River Basin and the various coastal basins in the Houston metropolitan area, the regional monitoring approach H-GAC pursues through the CRP involves coordinating efforts among those local agencies which monitor water quality in some portion of the area for their own purposes. H-GAC's Multi-Basin QAPP is the mechanism for bringing these data into the statewide water quality database, the Surface Water Quality Monitoring Information System (SWQMIS), maintained by TCEQ. The participation of local monitoring agencies in this regional coordination effort has been largely voluntary as these agencies have not received significant CRP funding for their activities. Most of the greater Houston-Galveston region is under pressure from increasing urbanization. Data collected will allow H-GAC, the TCEQ, or other concerned parties to evaluate if or how the streams' water quality changes over time.

Routine Monitoring (RT) conducted by all regional partners

Routine monitoring is scheduled at varying frequencies, which are determined by the parameters of concern for individual streams. Water bodies are also selected for baseline monitoring if there is high public interest; if it has a high potential for impairment; or there is a need for up-to-date water quality information. Frequencies vary from quarterly for some partners and parameters to monthly in more highly impacted areas (see coordinated monitoring schedule in Appendix B).

Data collected through routine monitoring are designed to characterize water quality trends and monitor progress in protecting and restoring water quality. This monitoring will provide an overall view of water quality throughout the river and coastal basins of the region. Routine monitoring will include the collection of basic field parameters at all sites and the collection of bacteria, flow, and conventional chemical parameters at sites where indicated. All monitoring procedures and methods will follow the guidelines prescribed in H-GAC QAPP and the most current versions of TCEQ's *Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).*

Houston-Galveston Area Council monitoring locations are sampled on a quarterly basis. H-GAC focuses their efforts in areas within the region that are not monitored by other partners and will add effort to support other water quality studies such as Total Maximum Daily Load (TMDL) and Watershed Protection Plan (WPP) projects.

Harris County Pollution Control Services' surface water quality monitoring is conducted at specific sites on the Houston Ship Channel, San Jacinto River, side bays of the Houston Ship Channel and Galveston Bay, and in and around Clear Lake and its tributaries on the north shore. Monitoring locations are sampled monthly or six times per fiscal year (FY) for informational and regulatory purposes involving municipal and industrial wastewater treatment facilities.

City of Houston – Health Department monitors area surface waters to document water quality status and trends with specific concerns for human health risks associated with the use of the waters for contact/non-contact recreation and potable water supply. Monitoring locations are sampled six times per site per FY.

City of Houston - Regulatory Compliance and Utility Development monitors ambient water quality at many locations on Lake Houston and the tributaries flowing into the lake. Lake Houston is one of the primary sources of public water supply for the City of Houston. The monitoring that is conducted allows the Water Quality Control Division to assess the quality of water that will eventually be pumped into water production facilities, treated, and distributed to the public as drinking water. Monitoring locations in Lake Houston are sampled monthly and monitoring locations in the tributaries are sampled six times per site per FY. Because Lake Conroe is also a public drinking water source, the City of Houston contracts with SJRA to collect water samples from that lake. Lake Conroe samples are also analyzed at the Houston Regulatory Compliance and Utility Development Laboratory.

San Jacinto River Authority monitors surface waters in Lake Conroe, Lake Woodlands, Upper and Lower Panther Branch and Bear Branch. SJRA collects routine surface water quality samples from Lake Conroe and transports samples to the City of Houston – RCUD Lab for analysis. SJRA also collects routine samples to establish baseline surface water quality information for Lake Woodlands, Panther Branch and Bear Branch, which are tributaries of Spring Creek. Eastex Environmental Laboratory (Coldspring, TX) is contracted to analyze those samples. Monitoring locations in Lake Conroe are sampled monthly and monitoring locations in Lake Woodlands and associated tributaries are sampled quarterly with field-only parameters sampled monthly.

The **Environmental Institute of Houston** is contracted by H-GAC to monitor surface water quality locations in the San Jacinto-Brazos Coastal Basin, the Brazos-Colorado Coastal Basin, Trinity-San Jacinto Coastal Basin, and the Bays and Estuaries (Basin 24). Monitoring locations are sampled on a quarterly basis for a total of four events at each site per FY.

The **Texas Research Institute for Environmental Studies** is contracted by H-GAC to monitor ambient surface water quality on the Upper East Fork San Jacinto River, Winters Bayou, and Tarkington Bayou watersheds, and Lake Raven. Monitoring locations are sampled on a quarterly basis for a total of four events at each site per FY.

24-Hour Dissolved Oxygen (DO) monitoring, biased to season (BS).

Numerous segments and unclassified waterbodies in H-GAC region have dissolved oxygen (DO) impairments or concerns for depressed DO. Occasionally additional data are needed to confirm DO impairments on these segments and/or unclassified waterbodies. All data collected and summarized will be submitted to the TCEQ. There are two partners in the region that conduct 24-hour DO monitoring, the H-GAC and EIH. Monitoring events will be planned and conducted according to the most current version of TCEQ's *Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).*

Houston-Galveston Area Council 24-hour DO monitoring locations are sampled based on the biased to season schedule of two non-critical, one non-index, and one critical event per FY. H-GAC typically focuses their 24-hour DO monitoring efforts in all areas in the region that are not sampled by EIH.

Environmental Institute of Houston is contracted by H-GAC to monitor 24-hour DO monitoring locations in the San Jacinto-Brazos Coastal Basin, the Brazos-Colorado Coastal Basin, Trinity-San Jacinto Coastal Basin, and the Bays and Estuaries (Basin 24) as needed. Monitoring locations are sampled based on the biased to season schedule of two non-critical, one non-index, and one critical event per FY.

See Appendix B for the project-related work plan tasks and schedule of deliverables for a description of work defined in this QAPP.

See Appendix B for sampling design and monitoring pertaining to this QAPP.

Amendments to the QAPP

Amendments to the QAPP may be necessary to address incorrectly documented information or to reflect changes in project organization, tasks, schedules, objectives, and methods. Requests for amendments will be directed from the H-GAC Project Manager (PM) or the H-GAC Quality Assurance Officer (QAO) to the TCEQ CRP PM electronically. The H-GAC will submit a completed QAPP amendment document, including a justification of the amendment, a table of changes, and all pages, sections, and attachments affected by the amendment. Amendments are effective immediately upon approval by the H-GAC PM, the H-GAC QAO, the TCEQ CRP PM, the TCEQ CRP Lead Quality Assurance Specialist (QAS), the TCEQ CRP Project QAS, the TCEQ CRP Team Leader, the TCEQ Data Management and Analysis (DM&A) Team Leader, and any additional parties affected by the amendment. Amendments are not retroactive. No work shall be implemented without an approved QAPP or amendment prior to the start of work. Any activities under this contract that commence prior to the approval of the governing QA document constitute a deficiency and are subject to corrective action as described in section C1 of this QAPP. Any deviation or deficiency from this QAPP which occurs after the execution of this QAPP will be addressed through a corrective action plan (CAP). An amendment may be a component of a CAP to prevent future recurrence of a deviation.

Amendments will be incorporated into the QAPP by way of attachment and distributed to personnel on the distribution list by the H-GAC QAO. Documentation of distribution and receipt of amendments will be retained by the H-GAC.

Special Project Appendices

Projects requiring QAPP appendices will be planned in consultation with the H-GAC, the TCEQ CRP PM, and TCEQ technical staff. Appendices will be written in an abbreviated format and will reference the H-GAC Multi-Basin QAPP where appropriate. Appendices will be approved by the H-GAC PM, the H-GAC QAO, the appropriate laboratory (lab) (as applicable), the TCEQ CRP PM, the TCEQ CRP Project QAS, the TCEQ Lead QAS, TCEQ CRP Team Leader, the TCEQ DM&A Team Leader, and additional parties affected by the appendix, as appropriate. Copies of approved QAPP appendices will be distributed by the H-GAC to project participants before data collection activities commence. The H-GAC will secure written documentation from each sub-tier project participant (e.g., subcontractors, sub-participants, other units of government) stating the organization's awareness of and commitment to requirements contained in each special project appendix to the QAPP. The H-GAC will maintain this documentation as part of the project's QA records and ensure that the documentation is available for review.

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.

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

Precision

Precision is the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. It is a measure of agreement among replicate measurements of the same property, under prescribed similar conditions, and is an indication of random error.

Lab precision is assessed by comparing replicate analyses of laboratory control samples (LCS) in the sample matrix (e.g., deionized water, sand, commercially available tissue), matrix spike/matrix spike duplicate (MS/MSD), or sample/duplicate (DUP) pairs, as applicable. Precision results are compared against measurement performance specifications and used during evaluation of analytical performance. Program-defined measurement performance specifications for precision are defined in Appendix A.

Bias

Bias is the systematic or persistent distortion of a measurement process, which causes errors in one direction (i.e., the expected sample measurement is different from the sample's true value). Bias is a statistical measurement of correctness and includes multiple components of systematic error. Bias is determined through the analysis of LCS and LOQ check samples prepared with verified and known amounts of all target analytes in the sample matrix (e.g., deionized water, sand, commercially available tissue) and by calculating percent recovery. Results are compared against measurement performance specifications and used during evaluation of analytical performance. Program-defined measurement performance specifications for bias are specified in Appendix A.

Representativeness

Site selection, the appropriate sampling regime, comparable monitoring and collection methods, and use of only approved analytical methods will assure that the measurement data represents the conditions at the site. Routine data collected under CRP are considered to be spatially and temporally representative of ambient water quality conditions. Water quality data are collected on a routine frequency and are separated by approximately even time intervals. At a minimum, samples are collected over at least two seasons (to include inter-seasonal variation) and over two years (to include inter-year variation) and include some data collected during an index period (March 15–October 15). Although data may be collected during varying regimes of weather and flow, the data sets will not be biased toward unusual conditions of flow, runoff, or season. The goal for meeting maximum representation of the water body will be tempered by funding availability.

Comparability

Confidence in the comparability of routine data sets for this project and for water quality assessments is based on the commitment of project staff to use only approved sampling and analysis methods and QA/QC protocols in accordance with quality system requirements as described in this QAPP and in TCEQ guidance. Comparability is also guaranteed by reporting data in standard units, by using accepted rules for rounding figures, and by reporting data in a standard format as specified in the Data Management Plan in Section B7.

Completeness

The completeness of the data describes how much of the data are available for use compared to the total potential data. Ideally, 100% of the data should be available. However, the possibility of unavailable data due to accidents, insufficient sample volume, broken or lost samples, etc. is to be expected. Therefore, it will be a general goal of the project(s) that 90% data completion is achieved.

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
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
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.

Houston-Galveston Area Council (H-GAC)

Todd Running
H-GAC CRP Project Manager
Responsible for implementing and monitoring CRP requirements in contracts, QAPPs, and QAPP amendments and appendices. Ensures monitoring systems audits are conducted to ensure QAPPs are followed by H-GAC participants and that projects are producing data of known quality. Ensures that sub-participants are qualified to perform contracted work. Ensures TCEQ CRP PM and/or QA Specialists are notified of deficiencies and corrective actions, and that issues are resolved.

Jenny Oakley
H-GAC CRP and Quality Assurance Officer
Responsible for coordinating the implementation of the QA program, basin planning activities, and work of basin sub-participants. Responsible for writing and maintaining the QAPP and monitoring its implementation. Responsible for maintaining records of QAPP distribution, including appendices and amendments. Responsible for maintaining written records of sub-tier commitment to requirements specified in this QAPP. Responsible for identifying, receiving, and maintaining project QA records. Responsible for coordinating with the TCEQ CRP PM to resolve QA-related issues. Notifies the H-GAC PM of particular circumstances that may adversely affect the quality of data. Coordinates and monitors deficiencies and corrective action. Coordinates and maintains records of data verification and validation. Responsible for validating that data collected are acceptable for reporting to the TCEQ. Coordinates the research and review of technical QA material and data related to water quality monitoring system design and analytical techniques. Conducts monitoring systems audits on project participants to determine compliance with project and program specifications, issues written reports, and follows through on findings. Ensures that field staff are properly trained and that training records are maintained.

Jessica Casillas
H-GAC CRP Data Manager
Responsible for ensuring that field data are properly reviewed and verified. Responsible for the transfer of basin quality-assured water quality data to the TCEQ in a format compatible with SWQMIS. Maintains quality-assured data on H-GAC internet sites. Coordinates new station location requests with the TCEQ. Coordinates updates to the coordinated monitoring schedule as needed.

Kendall Guidroz
H-GAC CRP Field Supervisor
Responsible for monitoring the activities of H-GAC 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 H-GAC QAO 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.

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.

Vanessa de Vera
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.

City of Houston – Houston Health Department (HHD)

Nguyen Ly
HHD CRP Project Manager
Ensures all routine monitoring is conducted in support of the QAPP and the monitoring schedule. Responsible for implementing and monitoring CRP requirements in QAPPs and QAPP amendments and appendices. 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.

Darryl Tate
HHD CRP Field Quality Assurance Officer and Field Supervisor
Responsible for scheduling all CRP monitoring activities, administering the QA program and coordinating with the H-GAC QA staff to resolve monitoring and QA-related issues. 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 HHD CRP Project Manager and/or H-GAC QAO or other staff of circumstances which may adversely affect the quality of data. Coordinates and monitors deficiencies and corrective actions. Coordinates the research and review of technical QA material and data related to water quality monitoring system design and analytical techniques. Ensures that field staff is properly trained and that training records are maintained.

Jane Marzano
HHD CRP Data Manager
Responsible for ensuring that field data are properly reviewed and verified. Formats and delivers data in the format described in the most recent version of the DMRG to the H-GAC CRP Data Manager. Responsible for sending hard or scanned copies of field data sheets, calibration sheets, and COC forms to H-GAC CRP Data Manager.

City of Houston – Houston Health Department – Bureau of Laboratory Services (HHD-BLS)

Lupe Garbalena
HHD-BLS Laboratory Manager
Responsible for overall performance, administration, and reporting of analyses performed by HHD-BLS. 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. Ensures QA issues are relayed to HHD CRP Field QAO, HHD CRP Data Manager, H-GAC QAO, and/or H-GAC Data Manager. 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. Responsible for ensuring that laboratory staff are trained and that training records are maintained. 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 listed in Appendix A of this QAPP. Provides a final review of lab data against Appendix A of this QAPP, NELAC standards and method requirements prior to submission to H-GAC.

Huan Nguyen

HHD-BLS Chemistry Laboratory Supervisor

Responsible for inorganic chemistry laboratory testing of samples from CRP as per CRP requirements in contracts, QAPPs, and QAPP amendments and appendices. Ensures NELAP certification in CRP parameters and that projects are producing data of known quality. Ensures that subcontractors are qualified to perform contracted work. Ensures HHD CRP project manager, laboratory manager, and/or QAO are notified of circumstances which may adversely affect quality of data derived from collection and analysis of samples. Responsible for validating that all chemistry data collected meet the data quality objectives of the project listed in Appendix A of this QAPP and are suitable for reporting to the TCEQ.

Jennifer Myers
HHD-BLS Environmental Microbiology Section Supervisor

Responsible for microbiology laboratory testing of samples from CRP as per CRP requirements in contracts, QAPPs, and QAPP amendments and appendices. Ensures NELAP certification in CRP parameters and that projects are producing data of known quality. Ensures that subcontractors are qualified to perform contracted work. Ensures HHD CRP project manager, laboratory manager, and/or QAO are notified of circumstances which may adversely affect quality of data derived from collection and analysis of samples. Responsible for validating that all microbiology data collected meet the data quality objectives of the project listed in Appendix A of this QAPP and are suitable for reporting to the TCEQ.

Kimyattia Smith
HHD-BLS Laboratory Quality Assurance Officer

Responsible for ensuring the overall quality control and quality assurance of analyses performed by HHD-BLS. Monitors the implementation of the QM/QAPP within the laboratory to ensure complete compliance with QA data quality objectives, as defined by the QAPP. Communicates QA issues to HHD-BLS Lab Manager, HHD CRP Data Manager, and H-GAC QAO or H-GAC Data Manager as needed. Ensures that all lab QA/QC requirements are met, that documentation is complete and adequately maintained, and results are reported accurately. 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. Coordinates and monitors deficiencies and corrective actions.

City of Houston – Regulatory Compliance and Utility Development (RCUD)

Jamie Shakar
RCUD CRP Project Manager and Laboratory Director

Responsible for implementing and monitoring CRP requirements in contracts, QAPPs and QAPP amendments and appendices. Coordinates RCUD basin planning activities and work of RCUD partners. Ensures monitoring systems audits are conducted to ensure QAPPs are followed by City of Houston RCUD Laboratory participants and that projects are producing data of known quality. Ensures H-GAC project manager, H-GAC QAO, and/or H-GAC data manager are notified of deficiencies and corrective actions, and that issues are resolved.

Harold Longbaugh
RCUD CRP Laboratory Manager

Responsible for overall performance, administration and reporting of analyses by City of Houston RCUD 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. Responsible for reviewing and validating field data submitted on COCs and laboratory data against raw data entered in Bin Technology Laboratory Information Management System (BTLIMS).

Narendra Joshi
RCUD CRP Laboratory Quality Assurance Officer and Laboratory Data Manager

Responsible for overall quality control and quality assurance of analyses performed by City of Houston RCUD

Laboratory. Monitors the implementation of the QM/QAPP within the laboratory to ensure complete compliance with QA data quality objectives, as defined by the 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 training and keeping record of lab personnel to produce quality analytical data. Communicates any QA issues with the laboratory manager and laboratory director. Responsible for coordinating and monitoring deficiencies and corrective actions. Responsible for coordinating with the H-GAC QAO to resolve QA-related issues. Notifies the City of Houston RCUD CRP Project Manager and laboratory manager of particular circumstances which may adversely affect the quality of data. Responsible for reviewing at least 10% of laboratory data against raw data entered in BTLIMS. Coordinates and maintains records of data verification and validation. Responsible for sending analytical data with required QA/QC and Data Review Checklist to H-GAC CRP Data Manager.

Sergio Cisneros
RCUD CRP Field Supervisor
Responsible for supervising, scheduling and overall performance by making sure all CRP field activities are conducted in adherence to this QAPP and SWQM Procedures.

Desta Takie
RCUD CRP Field Quality Assurance Officer
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 RCUD Lab QAOof particular circumstances which may adversely affect the quality of data. Trains all field monitoring personnel and maintains training records.

Michael Morfin
RCUD CRP Field Data Manager
Responsible for verifying and validating data files against measurement performance specifications and other requirements in the QAPP. Formats and delivers field data in the format described in the most recent revision of the DMRG to H-GAC CRP Data Manager. Submits hard copies of field sheets, chain-of custody reports and Data Review Checklist to H-GAC CRP Data Manager.

San Jacinto River Authority (SJRA)

Shane Simpson
SJRA CRP Project Manager, Field Quality Assurance Officer, and Data Manager
Responsible for conducting routine monitoring in support of this QAPP. Responsible for implementing and monitoring CRP requirements in QAPPs, and QAPP amendments and appendices. Coordinates basin planning activities with the H-GAC. Ensures H-GAC CRP project manager and/or QAO are notified of deficiencies and corrective actions, and that issues are resolved. Notifies the H-GAC QAO of particular circumstances which may adversely affect the quality of data. Responsible for coordinating the implementation of the QA program. Responsible for identifying, receiving, and maintaining project QA records. Responsible for coordinating with the H-GAC QA staff to resolve QA-related issues. Coordinates and monitors deficiencies and corrective actions. Responsible for data entry of all field data. Responsible for verifying and validating data files against measurement performance specifications and other requirements in this QAPP. Formats and delivers data in the format described in the DMRG, most recent version, to H-GAC CRP Data Manager. Submits electronic data and supporting documents (field data sheets, chain-of-custody reports, and Data Review Checklists) to the H-GAC CRP Data Manager.

Jack Newton
SJRA CRP Field Supervisor
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. Trains all field monitoring personnel and maintains training records.

Environmental Institute of Houston (EIH)

Mandi (Amanda) Gordon
EIH CRP Project Manager
Responsible for implementing and monitoring CRP requirements in the contract, QAPPs, and QAPP amendments and appendices. Coordinates basin planning activities with the H-GAC. Ensures H-GAC CRP project manager and/or QAO are notified of deficiencies and corrective actions, and that issues are resolved. Responsible for coordinating the implementation of the QA program. Responsible for identifying, receiving, and maintaining project QA records. Responsible for coordinating with the H-GAC QA staff to resolve QA-related issues.

Melanie Rogers
EIH CRP Quality Assurance Officer
Responsible for verifying and validating data files against measurement performance specifications and other requirements in this QAPP. Formats and delivers digital copies of datasheets, chain of custody forms, data review checklists, and databases in the format described in the DMRG, most recent version, to H-GAC CRP Data Manager. Coordinates and monitors deficiencies and corrective action plans.

Hannah Martin
EIH CRP Data Manager
Responsible for ensuring that field data are properly completed, formatted, reviewed and verified. Responsible for completing the data review checklist for their datasets. Notifies the EIH CRP QAO of circumstances which may adversely affect the quality of data.

Danielle DeChellis
EIH CRP Field Supervisor
Ensures 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 EIH CRP QAO of circumstances which may adversely affect the quality of data. Responsible for coordinating with the EIH CRP QAO to resolve field-related issues. Trains all field monitoring personnel and maintains training records.

Texas Research Institute for Environmental Studies (TRIES)

Chad Hargrave
TRIES CRP Project Manager
Responsible for conducting routine monitoring in support of this QAPP. Responsible for implementing and monitoring CRP requirements in QAPPs, and QAPP amendments and appendices. Coordinates basin planning activities with the H-GAC. Ensures H-GAC CRP project manager and/or QAO are notified of deficiencies and corrective actions, and that issues are resolved.

Ashley Morgan-Olvera
TRIES CRP Field Quality Assurance Officer and Field Supervisor
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 H-GAC QAO of particular circumstances which may adversely affect the quality of data. Responsible for verifying and validating field and laboratory data against measurement performance specifications and other requirements in this QAPP. Formats and delivers data in the format described in the DMRG, most recent version, to H-GAC CRP DM. Trains all field monitoring personnel and maintains training records.

Rachelle Smith
TRIES CRP Laboratory Manager and Laboratory Quality Assurance Officer
Responsible for the overall quality control and quality assurance of analyses performed by TRIES Lab. 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.

Jessy Smith
TRIES CRP Data Manager
Responsible for internal data compilation. Notifies the TRIES field and/or laboratory QAO of particular circumstances which may adversely affect the quality of data.

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.

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.

A9 Project QAM Independence

TCEQ uses a semi-decentralized QA program, which is organizationally independent of operational programs and activities within the agency. TCEQ's QA program has sufficient access and authority to coordinate the development and implementation of the agency's quality system.

The TCEQ QA Manager (QAM) and designated TCEQ QA staff from the Laboratory and Quality Assurance Section within the Air Monitoring Division of the Office of Air are independent of activities performed by CRP. No CRP staff have authority to sign QAPPs, amendments, or appendices on behalf of TCEQ's QAM or the Lead CRP QAS. Similarly, TCEQ's QAM and the Lead CRP QAS cannot sign QAPPs, amendments or appendices on behalf of CRP staff.

Roles of project QA staff are described in Section A8. An illustration of QA independence and lines of communication and supervision for this project are detailed in the project organization chart in A10. Communication for deficiencies and corrective actions are described in Section C1.

A10 Project Organizational Chart and Communication

Project Organization Chart

Figure A10.1. Organization Chart with Lines of Communication

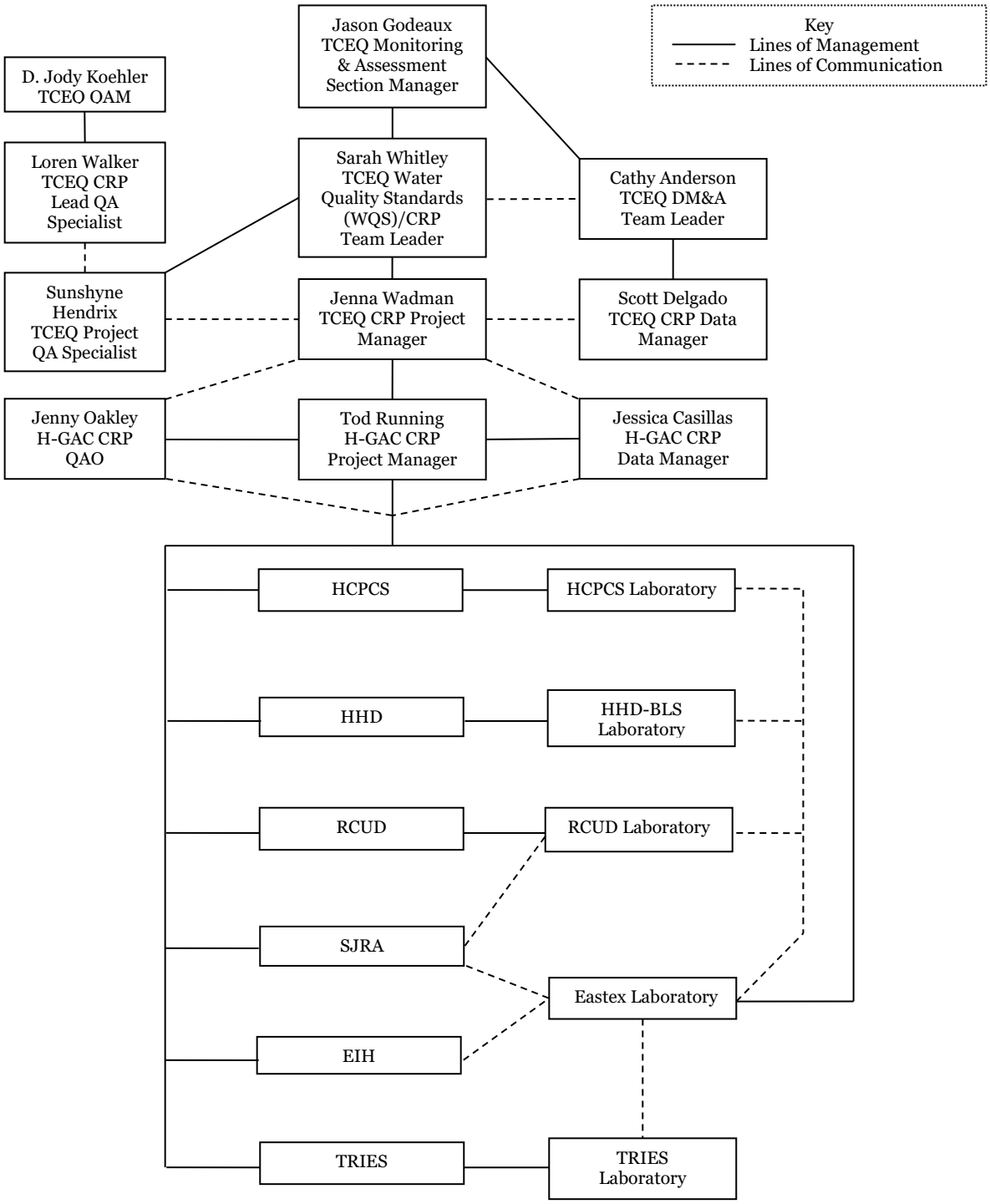


Figure A10.1a. CRP Organizational Chart – H-GAC

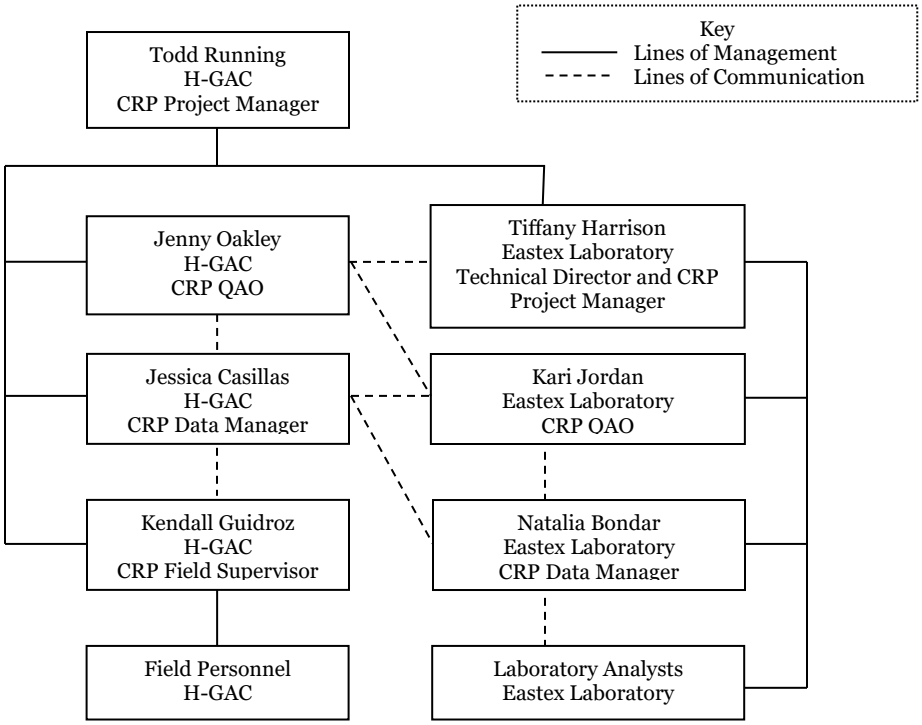


Figure A10.1b. CRP Organizational Chart – HCPCS

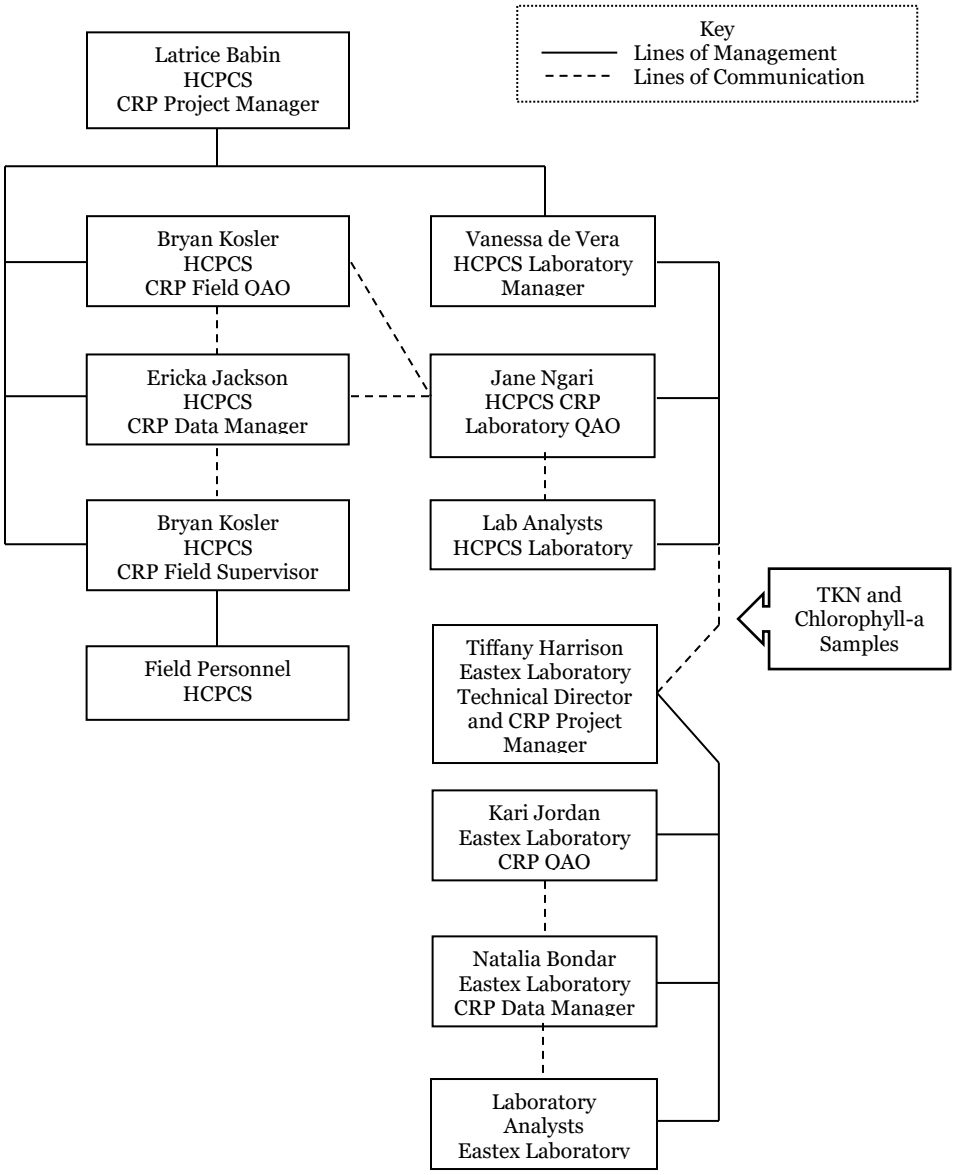


Figure A10.1c. CRP Organizational Chart – HHD

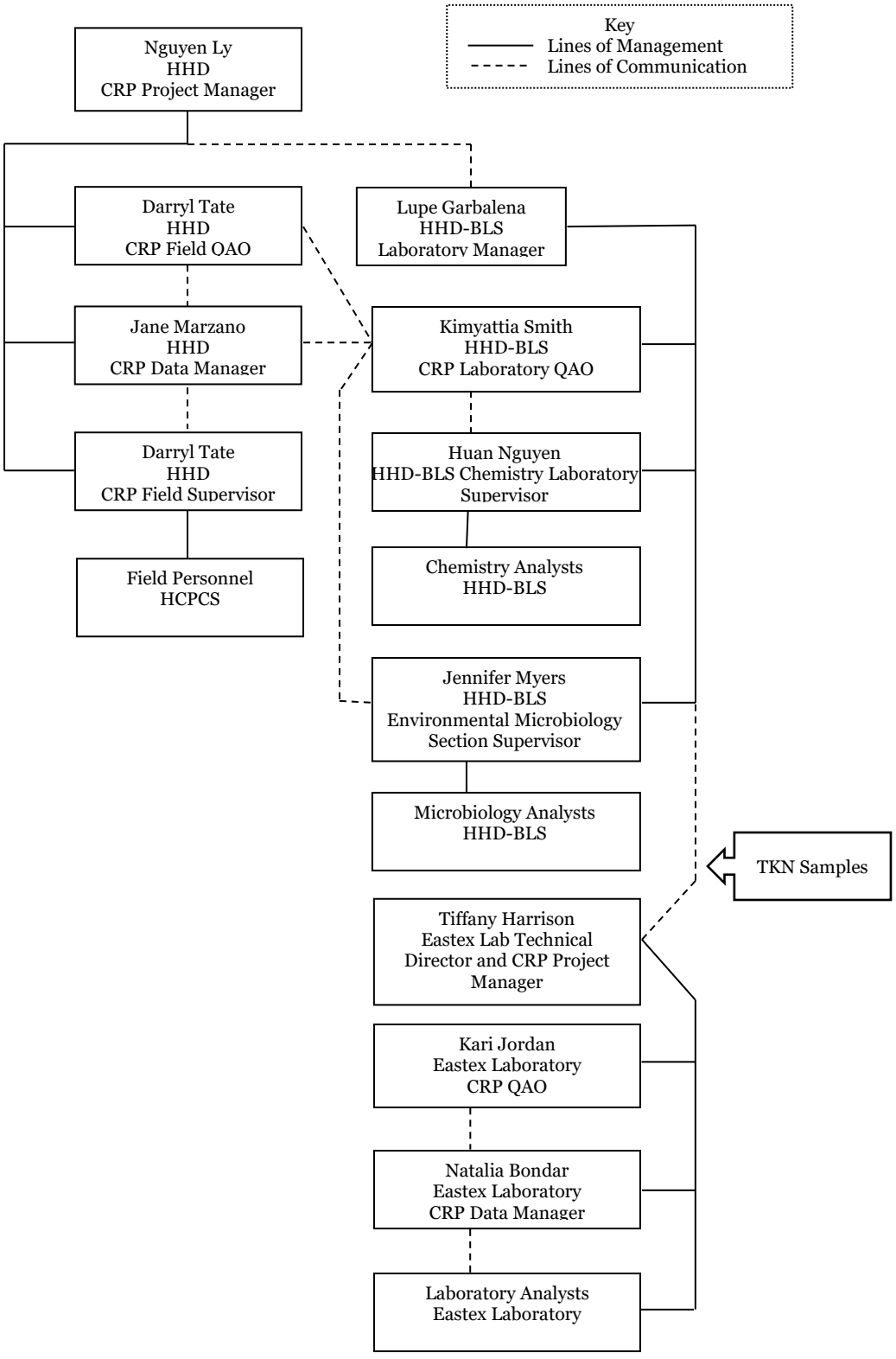


Figure A10.1d. CRP Organizational Chart – RCUD

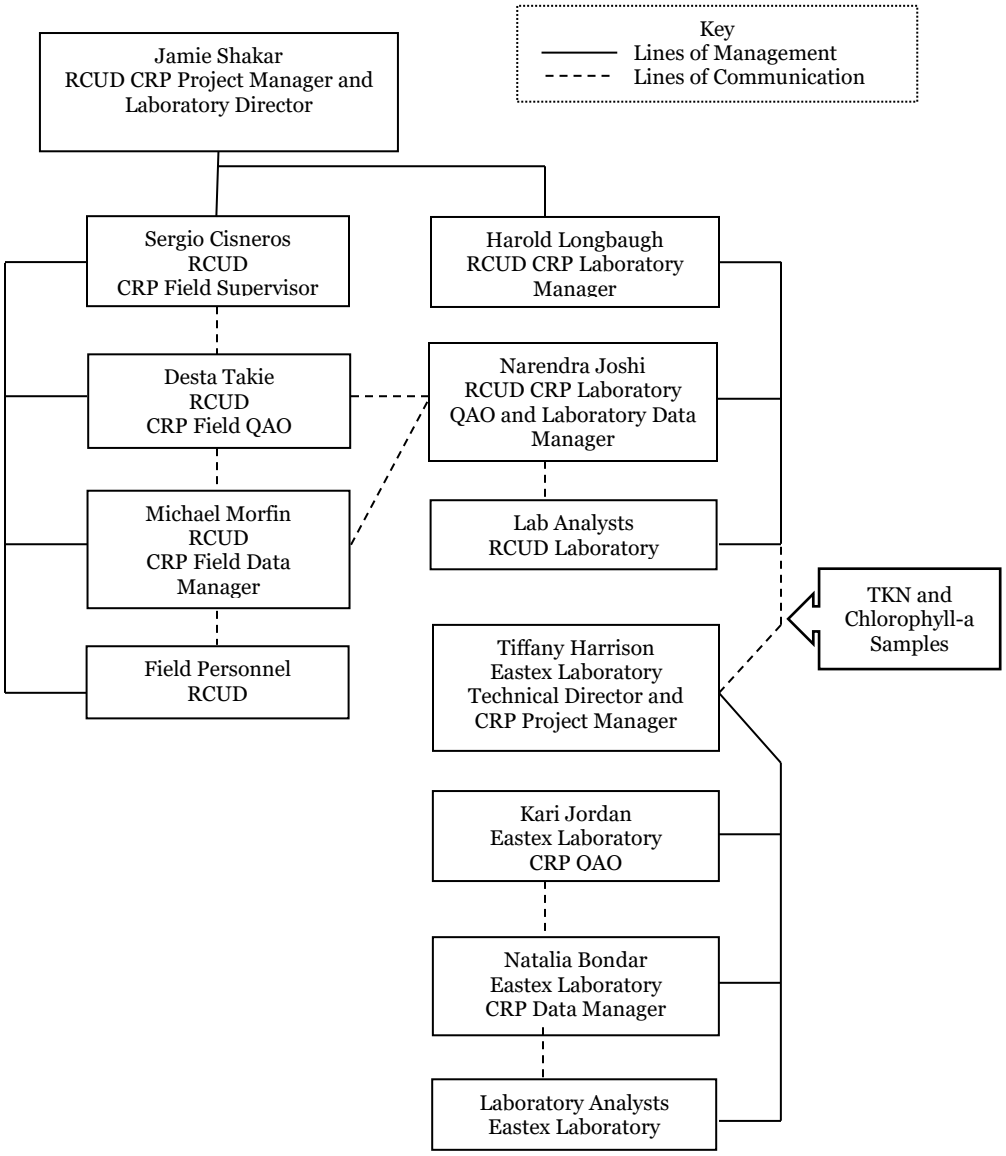


Figure A10.1e. CRP Organizational Chart – SJRA

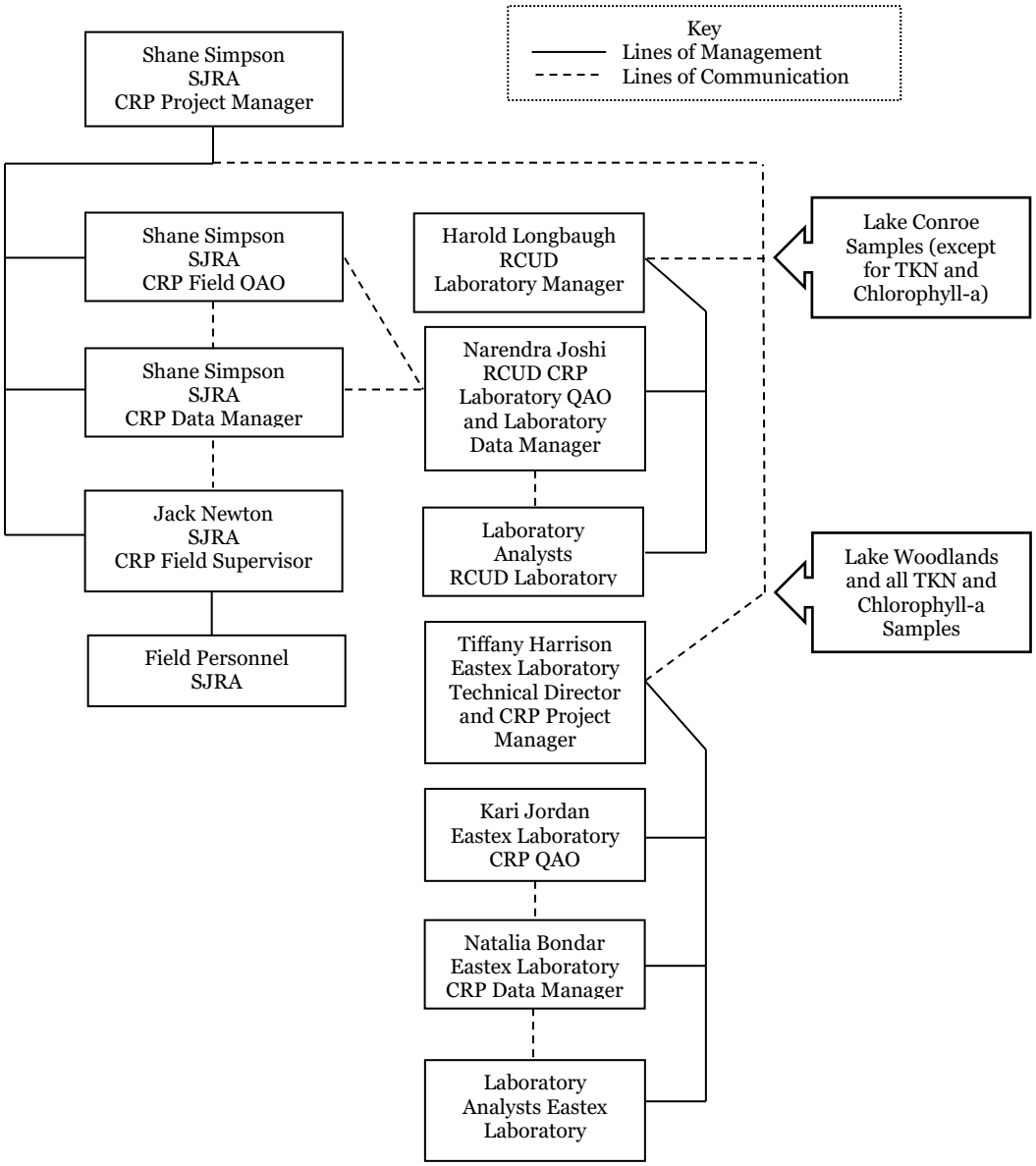


Figure A10.1f. CRP Organizational Chart – EIH

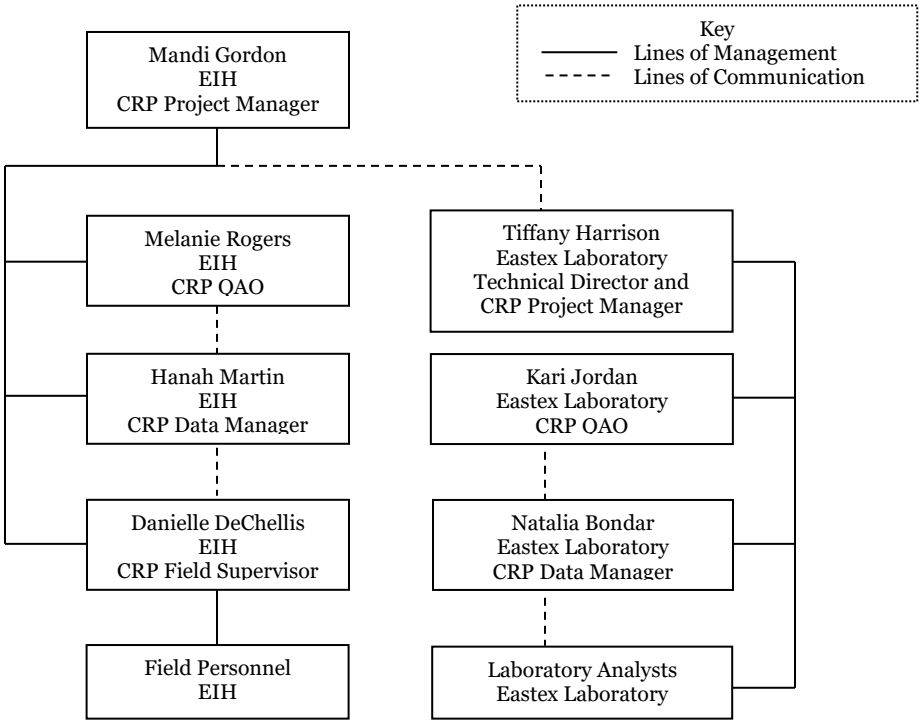
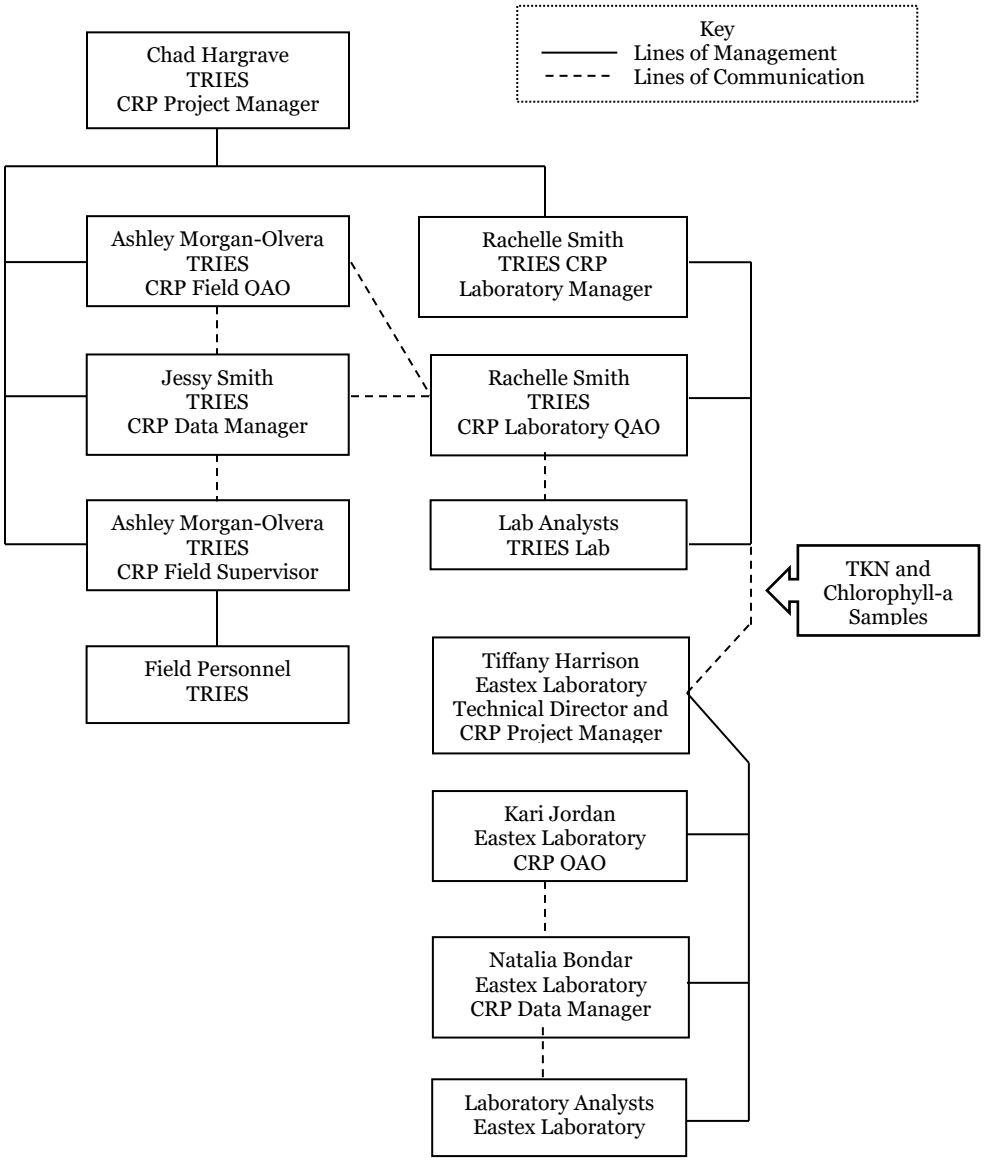


Figure A10.1g. CRP Organizational Chart - TRIES



A11 Special Training/Certification

Before new field personnel independently conduct field work, the sub-participant's designated trainer (Table A11.1) trains them in proper instrument calibration, field sampling techniques, and field analysis procedures. The designated trainer will document the successful field demonstration. The sub-participant's QAO (or designee) will retain documentation of training and the successful field demonstration in the employee's personnel file (or other designated location) and ensure that the documentation will be available during monitoring systems audits.

Table A11.1 Designated Trainer for each Sub-participant

Sub-participant	Designated Trainer
Houston-Galveston Area Council	Kendall Guidroz
Harris County Pollution Control Services	Bryan Kosler
City of Houston – Houston Health Department	Darryl Tate
City of Houston – Regulatory Compliance and Utility Development	Desta Takie
San Jacinto River Authority	Jack Newton
Environmental Institute of Houston	Danielle DeChellis
Texas Research Institute for Environmental Studies	Ashley Morgan-Olvera

The requirements for obtaining certified positional data using a global positioning system (GPS) are located in Section B7, Data Management.

Contractors and subcontractors must ensure that laboratories analyzing samples under this QAPP meet the requirements contained in The National Environmental Laboratories Accreditation Conference (NELAC) Institute Standard (2016) Volume 1, Module 2, Section 4.5 (concerning Subcontracting of Environmental Tests).

A12 Documents and Records

The documents and records that describe, specify, report, or certify activities are listed. The list below is limited to documents and records that may be requested for review during a monitoring systems audit.

Table A12.1a Project Documents and Records – H-GAC

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	H-GAC / Eastex Lab	≥7	Electronic
Field SOPs	H-GAC	≥7	Electronic
Laboratory quality manuals	Eastex Lab	≥7	Electronic
Laboratory SOPs	Eastex Lab	≥7	Electronic
QAPP distribution documentation	H-GAC / Eastex Lab	≥7	Electronic
Field staff training records	H-GAC	≥7	Electronic
Field equipment calibration/maintenance logs	H-GAC	≥7	Paper and/or Electronic
Field instrument printouts	H-GAC	≥7	Electronic
Field notebooks or data sheets	H-GAC	≥7	Paper and/or Electronic
Chain of custody records	H-GAC / Eastex Lab	≥7	Paper and/or Electronic
Laboratory calibration records	Eastex Lab	≥7	Paper and/or Electronic
Laboratory instrument printouts	Eastex Lab	≥7	Paper and/or Electronic
Laboratory data reports/results	H-GAC / Eastex Lab	≥7	Electronic
Laboratory equipment maintenance logs	Eastex Lab	≥7	Paper and/or Electronic
Corrective action documentation	H-GAC / Eastex Lab	≥7	Electronic

Table A12.1b Project Documents and Records – HCPCS

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	HCPCS / HCPCS Lab / H-GAC	≥7	Paper and/or Electronic
Field SOPs	HCPCS	≥7	Paper and/or Electronic
Laboratory quality manuals	HCPCS Lab	≥7	Paper and/or Electronic
Laboratory SOPs	HCPCS Lab	≥7	Paper and/or Electronic
QAPP distribution documentation	HCPCS / HCPCS Lab / H-GAC	≥7	Paper and/or Electronic
Field staff training records	HCPCS	≥7	Paper and/or Electronic
Field equipment calibration/maintenance logs	HCPCS	≥7	Paper and/or Electronic
Field instrument printouts	HCPCS	≥7	Paper and/or Electronic
Field notebooks or data sheets	HCPCS / H-GAC	≥7	Paper and/or Electronic
Chain of custody records	HCPCS / HCPCS Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory calibration records	HCPCS Lab	≥7	Paper and/or Electronic
Laboratory instrument printouts	HCPCS Lab	≥7	Paper and/or Electronic
Laboratory data reports/results	HCPCS Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory equipment maintenance logs	HCPCS Lab	≥7	Paper
Corrective action documentation	HCPCS / H-GAC	≥7	Paper and/or Electronic

Table A12.1c Project Documents and Records – HHD

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	HHD / HHD-BLS / H-GAC	≥7	Paper and/or Electronic
Field SOPs	HHD	≥7	Paper and/or Electronic
Laboratory quality manuals	HHD-BLS	≥7	Paper and/or Electronic
Laboratory SOPs	HHD-BLS	≥7	Paper and/or Electronic
QAPP distribution documentation	HHD / HHD-BLS / H-GAC	≥7	Paper and/or Electronic
Field staff training records	HHD	≥7	Paper and/or Electronic
Field equipment calibration/maintenance logs	HHD	≥7	Paper and/or Electronic
Field instrument printouts	HHD	≥7	Paper and/or Electronic
Field notebooks or data sheets	HHD / H-GAC	≥7	Paper and/or Electronic
Chain of custody records	HHD / HHD-BLS / H-GAC	≥7	Paper and/or Electronic
Laboratory calibration records	HHD-BLS	≥7	Paper and/or Electronic
Laboratory instrument printouts	HHD-BLS	≥7	Paper and/or Electronic
Laboratory data reports/results	HHD-BLS / H-GAC	≥7	Paper and/or Electronic
Laboratory equipment maintenance logs	HHD-BLS	≥7	Paper and/or Electronic
Corrective action documentation	HHD / HHD-BLS / H-GAC	≥7	Paper and/or Electronic

Table A12.1d Project Documents and Records – RCUD

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	RCUD / RCUD Lab / H-GAC	≥7	Paper and/or Electronic
Field SOPs	RCUD	≥7	Paper and/or Electronic
Laboratory quality manuals	RCUD Lab	≥7	Paper and/or Electronic
Laboratory SOPs	RCUD Lab	≥7	Paper and/or Electronic
QAPP distribution documentation	RCUD / RCUD Lab / H-GAC	≥7	Paper and/or Electronic
Field staff training records	RCUD	≥7	Paper and/or Electronic
Field equipment calibration/maintenance logs	RCUD	≥7	Paper and/or Electronic
Field instrument printouts	RCUD	≥7	Paper and/or Electronic
Field notebooks or data sheets	RCUD / H-GAC	≥7	Paper and/or Electronic
Chain of custody records	RCUD / RCUD Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory calibration records	RCUD Lab	≥7	Paper and/or Electronic
Laboratory instrument printouts	RCUD Lab	≥7	Paper and/or Electronic
Laboratory data reports/results	RCUD Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory equipment maintenance logs	RCUD Lab	≥7	Paper and/or Electronic
Corrective action documentation	RCUD / RCUD Lab / H-GAC	≥7	Paper and/or Electronic

Table A12.1e Project Documents and Records – SJRA

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	SJRA / RCUD Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Field SOPs	SJRA	≥7	Paper and/or Electronic
Laboratory quality manuals	RCUD Lab / Eastex Lab	≥7	Paper and/or Electronic
Laboratory SOPs	RCUD Lab / Eastex Lab	≥7	Paper and/or Electronic
QAPP distribution documentation	SJRA / RCUD Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Field staff training records	SJRA	≥7	Paper and/or Electronic
Field equipment calibration/maintenance logs	SJRA	≥7	Paper and/or Electronic
Field instrument printouts	SJRA	≥7	Paper and/or Electronic
Field notebooks or data sheets	SJRA / H-GAC	≥7	Paper and/or Electronic
Chain of custody records	SJRA / RCUD Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory calibration records	RCUD Lab / Eastex Lab	≥7	Paper and/or Electronic
Laboratory instrument printouts	RCUD Lab / Eastex Lab	≥7	Paper and/or Electronic
Laboratory data reports/results	RCUD Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory equipment maintenance logs	RCUD Lab / Eastex Lab	≥7	Paper and/or Electronic
Corrective action documentation	SJRA / RCUD Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic

Table A12.1f Project Documents and Records – EIH

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	EIH / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Field SOPs	EIH	≥7	Paper and/or Electronic
Laboratory quality manuals	Eastex Lab	≥7	Paper and/or Electronic
Laboratory SOPs	Eastex Lab	≥7	Paper and/or Electronic
QAPP distribution documentation	EIH / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Field staff training records	EIH	≥7	Paper and/or Electronic
Field equipment calibration/maintenance logs	EIH	≥7	Paper and/or Electronic
Field instrument printouts	EIH	≥7	Paper and/or Electronic
Field notebooks or data sheets	EIH	≥7	Paper and/or Electronic
Chain of custody records	EIH / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory calibration records	Eastex Lab	≥7	Paper and/or Electronic
Laboratory instrument printouts	Eastex Lab	≥7	Paper and/or Electronic
Laboratory data reports/results	EIH / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory equipment maintenance logs	Eastex Lab	≥7	Paper and/or Electronic
Corrective action documentation	EIH / Eastex Lab / H-GAC	≥7	Paper and/or Electronic

Table A12.1gProject Documents and Records – TRIES

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	TRIES / TRIES Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Field SOPs	TRIES	≥7	Paper and/or Electronic
Laboratory quality manuals	TRIES Lab / Eastex Lab	≥7	Paper and/or Electronic
Laboratory SOPs	TRIES Lab / Eastex Lab	≥7	Paper and/or Electronic
QAPP distribution documentation	TRIES / TRIES Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Field staff training records	TRIES	≥7	Paper and/or Electronic
Field equipment calibration/maintenance logs	TRIES	≥7	Paper and/or Electronic
Field instrument printouts	TRIES	≥7	Paper and/or Electronic
Field notebooks or data sheets	TRIES / H-GAC	≥7	Paper and/or Electronic
Chain of custody records	TRIES / TRIES Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory calibration records	TRIES Lab / Eastex Lab	≥7	Paper and/or Electronic
Laboratory instrument printouts	TRIES Lab / Eastex Lab	≥7	Paper and/or Electronic
Laboratory data reports/results	TRIES Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic
Laboratory equipment maintenance logs	TRIES Lab / Eastex Lab	≥7	Paper and/or Electronic
Corrective action documentation	TRIES / TRIES Lab / Eastex Lab / H-GAC	≥7	Paper and/or Electronic

Laboratory Test Reports

Test/data reports from the laboratory must document the test results clearly and accurately. Routine data reports should be consistent with The NELAC Institute (TNI) Standard (2016), Volume 1, Module 2, Section 5.10 and include the information necessary for the interpretation and validation of data. The requirements for reporting data and the procedures are provided.

Eastex is the current contract lab for the analysis of all lab parameters collected by H-GAC, EIH, and SJRA sites (within in the Lake Woodlands watershed). Eastex is also the subcontracted lab for TRIES where they prefer to keep them in the A6 table as a backup to ensure subcontracting samples is a quick and easy if needed. Eastex also analyzes TKN and chlorophyll *a* samples collected by other sub-participants. Eastex Lab submits electronic 'data packets' to the H-GAC DM monthly. Data are reformatted by H-GAC as needed and combined with additional field and lab data during Statistical Analysis Software (SAS) processing and reviewed with the final datasets. Formal lab reports (hard copy) will be available upon request. Eastex Lab reports include the following information.

1) The title "Test Report" or other identifying statement – Formal Report only
2) Name and address of laboratory, and phone number with name of contact person
3) A unique identification number and the total number of pages, with all pages sequentially numbered – Formal Report only
4) Name and address of client
5) Description and unambiguous identification of the sample(s) including the client identification code (i.e. station information)
6) Identification of results for any sample that did not meet sample acceptance requirements (Data Review Checklist)
7) Date of receipt of sample, date and time of sample collection, sample matrix, and time of sample preparation and/or analysis
8) Identification of the test method used plus its LOQ and LOD
9) Reference to sampling procedure (grab or composite) – Formal Report only
10) Any deviations from, additions to or exclusions from SOPs, and any conditions that may have affected the quality of results, and including the use and definitions of data qualifiers
11) Identification of whether data are calculated on a dry weight or wet weight basis – Formal report only
12) Identification of the reporting units such as µg/l or mg/kg
13) Clear identification of all test data provided by outside sources, such as subcontracted laboratories, clients, etc.
14) Clear identification of numerical results with values below the Reporting Limit, and
15) Identification of accreditation status per analysis – Formal Report only

The information in test reports from other sub-participants (HCPCS, HHD, RCUD, and TRIES) will be consistent with the information that is needed to prepare data submittals to TCEQ. These other sub-participants may share their data but review and compile their own lab reports in-house. Each sub-participant's DM works with their respective labs to receive their lab reports and input results to a database or spreadsheet which is then sent to H-GAC in an electronic format. At the very minimum, test reports from all labs will include the following items and be submitted with the database or spreadsheet. Additional information may be requested as needed:

- Sample results
- Units of measurement
- Sample matrix
- Dry weight or wet weight (as applicable)
- Station information
- Date and time of collection
- Holding time for *E. coli*
- LOQ (formerly referred to as the reporting limit), and qualification of results outside the working range (if applicable)
- LOD (formerly referred to as the method detection limit) is provided to H-GAC upon request
- Certification of NELAP compliance

Otherwise, reports should be consistent with the TNI Standard and should include any additional information critical to the review, verification, validation, and interpretation of data.

Electronic Data

H-GAC's sub-participants submit data to H-GAC electronically. Each sub-participants' data set is submitted with a completed Data Review Checklist (Appendix F). Data are submitted in one of two formats, as shown Table A12.2. Upon arrival at H-GAC, datasets are copied to sub-participant-specific "raw data" folders on a secured network drive that is regularly backed-up by H-GAC's IT staff. The H-GAC DM reformats the data to create an input dataset for SAS processing and saves it in a separate folder as a "working" file. Unaltered copies of submitted data are retained in the raw data folder. Sub-participant-specific SAS code has been written to create properly formatted text files to be submitted to TCEQ. While many data validation and verification tasks are now part of routine processing, data sets are still reviewed manually by H-GAC's QAO to identify issues not found during routine processing. The data processing, verification, and review process is described in H-GAC's Data Management Procedures in Section B7.

The following table outlines how data are received from each local sub-participant. All local sub-participant data are submitted with a Data Review Checklist. The checklist includes specific information regarding each data set. As H-GAC performs data processing and management tasks, the H-GAC DM compiles a Data Summary report (see example in Appendix F) that is submitted with the Event/Results text files. The Data Summary Report/Sheet will include information from the local sub-participant Data Review Checklists as well as information about any changes to or deletions of data by H-GAC before it was submitted to TCEQ.

Table A12.2 Software used by Local Sub-participants to Submit Data to H-GAC

Sub-participant	Software
HCPCS	MS Excel
HHD	MS Access
RCUD	MS Excel
SJRA	MS Excel
EIH	MS Excel
TRIES	MS Excel
Eastex Environmental Lab	MS Excel

Data will be submitted electronically to the TCEQ in the event/result file format described in the most current version of the DMRG. A completed data review checklist and data summary (see Appendix F) will be included with each data submittal.

B1 Sampling Process Design

See Appendix B for sampling process design information and monitoring tables associated with data collected under this QAPP.

B2 Sampling Methods

Field Sampling Procedures

Field sampling will be conducted in accordance with the latest versions of the *TCEQ Surface Water Quality Monitoring Procedures Volume 1: Physical and Chemical Monitoring Methods, 2012* (RG-415) and *Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014* (RG-416), collectively referred to as "SWQM Procedures." Updates to SWQM Procedures are posted to the Surface Water Quality Monitoring Procedures website (https://www.tceq.texas.gov/waterquality/monitoring/swqm_guides.html) and shall be incorporated into the H-GAC's procedures, QAPP, SOPs, etc., within 60 days of any final published update. Chloride and Sulfate will be collected at non-tidal sites only. TKN and Chlorophyll-a samples are collected at specified sites only (see Table B1.1). Additional aspects outlined in Section B below reflect specific requirements for sampling under CRP and/or provide additional clarification.

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
	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]	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 (HNO_3) 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 TKN is included in the coordinated monitoring schedule (CMS).

Table B2.1b Sample Storage, Preservation, and Handling Requirements for HCPCS

Matrix	Parameter	Container	Sample Volume	Preservation	Holding Time
water	TSS	0.5 gallon Plastic	0.5 Gal	Cool to 4°C ± 2°C	7 days
	Enterococci IDEXX Enterolert	120 mL Sterile Plastic w/ sodium	100 mL	Cool to 4°C ± 2°C	8 hours

		thiosulfate			
	TKN[1]	500 mL Plastic	250 mL	Cool to 4°C ± 2°C, H_2SO_4 to pH <2	28 days
	Ammonia-N	500 mL Plastic[2]	50 mL	Cool to 4°C ± 2°C, H_2SO_4 to pH <2	28 days
	Nitrite + nitrate-N		2 mL		28 days
	Phosphorus-P, total		50 mL		28 days
	Chlorophyll-*a*[1]	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. Eastex Environmental Lab will analyze sample(s) only at sites where the parameter is included in the CMS.
2. One 500 mL plastic container is used to collect these three parameters.

Table B2.1c Sample Storage, Preservation, and Handling Requirements for HHD

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

1. At sites with a secchi reading >0.8m a second 1 L plastic container will be collected for TSS.
2. At sites with a secchi reading <0.8m the TSS sample volume required is typically ~600 mL due to the presence of suspended solids within the sample matrix. This allows for all of these constituents to be collected out of a single 1 L container.
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. One 1 L plastic container is used to collect these two parameters.

Table B2.1d Sample Storage, Preservation, and Handling Requirements for RCUD

Matrix	Parameter	Container	Sample Volume	Preservation	Holding Time
water	TSS	1 L Plastic	1 L	Cool to 4°C ± 2°C	7 days
	Sulfate	500 mL Plastic[1]	50 mL	Cool to 4°C ± 2°C	28 days
	Chloride		50 mL		28 days
	Nitrite-N		50 mL		48 hours
	Nitrate-N		50 mL		48 hours
	Alkalinity, Total		50 mL		14 days
	E.coli IDEXX Colilert	120 mL / 250 mL Sterile Plastic w/ sodium thiosulfate	100 mL / 200 mL[2]	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
	Ammonia-N	500 mL Plastic	500 mL	Cool to 4°C ± 2°C, H_2SO_4 to pH <2	28 days
	Phosphorus-P, total	250 mL Brown, glass bottle	250 mL	Cool to 4°C ± 2°C, H_2SO_4 to pH <2	28 days
	Chlorophyll-*a*[4]	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. One 500 mL plastic container is used to collect these five parameters.
2. Volume analyzed for *E. coli* is 100 ml and collected in 120mL sterilized bottle from each site and one 250mL sterilized bottle from one site with each sampling event allowing duplicate analyses from the container.
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 the parameter is included in the CMS.

Table B2.1e Sample Storage, Preservation, and Handling Requirements for SJRA Samples collected from Lake Conroe and analyzed by RCUD

Matrix	Parameter	Container	Sample Volume	Preservation	Holding Time
water	TSS	1 L Plastic	1 L	Cool to 4°C ± 2°C	7 days
	Sulfate	500 mL Plastic[1]	50 mL	Cool to 4°C ± 2°C	28 days
	Chloride		50 mL		28 days
	Nitrite-N		50 mL		48 hours
	Nitrate-N		50 mL		48 hours
	Alkalinity, Total		50 mL		14 days
	E.coli IDEXX Colilert	120 mL / 250 mL Sterile Plastic w/ sodium thiosulfate	100 mL / 200 mL[2]	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
	Ammonia-N	500 mL Plastic	500 mL	Cool to 4°C ± 2°C, H_2SO_4 to pH <2	28 days
	Phosphorus-P, total	250 mL Brown, glass bottle	250 mL	Cool to 4°C ± 2°C, H_2SO_4 to pH <2	28 days
	Chlorophyll-*a*[4]	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. One 500 mL plastic container is used to collect these five parameters.
2. Volume analyzed for *E. coli* is 100 ml and collected in 120mL sterilized bottle from each site and one 250mL sterilized bottle from one site with each sampling event allowing duplicate analyses from the container.
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 the parameter is included in the 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
	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
	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

* 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.

Sample Containers

Certificates from sample container manufacturers are maintained in a notebook by each of the sub-participants as appropriate. Information about the various sample containers for each sub-participants are included in tables B2.1 and described below.

In most cases, sample containers used for conventional parameters are purchased new, are pre-cleaned, and are disposable. The only exception to this is for the sub-participant RCUD . They primarily use new sample containers for their sampling, however on occasion, containers may be reused. In such cases, RCUD follows the container washing procedures outlined below: The bottles are placed in a dish washing machine where they go through a pre-wash cycle with a deionized water (DI) water, a wash cycle with phosphate-free soap, DI rinse cycle, and an acid rinse cycle. Next, the bottles are rinsed with DI water several times making sure there is at least a three (3) volume exchange of water. Lastly, the bottles are air dried. Afterwards, the bottles are sealed prior to storage for their next use. RCUD bottle washing procedures include a tracking system and QC procedure to assure that no contamination persists after the washing procedure. The logbook for the bottle cleaning process is located in the washing room and will be retained for minimum of 7 years.

When preservation is required for specific parameters, the acid is added to the container either in the laboratory when the bottles are prepared for the sampling run or in the field-by-field personnel immediately after samples are collected. The only exception to this is the total phosphorus parameter analyzed by Eastex Environmental Laboratory where preservation is completed in the lab upon receipt of the samples from the field staff.

Processes to Prevent Contamination

SWQM Procedures outline the necessary steps to prevent contamination of samples, including: direct collection into sample containers, when possible; use of certified containers for organics; and clean sampling techniques for metals. Field QC samples (identified in Section B4) are collected to verify that contamination has not occurred.

Documentation of Field Sampling Activities

Field sampling activities are documented on field data sheets as presented in Appendix D. Flow worksheets, aquatic life use monitoring checklists, habitat assessment forms, field biological assessment forms, and records of bacteriological analyses (if applicable) are part of the field data record. The following will be recorded for all visits:

- Station ID
- Sampling date
- Site description
- Sampling depth
- Sampling time
- Sample collector's name
- Values for all field parameters collected
- Notes or comments as applicable *

*Additional notes containing detailed observational data not captured by field parameters, when applicable, should include, but are not limited to: water appearance, weather, biological activity, recreational activity, unusual odors, missing parameters, other observations that may affect water quality.

Recording Data

For the purposes of this section and subsequent sections, all field and laboratory personnel follow the basic rules for recording information as documented below:

- Write legibly, in indelible ink.
- Make changes by crossing out original entries with a single line strike-out, entering the changes, and initialing and dating the corrections.
- Close-out incomplete pages or data fields with an initialed and dated diagonal line.

Sampling Method Requirements or Sampling Process Design Deficiencies, and Corrective Action

Examples of sampling method requirements or sample design deficiencies include but are not limited to such things as inadequate sample volume due to spillage or container leaks, failure to preserve samples appropriately, contamination of a sample bottle during collection, storage temperature and holding time exceedance, sampling at the wrong site, etc. Any deviations from the QAPP, SWQM Procedures, or appropriate sampling procedures may invalidate data and require documented corrective action. Corrective action may include for samples to be discarded and re-collected. It is the responsibility of the H-GAC PM, in consultation with the H-GAC QAO, to ensure that the actions and resolutions to the problems are documented and that records are maintained in accordance with this QAPP. In addition, these actions and resolutions will be conveyed to the TCEQ CRP PM both verbally and in writing in the project progress reports and by completion of a CAP.

The definition of and process for handling deficiencies and corrective action are defined in Section C1.

Analytical Methods

The analytical methods, associated matrices, and performing laboratories are listed in Appendix A. The authority for analysis methodologies under CRP is derived from the Texas Administrative Code (TAC), Title 30, Chapter 307, in that data generally are generated for comparison to those standards and/or criteria. The TSWQS state "procedures for laboratory analysis must be in accordance with the most recently published edition of the book entitled Standard Methods for the Examination of Water and Wastewater, the TCEQ SWQM Procedures as amended, 40 Code of Federal Regulations (CFR) 136, or other reliable procedures acceptable to the TCEQ, and in accordance with chapter 25 of this title."

Laboratories collecting data under this QAPP must be accredited by the National Environmental Laboratory Accreditation Program (NELAP) in accordance with TAC, Title 30, Chapter 25. Copies of laboratory quality

manuals (QMs) and SOPs shall be made available for review by the TCEQ.

Standards Traceability

All standards used in the field and laboratory are traceable to certified reference materials. Standards preparation is fully documented and maintained in a standards log book. Each documentation includes information concerning the standard identification, starting materials, including concentration, amount used and lot number; date prepared, expiration date and preparer's initials/signature. The reagent bottle is labeled in a way that will trace the reagent back to preparation.

Analytical Method Deficiencies and Corrective Actions

Deficiencies in field and laboratory measurement systems involve, but are not limited to such things as instrument malfunctions, failures in calibration, blank contamination, quality control samples outside QAPP-defined limits, etc. In many cases, the field technician or lab analyst will be able to correct the problem. If the problem is resolvable by the field technician or lab analyst, then they will document the problem on the field data sheet or laboratory record and complete the analysis. If the problem is not resolvable, then it is conveyed to the applicable supervisor, who will make the determination and notify the H-GAC QAO if the problem compromises sample results. If the analytical system failure may compromise the sample results, the resulting data will not be reported to the TCEQ. The nature and disposition of the problem is reported on the data report which is sent to the H-GAC PM. If a CAP is necessary (Figure C1.1), the H-GAC QAO will submit the CAP to the TCEQ CRP PM in a timely manner for review. Additionally, the H-GAC PM will summarize the CAP in the associated progress report submitted to the TCEQ CRP PM.

The definition of and process for handling deficiencies and corrective action are explained in detail in Section C1.

The TCEQ has determined that analyses associated with qualifier codes (e.g., "holding time exceedance," "sample received unpreserved," "estimated value") may have unacceptable measurement uncertainty associated with them. This will immediately disqualify analyses from submittal to SWQMIS. Therefore, data with these types of problems should not be reported to the TCEQ. Additionally, any data collected or analyzed by means other than those stated in the QAPP, or data suspect for any reason should not be submitted for loading and storage in SWQMIS. However, when data are lost, its absence will be described in the data summary report submitted with the corresponding data set, and a CAP (as described in Section C1) may be necessary.

Acquired Data

Non-directly measured data, secondary data, or acquired data involves the use of data collected under another project and collected with a different intended use than this project. The acquired data still meets the quality requirements of this project and is defined below. The following data source(s) will be used for this project:

USGS gage station data will be used throughout this project to aid in determining gage height and flow. Rigorous QA checks are completed on gage data by the USGS and the data are approved by the USGS and permanently stored at the USGS. This data will be submitted to the TCEQ under parameter code 00061 (Flow, Instantaneous).

Reservoir stage data are collected every day from the USGS, International Boundary and Water Commission (IBWC), and the United States Army Corps of Engineers (USACE) websites. These data are preliminary and subject to revision. The Texas Water Development Board (TWDB) derives reservoir storage (in acre-feet) from these stage data (elevation in feet above mean sea level), by using the latest rating curve datasets available. These data are published at the TWDB website at http://waterdatafortexas.org/reservoirs/statewide. Information about measurement methodology can be found on the TWDB website. These data will be submitted to the TCEQ under parameter code 00052 (Reservoir Stage) and parameter code 00053 (Reservoir Percent Full).

Rainfall data will be acquired from multiple sources to report parameter code 72053 (Days Since Precipitation Event) with each set of water quality data submitted to TCEQ. Each sub-participant will use the internet source that best addresses the rainfall events occurring closest to but upstream of or within the drainage area affecting their various monitoring stations. Historical rainfall data are accessible on these web sites to determine the

correct value for parameter 72053, “Days since precipitation event”. These sites include:

- National Oceanic and Atmospheric Administration’s (NOAA’s) National Climatic Data Center (NCDC) (http://www.ncdc.noaa.gov/). The NCDC is responsible for preserving, monitoring, assessing, and providing public access to the nation’s climate and historical weather data and information
- Weather Underground (http://www.wunderground.com/) which collects and maintains precipitation data from numerous sources in the selected area
- The Harris County Flood Control District (HCFCD) operates a Flood Warning System (http://www.harriscountyfws.org/) which measures rainfall amounts and monitors water levels in bayous and major streams on a real-time basis to inform the public of dangerous weather conditions. The system relies on 133 gage stations strategically placed on bayous and their tributaries throughout the greater Harris County area.
- The USGS National Water Information System web interface can also be used to determine when a significant change in flow occurred at the various flow gages operated around the greater Houston region. The web site http://waterdata.usgs.gov/tx/nwis/current/?type=flow can display discharge data in graph or tabular format to determine days when runoff affected the stream.

B3 Sample Handling and Custody

Sample Tracking

Proper sample handling and custody procedures ensure the custody and integrity of samples beginning at the time of sampling and continuing through transport, sample receipt, preparation, and analysis.

A sample is in custody if it is in actual physical possession or in a secured area that is restricted to authorized personnel. The chain of custody (COC) form is a record that documents the possession of the samples from the time of collection to receipt in the laboratory. The following information concerning the sample is recorded on the COC form (see Appendix E). The following list of items matches the COC form in Appendix E.

Date and time of collection
Station ID/Site Identifier
Sample matrix
Number of containers
Preservative used
Analyses required
Name of collector
Custody transfer signatures and dates and time of transfer

Sample Labeling

Samples from the field are labeled on the container, or on a label, with an indelible marker. Label information includes:

Station ID/Site Identifier
Date and time of collection
Preservative added, if applicable
Analyses required
Collecting Entity

Sample Handling

Upon collection, all sub-participants immediately immerse their samples in coolers containing ice. Samples are transported to each sub-participants’ lab by the person who collected the samples or, in the case of EIH, H-GAC, and SJRA, the samples are transferred to a lab courier who signs the COC form and transports the samples to the lab. After the samples arrive, the lab personnel taking custody of samples will verify the samples are “in the process” of cooling to 4°C ± 2°C before signing the COC. Internal sample handling, custody, and storage procedures for each of the laboratories supporting H-GAC’s monitoring entities are described in the SOPs and Quality Manuals (QM) and are available to H-GAC upon request. For TKN and chlorophyll *a* samples, all

samples are transferred to a lab courier who signs the COC form and transports the samples to the contract lab for processing and analysis. References for each laboratory's sample handling procedure are listed in Table B3.1.

Table B3.1. Sample Handling References for Laboratories.

Monitoring Entity	Reference to Sample Handling
Eastex Environmental Laboratory	Eastex Environmental Laboratory QM, most current version.
Harris County Pollution Control Services	Harris County Pollution Control Services Department Standard Operating Procedure – *Procedures for Sample Custody, Login and Tracking Using Sample Master LIMS*. Most current version.
City of Houston, Health Department	HHD-BLS Environmental Laboratory Services QM, Section 22 – Sample Management, most current version.
City of Houston, Regulatory Compliance and Utility Development	RCUD - Environmental Sampling SOP, most recent revision.
Texas Research Institute for Environmental Studies	TRIES Laboratory QM, most current version.

Sample Tracking Procedure Deficiencies and Corrective Action

All deficiencies associated with COC procedures, as described in this QAPP, are immediately reported to the H-GAC PM and H-GAC QAO. These include such items as delays in transfer resulting in holding time violations; violations of sample preservation requirements; incomplete documentation, including signatures; possible tampering of samples; broken or spilled samples; etc. The H-GAC PM, in consultation with the H-GAC QAO, will determine if the procedural violation may have compromised the validity of the resulting data. Any failures that have reasonable potential to compromise data validity will invalidate data and the sampling event should be repeated. The resolution of the situation will be reported to the TCEQ CRP PM in the project progress report. CAPs will be prepared by the H-GAC and submitted to TCEQ CRP PM.

The definition of and process for handling deficiencies and corrective action are defined in Section C1.

B4 Quality Control

Sampling Quality Control Requirements and Acceptability Criteria

The minimum field QC requirements, and program-specific laboratory QC requirements, are outlined in SWQM Procedures.

Laboratory Measurement Quality Control Requirements and Acceptability Criteria

Batch

A batch is defined as environmental samples that are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents. A preparation batch is composed of one to 20 environmental samples of the same NELAP-defined matrix, meeting the above-mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours. An analytical batch is composed of prepared environmental samples (extract, digestates, or concentrates) which are analyzed together as a group. An analytical batch can include prepared samples originating from various environmental matrices

and can exceed 20 samples.

Method Specific QC requirements

QC samples, other than those specified later in this section (e.g., sample duplicates, surrogates, internal standards, continuing calibration samples, interference check samples, positive control, negative control, and media blank), are run as specified in the methods and in SWQM Procedures. The requirements for these samples, their acceptance criteria or instructions for establishing criteria, and corrective actions are method-specific.

Detailed laboratory QC requirements and corrective action procedures are contained within the individual laboratory QMs. The minimum requirements that all participants abide by are stated below.

Comparison Counting

For routine bacteriological samples, repeat counts on one or more positive samples are required, at least monthly. If possible, the analyst will compare counts with another analyst who also performs the analysis. Replicate counts by the same analyst should agree within 5 percent, and those between analysts should agree within 10 percent. The analyst(s) will record the results.

Limit of Quantitation (LOQ)

The laboratory will analyze a calibration standard (if applicable) at the LOQ published in Appendix A of this QAPP on each day calibrations are performed. In addition, an LOQ check sample will be analyzed with each analytical batch. Calibrations including the standard at the LOQ listed in Appendix A will meet the calibration requirements of the analytical method, or corrective action will be implemented.

LOQ Check Sample

An LOQ check sample consists of a sample matrix (e.g., deionized water, sand, commercially available tissue) free from the analytes of interest spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. It is used to establish intra-laboratory bias to assess the performance of the measurement system at the lower limits of analysis. The LOQ check sample is spiked into the sample matrix at a level less than or equal to the LOQ published in Appendix A of this QAPP, for each analyte for each analytical batch of CRP samples run. If it is determined that samples have exceeded the high range of the calibration curve, samples should be diluted or run on another curve. For diluted or high concentration samples run on batches with calibration curves that do not include the LOQ published in Appendix A of this QAPP, a check sample will be run at the low end of the calibration curve.

The LOQ check sample is carried through the complete preparation and analytical process and is performed at a rate of one per analytical batch.

The percent recovery of the LOQ check sample is calculated using the following equation in which %R is percent recovery, S_R is the sample result, and S_A is the reference concentration for the check sample:

$$\%R = {}^{S_R}/_{S_A} \times 100$$

Measurement performance specifications are used to determine the acceptability of LOQ check sample analyses as specified in Appendix A of this QAPP.

Laboratory Control Sample (LCS)

An LCS consists of a sample matrix (e.g., deionized water, sand, commercially available tissue) free from the analytes of interest spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. It is used to establish intra-laboratory bias to assess the performance of the measurement system. The LCS is spiked into the sample matrix at a level less than or near the midpoint of the calibration for each analyte. In cases of test methods with very long lists of analytes, LCSs are prepared with all the target analytes and not just a representative number, except in cases of organic analytes with multipeak responses.

The LCS is carried through the complete preparation and analytical process and is performed at a rate of one per preparation batch.

Results of LCSs are calculated by percent recovery (%R), which is defined as 100 times the measured concentration, divided by the true concentration of the spiked sample.

The following formula is used to calculate percent recovery, where %R is percent recovery; S_R is the measured result; and S_A is the true result:

$$\%R = {}^{S_R}/_{S_A} \times 100$$

Measurement performance specifications are used to determine the acceptability of LCS analyses as specified in Appendix A.

Laboratory Duplicates

A laboratory duplicate is an aliquot taken from the same container as an original sample under laboratory conditions and processed and analyzed independently. A laboratory duplicate is achieved by preparing 2 separate aliquots of a sample, LCS, or matrix spike. Both samples are carried through the entire preparation and analytical process. Laboratory duplicates are used to assess precision and are performed at a rate of one per preparation batch.

For most parameters except bacteria, precision is evaluated using the relative percent difference (RPD) between duplicate results as defined by 100 times the difference (range) of each duplicate set, divided by the average value (mean) of the set. For duplicate results, X_1 and X_2, the RPD is calculated from the following equation:

$$RPD = \frac{|X_1 - X_2|}{\left(\frac{X_1 + X_2}{2}\right)} \times 100$$

If the precision criterion is exceeded, the data are not acceptable for use under this project and are not reported to TCEQ. Results from all samples associated with that failed duplicate (usually a maximum of 10 samples) are considered to have excessive analytical variability and are qualified as not meeting project QC requirements.

For bacteriological parameters, precision is evaluated using the results from laboratory duplicates. Bacteriological duplicates are analyzed at a 10% frequency (or once per preparation batch, whichever is more frequent). Sufficient volume should be collected to analyze laboratory duplicates from the same sample container.

The base-10 logarithms of the results from the original sample and its duplicate are calculated. The absolute value of the difference between the two base-10 logarithms is calculated and compared to the precision criterion in Appendix A.

$$|\text{Log A} - \text{Log B}| = \text{Log Range}$$

If the difference in logarithms is greater than the precision criterion, the data are not acceptable for use under this project and are not reported to TCEQ. Results from all samples associated with that failed duplicate (usually a maximum of 10 samples) are considered to have excessive analytical variability and are qualified as not meeting project QC requirements.

The precision criterion in Appendix A for bacteriological duplicates applies only to samples with concentrations > 10 MPN.

Matrix spike

Matrix spikes are prepared by adding a known quantity of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

Matrix spikes indicate the effect of the sample on the precision and accuracy of the results generated using the selected method. Matrix-specific QC samples indicate the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. The information from these controls is sample/matrix specific and would not normally be used to determine the validity of the entire batch. The frequency of matrix spikes is specified by the analytical method, or a minimum of one per preparation batch,

whichever is greater. To the extent possible, matrix spikes prepared and analyzed over the course of the project should be performed on samples from different sites.

The components to be spiked shall be as specified by the mandated analytical method. The results from matrix spikes are primarily designed to assess the validity of analytical results in a given matrix and are expressed as percent recovery (%R).

The percent recovery of the matrix spike is calculated using the following equation, where %R is percent recovery, S_{SR} is the concentration measured in the matrix spike, S_R is the concentration in the parent sample, and S_A is the concentration of analyte that was added:

$$\%R = \frac{S_{SR} - S_R}{S_A} \times 100$$

Matrix spike recoveries are compared to the acceptance criteria published in the mandated test method. If the matrix spike results are outside established criteria, the data for the analyte that failed in the parent sample is not acceptable for use under this project and will not be reported to TCEQ. The result from the parent sample associated with that failed matrix spike will be considered to have excessive analytical variability and will be qualified by the laboratory as not meeting project QC requirements. Depending on the similarities in composition of the samples in the batch, the H-GAC may consider excluding all of the results in the batch related to the analyte that failed recovery.

Measurement performance specifications for matrix spikes for each lab are discussed below.

- Eastex uses matrix spike recovery limits of 75-125 for parameters where a spike solution is available. These recoveries are monitored with QC charts to help determine interferences or detect trends. Matrix spikes that fail to meet these guidelines are reanalyzed, if possible. An alternate sample may be used to help determine whether the problem was specific to that sample. If matrix spikes are not achievable within 75-125 % recovery then this recovery is flagged as exceeding the control limit on the QC report.

- Harris County Pollution Control Services (HCPCS) The measurement performance specification for matrix spikes is recovery between 75 and 125 percent. If a spike recovery is outside this range, the result is qualified in the QC narrative contained in the data submittal checklist. In addition, the laboratory applies control chart techniques to monitor performance and establishes updated internal control limits for matrix spike recovery on an annual basis.

- The City of Houston, HHD-BLS Lab has a matrix spike recovery requirement of 80-120 percent unless specifically stated for the parameter. A spike that falls outside laboratory limits is reanalyzed. If the spike fails a second time, another sample within the same set is prepared as a spike and analyzed. When several different matrix spikes fall outside stated limits, matrix interference is likely. If the required matrix spike recovery is not met, the data affected are qualified and flagged as exceeding control limits.

- The City of Houston, RCUD Lab The recovery of matrix spikes for the samples analyzed in RCUD laboratory is between 80 to 120 percent. If a spike recovery is outside this range, the result is qualified in the QC narrative contained in the data submittal checklist. In addition, the laboratory applies control chart techniques to monitor performance.

- TRIES Lab uses matrix spike recovery limits of 75-125 percent which are published in the mandated test method where a spike solution is required. Matrix spikes that fail to meet these guidelines are reanalyzed, if possible, or an alternate sample may be used to help determine whether the problem was specific to that sample. If matrix spikes are not achievable within method acceptance criteria, the data are reported with appropriate data qualifying codes on the analytical report. Control Charts are monitored for laboratory performance.

Method blank

A method blank is a sample of matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as the samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at

concentrations that impact the analytical results for sample analyses. The method blank is used to document contamination from the analytical process. The analysis of method blanks should yield values less than the LOQ. For very high-level analyses, the blank value should be less than 5% of the lowest value of the batch, or corrective action will be implemented. Samples associated with a contaminated blank shall be evaluated as to the best corrective action for the samples (e.g., reprocessing, data qualifying codes). In all cases, the corrective action must be documented.

The method blank shall be analyzed at a minimum of one per preparation batch. In those instances, for which no separate preparation method is used (e.g., VOA), the batch shall be defined as environmental samples that are analyzed together with the same method and personnel, using the same lots of reagents, not to exceed the analysis of 20 environmental samples.

Quality Control or Acceptability Requirements, Deficiencies, and Corrective Actions

Sampling QC excursions are evaluated by the H-GAC PM, in consultation with the H-GAC QAO. In that differences in sample results are used to assess the entire sampling process, including environmental variability, the arbitrary rejection of results based on pre-determined limits is not practical. Therefore, the professional judgment of the H-GAC PM and QAO will be relied upon in evaluating results.

Laboratory measurement quality control failures are evaluated by the laboratory staff. The disposition of such failures and the nature and disposition of the failure is reported to the Laboratory QAO. The Laboratory QAO will discuss the failure with the H-GAC QAO and H-GAC PM. If applicable, the H-GAC QAO will include this information in a CAP and submit the CAP to the TCEQ CRP PM.

The definition of and process for handling deficiencies and corrective action are defined in Section C1.

Additionally, in accordance with CRP requirements and the TNI Standard (Volume 1, Module 2, Section 4.5, Subcontracting of Environmental Tests) when a laboratory that is a signatory of this QAPP finds it necessary and/or advantageous to subcontract analyses, the laboratory that is the signatory on this QAPP must ensure that the subcontracting laboratory is NELAP-accredited (when required) and understands and follows the QA/QC requirements included in this QAPP. This includes confirming that the sub-contracting laboratory has LOQs at or below TCEQ AWRLs and performs all required QC analysis outlined in this QAPP. The signatory laboratory is also responsible for QA of the data prior to delivering it to the H-GAC, including review of all applicable QC samples related to CRP data. As stated in section 4.5.5 of the TNI Standard, the laboratory performing the subcontracted work shall be indicated in the final report and the signatory laboratory shall make a copy of the subcontractor's report available to the client (H-GAC) when requested.

B5 Instrument/Equipment Calibration, Testing, Inspection, and Maintenance

All sampling equipment testing, and maintenance requirements are detailed in the SWQM Procedures. Sampling equipment is inspected and tested upon receipt and is assured appropriate for use by each sub-participant's Field Supervisor or designee. Equipment records are kept on all field equipment and a supply of critical spare parts is maintained.

All laboratory tools, gauges, instrument, and equipment testing, and maintenance requirements are contained within laboratory QM(s).

Instrument Calibration and Frequency

Field equipment calibration requirements are contained in the SWQM Procedures. Post-calibration check error limits and the disposition resulting from errors are adhered to. Data collected from field instruments that do not meet the post-calibration check error limits specified in the SWQM Procedures will not be submitted for inclusion into SWQMIS.

Detailed laboratory calibrations are contained within the QM(s).

B6 Inspection/Acceptance of Supplies and Consumables

There is a reference in each of the laboratory QMs or QMP for accepting all field supplies and consumables. The Laboratory QAO is responsible for ensuring that laboratory staff check multiple containers from each case or 'Lot' of bottles received to confirm all containers are properly cleaned before releasing them to the field staff for use in collecting samples. In short, each tested container is filled with deionized water (DI), shaken to disperse any residual contamination that might be present within the bottle, then, that same DI water is tested as blanks for each parameter to confirm no contamination is present. All the labs also track each of the cases/Lots to ensure only containers confirmed to be clean are used. Refer to the laboratory QMs or QMPs for inspection/acceptance process for all supplies and consumables.

B7 Data Management

Data Management Process

Data are received by H-GAC from all sub-participants, including H-GAC's own data monitoring program. Each sub-participant has a paragraph below which gives a brief description of their data submission process.

- H-GAC's calibration sheets, field sheets, and COCs are kept in a three-ring binder at H-GAC office and are scanned and stored as digital files on H-GAC's data server. Electronic data from flow-measurement devices are downloaded into a raw data folder. These electronic files are saved in their proprietary formats developed by manufacturers of the flow measurement devices. The field sheets are entered into an Access database by a field staff member and then checked for transcription, reasonableness, and completion by a second staff member (or the same staff member on a different day if necessary). If there are nonconformances such as failed calibration, comments are added to the datasheet, database, and associated data are removed. The H-GAC DM begins processing the data from here; see detailed data processing and review procedures below.

- Harris County Pollution Control Services (HCPCS) submits Excel spreadsheets to H-GAC containing laboratory and field data. Data are exported from the department database and spreadsheets are reviewed by the CRP DM (or designee) for accuracy, consistency, and reasonableness (as indicated by inter-parameter correlations, historical parameter results, and screening values established by the TCEQ). Documented non-conformances from QAPP, SOP, and HCPCS QM requirements that may impact the data and problems encountered in collection or analysis of the samples are evaluated and addressed in the data submittal checklist. A Data Review Checklist is generated for each data packet. The checklist is prepared by the CRP DM and reviewed and approved by the Lab Manager (or designee), and CRP Field QAO or a representative of the field collection team.

- The City of Houston HHD field personnel and CRP DM enter field and laboratory data into an Access database from field sheets, COCs, and lab reports received from the Lab Supervisor. Printouts of any data from field equipment memory are printed out to be saved with field forms by CRP DM at the Park Avenue office where field staff are housed. The DM or designee reviews all data entries for accuracy then checks for outliers. A Data Review Checklist is generated for each data packet. Data are then submitted to the HHD-BLS Lab Manager for additional review before being sent back to the HHD CRP DM and submitted to H-GAC via Sharefile. The laboratory data management process is explained in the lab's QM - Section 23.8 Data Review.

- City of Houston RCUD field personnel turn in samples, the COC, and the field form to the sample receiver in the lab. The Sample Administrator enters some of the field data provided by sample collectors on COCs into the BTLIMS. Samples are analyzed by various chemists according to the required method and results are entered by the chemists performing each analysis, then reviewed by another chemist and the DM for accuracy, validity, QA/QC requirements, and finally validated in BTLIMS by Lab QAO. The laboratory manager also checks the accuracy of these data entry into BTLIMS. These tables are exported from the BTLIMS. The checklist for lab data accuracy, completeness,

reasonableness, and outliers is created and reviewed by the Lab QAO. The lab submits Excel spreadsheets to H-GAC containing laboratory data only. Documented non-conformances from QAPP, SOP, and RCUD QM requirements that may impact the data and problems encountered in collection or analysis of the samples are evaluated and addressed in the data review checklist.

The CRP Field Supervisor and/or CRP DM or designee inputs field data into an Excel worksheet. The data are reviewed for accuracy and completeness by a different person. A Data Review Checklist is generated for each data packet. The CRP Field Supervisor assists the CRP DM to complete a Data Review Checklist section for that field dataset before it is submitted to H-GAC independent of the lab data.

- SJRA collects samples from Lake Conroe and the Lake Woodlands watershed. Lake Conroe samples are submitted to the City of Houston RCUD Lab for analysis (see previous paragraph for lab data handling) and the Woodlands samples are sent to Eastex Laboratory. Electronic data files from the field datasondes are sent directly to H-GAC's DM for import during data processing. Additional field data are input to an Access database by SJRA's DM, where it is reviewed, formatted, and exported in Excel format for submission to H-GAC. H-GAC's DM merges the field data with the profile data and rechecks for outliers and formatting. H-GAC's QAO checks the data for accuracy and reasonableness. SJRA keeps the original field sheets. Copies of field sheets, COCs, calibration logs, and a Data Review Checklist are sent to H-GAC with every data submittal for Lake Conroe and The Woodlands samples. Eastex Lab sends electronic lab data results to SJRA and H-GAC at the same time for the H-GAC DM to merge with field data.

- EIH field staff enter field data collected by their program into an Excel spreadsheet and a second staff member reviews the entered data for accuracy and completeness. All supporting QA data are input to spreadsheets as well. The EIH CRP QAO and the EIH CRP DM review 50-100% of the data for accuracy, completeness, and reasonableness. A Data Review checklist is generated while data are being reviewed. Then, it is submitted to H-GAC along with electronic data. H-GAC downloads scanned field sheets and COCs from the EIH file sharing site for review during data processing. H-GAC's DM receives electronic data files from Eastex Lab and merges lab data with field data during data processing, prior to review and submission to TCEQ.

- TRIES Lab QAO submits all final lab data to the TRIES DM who merges the lab and field data together. The DM completes all data entry into an Excel spreadsheet, with exception to flow measurements taken by a SonTek Flowboat (M9 or RS5). If flow it taken by SonTek Flowboat (M9 or RS5), all .RIV files are submitted to HGAC along with Excel spreadsheets. Any supporting QA data are input to a separate Excel spreadsheet in the same workbook. The TRIES Field QAO or designee, TRIES Lab QAO and the TRIES CRP DM review more than 10% of data for accuracy, completeness, and reasonableness. A Data Review Checklist is completed by the DM and submitted to the TRIES CRP PM for final approval. The DM then submits the Excel spreadsheet for both the field and lab data along with scanned copies of the field sheets and COCs to H-GAC. TRIES Lab Manager keeps the original COCs and TRIES CRP QAO keeps the original field and flow sheets. If necessary, analytes analyzed by Eastex Laboratory are submitted directly to H-GAC for processing.

- Eastex Environmental Lab (Eastex) analyses water quality samples for H-GAC, EIH, SJRA-Lake Woodlands, and sometimes TRIES. Eastex also analyses all TKN and chlorophyll samples for sub-participants. Eastex is contacted to pick up samples and conducts the analyses listed on the COC. The raw data are reviewed by the Technical Director and then entered into LIMS by analysts and data entry personnel. The DM reviews data entry into LIMS for accuracy, then validates the data after reviewing for validity & QA/QC requirements. The Technical Director then further reviews the final data packet and completes the Data Review checklist before emailing to H-GAC.

When the H-GAC DM receives field and laboratory data from individual sub-participants, all electronic files are saved in the sub-participants 'Raw Data' folder. Electronic files may include tabular data, data summary checklists, calibration records, and laboratory quality assurance documents that are referenced during the data review and validation process. The data files may be in the form of Excel spreadsheets, Access tables, scanned field data collection forms, or files downloaded directly from field instrumentation. Transfer of data is through e-mail or file sharing services, such as ShareFile and OneDrive. When a data set or individual files are received

through any method, an e-mail confirmation is sent to the submitter. The e-mails are stored within an Outlook folder, which has a retention policy of 7 years. No modifications or corrections are made to files in the raw data folders.

Raw data files are then copied to the sub-participant's "Working Data" folder. All modifications to the data prior to SAS processing are performed on the files in the "Working Data" folder. Compilation of the submitted data, where necessary, is performed by the H-GAC DM. This typically involves combining and re-formatting spreadsheets or database tables, as well as other data management tasks. Field/variable names are changed to standardized formats, and parameter names in the raw data files are replaced by TCEQ parameter codes. Most of these tasks are performed after the data have been imported into the SAS environment for processing. In rare cases (e.g. to correct a data entry error or add data that were not entered prior to submission) H-GAC staff may enter data manually into the working file or add SAS code to make the change. Because the measurement performance specifications found in the A6 table may vary from one QAPP to another, the working data file does not include data collected under two different QAPPs. The file may, however, contain information from more than one month within the fiscal year covered by an individual QAPP.

Field and laboratory data for specific sample sites (monitoring stations) are combined during SAS processing. During SAS processing, all fields (columns) in the compiled dataset are renamed and reformatted to comply with SWQM data management guidelines per the Data Management Reference Guide for Surface Water Quality Monitoring. The fields containing sample site, sample date, sample time, and sample depth are renamed STATION_ID, ENDDATE, ENDTIME, and ENDDEPTH respectively. The parameter names used by the sub-participant are replaced by the TCEQ parameter code, preceded by an "S" to ensure that the data are read by SAS procedures as text data. Example: The field or column for dissolved oxygen is renamed "S00300".

The units of measurement as reported by the sub-participants may not comply with SWQM guidelines. In most cases the SAS code will make the conversion to the correct units. If it is discovered that the code for conversion has not been written or is incorrect, or if the sub-participants does not report the results consistently, manual conversion of the units may be necessary. In many cases, the SAS code will flag any records reported in the wrong units for other reasons (below or above screening values, for example), and the correction can be made using SAS. If the SAS code does not include an algorithm for reformatting dates and times, the H-GAC DM ensures that these data are formatted as mm/dd/yyyy and hh:mm respectively prior to import.

When a database table(s) or Excel spreadsheets containing all field and laboratory data have been compiled and reformatted (if needed) as described above, they are saved to the SAS input folder within the "SAS Data Processing" folder as an Access database or an Excel file. The input file should be renamed to include a code identifying the sub-participant and the date range of the data. As part of SAS processing, tables containing laboratory – specific quantitation limits, TCEQ minimum and maximum screening values, and site name / monitoring station ID correspondences are imported for comparison to the sub-participant data. At the beginning of the period under which a specific QAPP is applicable, the H-GAC DM ensures that the tables containing this information correspond (where applicable) to the A6 tables. The H-GAC DM updates these tables at other times as needed.

The H-GAC DM modifies the SAS program used for the sub-participant's most recent dataset for processing of the current data as follows. The most recent SAS program for the sub-participant is saved with a name identifying the sub-participant and date range of the data. All references to input and output files within the program are replaced with a name identifying the sub-participant and date range of the data, and the program is saved. The SAS program creates a new Access database in the "Access" folder within the "SAS Data Processing" folder. The database should have the same name as the input file. The database contains at least two tables: The "Input_Data_Matrix" that contains all data in the input file, and the "Flagged_Records_1" table. The "Flagged_Records_1" table identifies questionable data that must be investigated by the H-GAC DM and QAO. The table is generated from comparisons against screening levels to identify outliers, quantitation limit tables to identify improperly reported data, and a variety of other comparisons.

Each data set submitted to TCEQ has a file folder where the final pipe-delimited text files, Data Summary Report, Validator Report, and the temporary SWMQIS Validator Report link are stored. These files are submitted to TCEQ. In addition to final data set files, this folder contains any communication or files where data have been reviewed or validated by H-GAC staff or staff of sub-participants. Before changes are made to each data set, the H-GAC DM creates a "Data Summary Report" for that specific data set. The Data Summary Report is created from the most recent Data Summary Report for that sub-participant agency and saved with the name

of the current data set. All changes to the data and/or action taken on the data set are documented in this report. In addition, summary narratives discussing missing data, outliers that were verified and accepted, explanations of variations in reporting the data, failure to meet A6 table LOQs, and so forth are also included. Pertinent information from the data submittal checklist submitted by the sub-participant is also included in the final report. This report is submitted to TCEQ with each data set.

The data submittal checklist submitted by the sub-participant are reviewed. The SAS program may be re-run following action on flagged records where revision(s) to the input files were necessary. New tables and files are created and over-ride previously created SAS outputs. Once the SAS program is finalized for a data set, the H-GAC DM reviews the pipe-delimited text files. Each event and its relative results are reviewed for completeness, transcription errors, reasonableness, and conformity with the QAPP's A6 tables. Thus, all data submitted to TCEQ has been reviewed by the H-GAC DM. The completed review document (Excel spreadsheet) is saved in the data set's file folder.

The H-GAC DM's review file(s) and Data Summary Report is submitted to the H-GAC QAO. The event and result files and draft Data Summary Report are reviewed by the H-GAC QAO , who identifies all values that, in the H-GAC QAO's judgment, are unreasonable, are unverified outliers, or are otherwise questionable. Written comments and concerns are returned to the H-GAC DM for further investigation and correction of the dataset (where warranted). Newly identified discrepancies are investigated and documented on the Data Summary Report.

The H-GAC DM reviews the written comments, takes the appropriate action, and documents any additional actions on the Data Summary Report. If action is taken, the change is most commonly performed in the pipe-delimited text files and saved, over-riding the previously created text files. However, if the change(s) are significant, the SAS program may be re-run for that data set. Any changes to the text files or original input files for SAS program re-runs are documented in the Data Summary Report. The written comments from the H-GAC QAO, with annotations by the H-GAC DM, are retained with the data package as a record of data review and modification (where applicable).

The text files created by the SAS program and the final Data Summary Report are then submitted to TCEQ by the H-GAC DM. The data are first submitted to the SWQMIS (database) validation algorithm to obtain a Validation Report; the files are then e-mailed to the CRP PM at TCEQ. E-mails related to the submission of data are also stored in the data set's file folder.

If the TCEQ CRP PM identifies further problems with the dataset, the appropriate action is taken and revised data sets or data correction requests (where appropriate) are submitted. E-mail communications with the TCEQ CRP PM are retained on file with the data package to serve as a record of validation and modification of the dataset. Data management activities are documented in the Excel tracking document ("CRP Dataset Status") maintained by the H-GAC DM. The tracking document contains each data set submitted to TCEQ, its status, date of submission, and date of acceptance to SWQMIS. All data set files, and any correspondence related to the data set are saved within a single file folder for that data set. These folders are organized by fiscal year, data deliverable date, by sub-participant, and finally by the date period of the data set.

Data Dictionary

Terminology and field descriptions are included in the 2019 DMRG, or most recent version. A table outlining the entities that will be used when submitting data under this QAPP is included below for the purpose of verifying which entity codes are included in this QAPP.

Table B7.1 –Sampling Entity Data Submission Codes

Name of Monitoring Entity	Tag Prefix	Submitting Entity	Collecting Entity
Houston-Galveston Area Council	I	HG	HG
Harris County Pollution Control Services	I	HG	HC
City of Houston – Health Department	I	HG	HH
City of Houston – Regulatory Compliance and Utility Development*	I	HG	HW*
San Jacinto River Authority	I	HG	SJ
Environmental Institute of Houston	I	HG	UI
Texas Research Institute for Environmental Studies – Sam Houston State University	I	HG	TF

* Collecting entity code HW = Houston Water Quality Control is now HW = City of Houston Regulatory Compliance and Utility Development. HW was also formerly recognized as City of Houston Drinking Water Operations.

Data Errors and Loss

H-GAC stores original electronic data as "Raw Data" files. These files are saved in the original format and other than changing the name of a file, remains unchanged. Files that are changed prior to processing are saved in the "Working Data" folders. The "SAS Data Processing" network folder holds all input and output from SAS processing. The "Input" folder contains the file imported into SAS. Text files in the format required by SWQMIS are exported during SAS processing to the "Output" folder. All changes, validation, and verification actions on the data are documented in a Data Review Summary Report which accompanies each data set submittal (Appendix F).

E-mails and communications with sub-participants are saved with archived emails and filed with the dataset in the G-drive folders to facilitate traceability of reported results to raw data.

Each sub-participant has a paragraph below briefly discussing their data control mechanisms.

- H-GAC water samples are sent to Eastex Lab for analysis. (See Eastex lab details below.) Field data sheets are collected by the assigned staff for input to an Access Database and are reviewed for outliers. A second staff member reviews the data for transcription accuracy and reasonableness. A Data Summary Sheet is prepared by the H-GAC DM after SAS processing for review by H-GAC's QAO and for submission to TCEQ with the text files.

- Harris County Pollution Control Services (HCPCS) Details of the mechanisms for review and correction of errors and preventing loss of data are described in the HCPCS Laboratory Services Quality Manual, (most current version). All field data sheets are given to the HCPCS CRP Field QAO who applies the same review, correction of errors, and prevention of loss of data as the Lab QAO and CRP DM. A Data Review Checklist is completed for each set of data submitted to H-GAC.

- City of Houston HHD Details of the HHD-BLS Lab protocols for data reductions and review are described in their Environmental Laboratory Services Quality Manual, Section 23, (most current version). All field data are gathered by the HHD DM who inputs the data to their database, checks all data for outliers and reasonableness. Then, the data are reviewed by a second individual for transcription accuracy. A Data Review Checklist is completed for each set of data submitted to H-GAC.

- City of Houston RCUD Details of their Laboratory protocols for data reductions and review are described in their Quality Management Plan, Section 7, (most recent revision). All field data sheets are turned over at the Lake Houston office for data input to Excel spreadsheets. All data are reviewed for

transcription accuracy and reasonableness by the Field QAO or designee. The RCUD DM reviews the data for outliers and accuracy. A Data Review Checklist is completed for each set of data submitted to H-GAC.

- San Jacinto River Authority Lake Conroe water samples are sent to RCUD lab where all analyses are completed and results managed (See City of Houston RCUD above). A copy of the field data sheet is sent to the lab. RCUD CRP Lab DM/Lab QAO or designee perform all data management for Lake Conroe lab data. SJRA inputs field data to an Excel spreadsheet and submits spreadsheet to H-GAC DM along with scanned copies of field sheets, calibration forms, and COCs. Profile data from the Hydrolab Surveyor is downloaded to SJRA's data folders and saved in a raw data file and a working data file. The working data files are reviewed and reformatted as needed, then sent to H-GAC. A Data Review Checklist is completed by SJRA for field data while RCUD provides the Data Review Checklist for the lab data.

  The Woodlands samples are sent to Eastex Lab for analysis. (See Eastex Lab details below.) The Woodlands lab data results are managed by Eastex and sent to H-GAC directly by Eastex along with a Data Review Checklist for the same data. Information from the field data sheets are input to Excel spreadsheets by the SJRA DM who also checks the data for outliers and reasonableness. The SJRA CRP QAO or a second employee reviews the data for transcription accuracy and completeness. A Data Review Checklist is completed for each set of field data submitted to H-GAC along with scanned copies of field sheets, calibration forms, and COCs. SJRA performs data management for only The Woodlands field data because Eastex manages all the lab data.

  When all data are received from SJRA, RCUD Lab, and Eastex Lab, H-GAC's DM inputs the data to an ACCESS database, merges the related data sets, and reviews the data for outliers. H-GAC QAO reviews the data for accuracy, reasonableness, and completeness. A Data Summary Sheet is submitted to TCEQ with each data set from Lake Conroe and/or The Woodlands.

- Eastex Lab Details of their protocols for data reduction and review are described in the Eastex Laboratory Quality Manual, (most recent version), Sections 8.1. A Data Review Checklist is completed for each set of data submitted to H-GAC. Eastex sends data results from all CRP monitoring to H-GAC.

- EIH water samples are sent to Eastex Lab for analysis. (See Eastex Lab details above.) Field data sheets are collected and information input to Excel spreadsheets by the EIH CRP DM or designee who also checks the data for outliers and reasonableness. The EIH CRP QAO also reviews the data for transcription accuracy and reasonableness. A Data Review Checklist is completed for each set of data submitted to H-GAC.

- TRIES Details of the protocols for data reductions and review are described in their TRIES Analytical Lab Quality Manual, Section 27 (most current version). The TRIES DM collects all field data sheets and immediately inputs data into an Excel spreadsheet while also checking for data outliers and reasonableness. If a SonTek flowboat (M9 or RS5) is used, the TRIES DM also collates .RIV files for data review. The TRIES CRP Field QAO also reviews the data for transcription accuracy and reasonableness. A Data Review Checklist is completed for each set of data submitted to H-GAC.

Record Keeping and Data Storage

As each data set is processed by H-GAC, all hard copies of data and/or field forms are organized into packets. All correspondence or reports related to the data set are to be printed and placed in the packet of information, including but not limited to the H-GAC QAO review comments, the draft and final Data Summary Reports. Any other documentation related to that specific data set is also to be attached. Each packet of information is placed in a file storage box for long term storage.

Each local agency submits electronic data along with scanned copies of field sheets and COC forms. In addition, the local agency is required to submit a Data Review Checklist (Appendix F) to H-GAC. Electronic data are stored in folders on H-GAC network as "raw data" and as copies for data management, verification, and validation. Daily and weekly backups are completed on H-GAC's server. Hard copies are filed in filing cabinets or file boxes for use as needed. Data more than 2 years old may be stored off-site storage according to H-GAC

procedures. All data are maintained indefinitely by H-GAC and for at least seven (7) years by all sub-participants.

Each sub-participant has a paragraph below briefly discussing their Record Keeping and Data Storage practices.

- HCPCS Details of the HCPCS records management and data storage procedures may be found in Section 6 of the HCPCS Laboratory Services Quality Manual, (most current version). The laboratory DM manages all the data – hard copy and electronic – for both field and lab.

- City of Houston HHD-BLS Details of their protocols for records management and data storage procedures are described in their Environmental Laboratory Services Quality Manual, Section 6 and Section 15, (most current version). HHD field data are housed and electronically stored at HHD offices located Park Place, Houston. Electronic data are stored in an Access Database which is maintained by the HHD field office.

- City of Houston RCUD Laboratory Details of their protocols for records management and data storage procedures are described in their Quality Management Plan, Section 13, (most recent revision). Original RCUD field data are stored at their field office located at Lake Houston. Copies of all field sheets are given to the lab to be kept with lab analysis paperwork. Electronic data are stored in an Excel spreadsheet by the field supervisor.

- SJRA will store all hard copies of field and lab data from both Lake Conroe and The Woodlands sample sites in the Program Manager's Lake Conroe office. Electronic data (raw and working files) will be stored on a shared computer server at the same location in Excel or Access format.

- Eastex Environmental Lab Details of the Eastex *Electronic Record Storage* system is described in the Laboratory's Quality Assurance Manual, (most current version), Sections 8.4.

- EIH stores hard copy and electronic data at their offices on the University of Houston-Clear Lake campus. Electronic data are stored in Excel spreadsheets and various workbooks. The EIH CRP DM maintains the files.

- TRIES Details of the protocols for records management and data storage procedures are described in their TRIES Analytical Lab Quality Manual, Sections 16.1 and 16.2 (most current version). All field data will be stored electronically in an Excel spreadsheet and in hard copy format at TRIES. The TRIES DM and the TRIES Lab QAO will maintain the data.

Data Handling, Hardware, and Software Requirements

H-GAC maintains several networked servers to store and manage agency data, including CRP data. All computers are equipped with the most recent available Microsoft Office package including MS Excel and MS Access. Additionally, the SAS software is available on the DM's and another computer if an alternate SAS Operator is needed.

Information Resource Management Requirements

Data will be managed in accordance with the TCEQ DMRG (most recent revision) and applicable H-GAC information resource management policies. See the most current version of H-GAC's Data Analytics and Research Department's, formerly the Community & Environmental Planning Department, *Geospatial Data Management Plan*. The most current version of this document is found on H-GAC's web site at https://www.H-GAC.com/community-and-environmental-planning-publications/water-resources. It is updated approximately every two years. This plan outlines how both tabular (non-geographic) and spatial (geographic) datasets are captured, manipulated, analyzed, stored, and displayed with the Geospatial/GIS environment as it relates to sharing of data, development of geospatial applications, cartography, and underlying GIS resources.

GPS equipment may be used as a component of the information required by the station location (SLOC) request process for creating the certified positional data that will ultimately be entered into SWQMIS database. Positional data obtained by CRP grantees using a GPS will follow the TCEQ's OPP 8.11 policy regarding the collection and management of positional data. Positional data may be acquired with a GPS and verified with

photo interpolation using a certified source, such as Google Earth or Google Maps. The verified coordinates and map interface can then be used to develop a new SLOC.

C1 Assessments and Response Actions

The following table presents the types of assessments and response actions for data collection activities applicable to the QAPP.

Table C1.1 Assessments and Response Requirements

Assessment Activity	Approximate Schedule	Responsible Party	Scope	Response Requirements
Status Monitoring Oversight	Continuous	H-GAC	Monitoring of the project status and records to ensure requirements are being fulfilled	Report to TCEQ in quarterly report. Submit CAPs to TCEQ as needed.
Monitoring Systems Audit of Basin Planning Agency	Dates to be determined by TCEQ CRP	TCEQ	Field sampling, handling and measurement; facility review; and data management as they relate to CRP	30 days to provide corrective actions response to the TCEQ
Monitoring Systems Audit of Program Sub-participants	Dates to be determined by H-GAC (at least once per biennium)	H-GAC	Field sampling, handling and measurement; facility review; and data management as they relate to CRP	30 days to respond in writing to the H-GAC. H-GAC will report findings to TCEQ in progress report.
Laboratory Assessment	Dates to be determined by TCEQ	TCEQ Laboratory Assessor	Analytical and quality control procedures employed at the laboratory and the contract laboratory	30 days to provide corrective actions response to the TCEQ

Corrective Action Process for Deficiencies

Deficiencies are any deviation from the QAPP, SWQM Procedures, DMRG, SOPs, or other applicable guidance documents. Deficiencies may invalidate resulting data and require corrective action. Deficiencies that can be prevented from occurring again in the future require a CAP. TCEQ QA staff recognize that deficiencies may occur that are out of the control of H-GAC staff and/or their sub-participant's staff. Such deficiencies do not require a CAP. However, when a deficiency impacts data quality or quantity, the TCEQ CRP PM must be notified (within three business days of discovery) and the data loss noted in the associated monitoring activities report and data summary. Corrective action for deficiencies may include for samples to be discarded and re-collected. Deficiencies are documented in logbooks, field data sheets, etc. by field or laboratory staff, are communicated to the H-GAC PM (or other appropriate staff) and should be subject to periodic review so their responses can be uniform, and their frequency tracked. It is the responsibility of the H-GAC PM, in consultation with the H-GAC QAO, to ensure that the actions and resolutions to the problems are documented and that records are maintained in accordance with this QAPP.

TCEQ staff are tasked with reviewing CAPs written by H-GAC concerning deficiencies associated with CRP work. This includes the TCEQ CRP Team Leader, PM, Project QAS, and Lead QAS. The H-GAC PM or QAO should submit CAPs to their assigned TCEQ CRP PM in a timely manner. H-GAC can begin implementing corrective actions without TCEQ approval. However, TCEQ may request alternate or modified corrective actions if deemed necessary.

The CAP form used by H-GAC and all sub-participants is provided in Figure C1.1. While CAPs need not adhere to this specific format, they must include information for all of the listed elements. Incomplete CAPs will be returned to the H-GAC QAO for revision. All CAPs for a FY should be cataloged in the quarterly progress reports submitted to the TCEQ CRP PM by the H-GAC QAO. This documentation should include, at a minimum, the report number, date(s) of deficiency occurrence, description of deficiency, action taken, CAP status, and the date

the CAP was closed (if applicable).

Significant conditions that, if uncorrected, could have a serious effect on safety or on the validity or integrity of data will be reported to the TCEQ immediately.

The H-GAC PM is responsible for ensuring that corrective actions have been implemented and tracks deficiencies and corrective actions. Records of audit findings and corrective actions are maintained by the H-GAC PM. Audit reports and associated corrective action documentation will be submitted to the TCEQ with the quarterly progress reports.

If audit findings and corrective actions cannot be resolved, then the authority and responsibility for terminating work are specified in the TCEQ QMP and in agreements in contracts between participating organizations.

Corrective Action

CAPs should:

- Identify the problem, nonconformity, or undesirable situation
- Identify immediate remedial actions if possible
- Identify the underlying cause(s) of the problem
- Describe the programmatic impact
- Identify whether the problem is likely to recur, or occur in other areas
- Assist in determining the need for corrective action and actions to prevent reoccurrence
- Employ problem-solving techniques to verify causes, determine solution, and develop an action plan
- Identify personnel responsible for action
- Establish timelines and provide a schedule
- Document the corrective action and action(s) to prevent reoccurrence

Flow charts have been developed to facilitate the process (see Figures C1.2 and C1.3: Corrective Action Process for Deficiencies).

Figure C1.1 Corrective Action Plan Form

Corrective Action Plan		
Report No.:	**Issued By:**	**Date Issued:**
Monitoring Entity Involved:		**Date Closed:**
Description of deficiency:		
Root Cause of deficiency:		
Programmatic Impact of deficiency:		
Does the seriousness of the deficiency require immediate reporting to the TCEQ? If so, when was it?		
Corrective Action to address the deficiency and prevent its recurrence:		
Proposed Completion Date for Each Action:		
Individual(s) Responsible for Each Action:		
Method of Verification:		

Figure C1.2 Corrective Action Process for Deficiencies at H-GAC

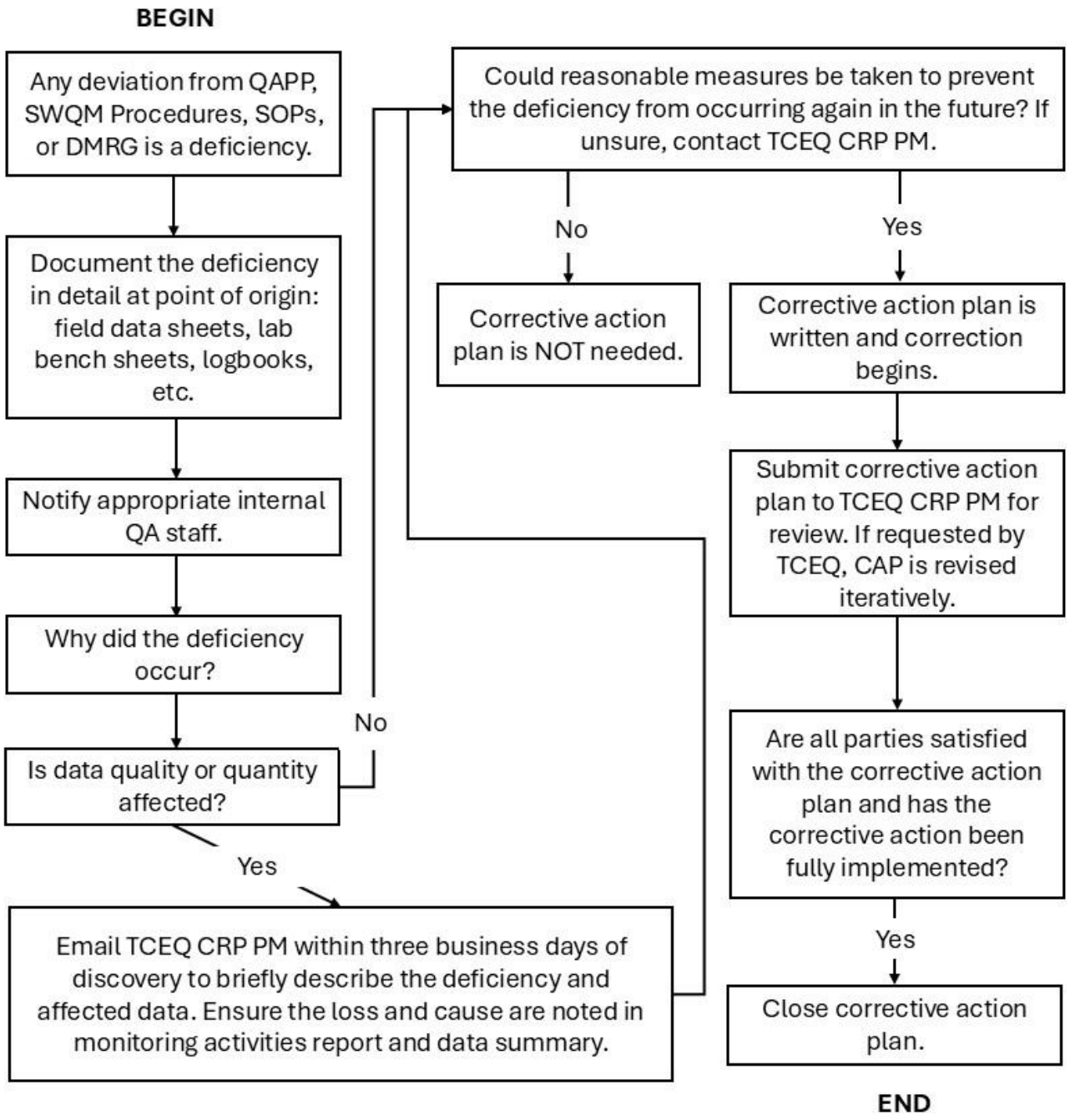
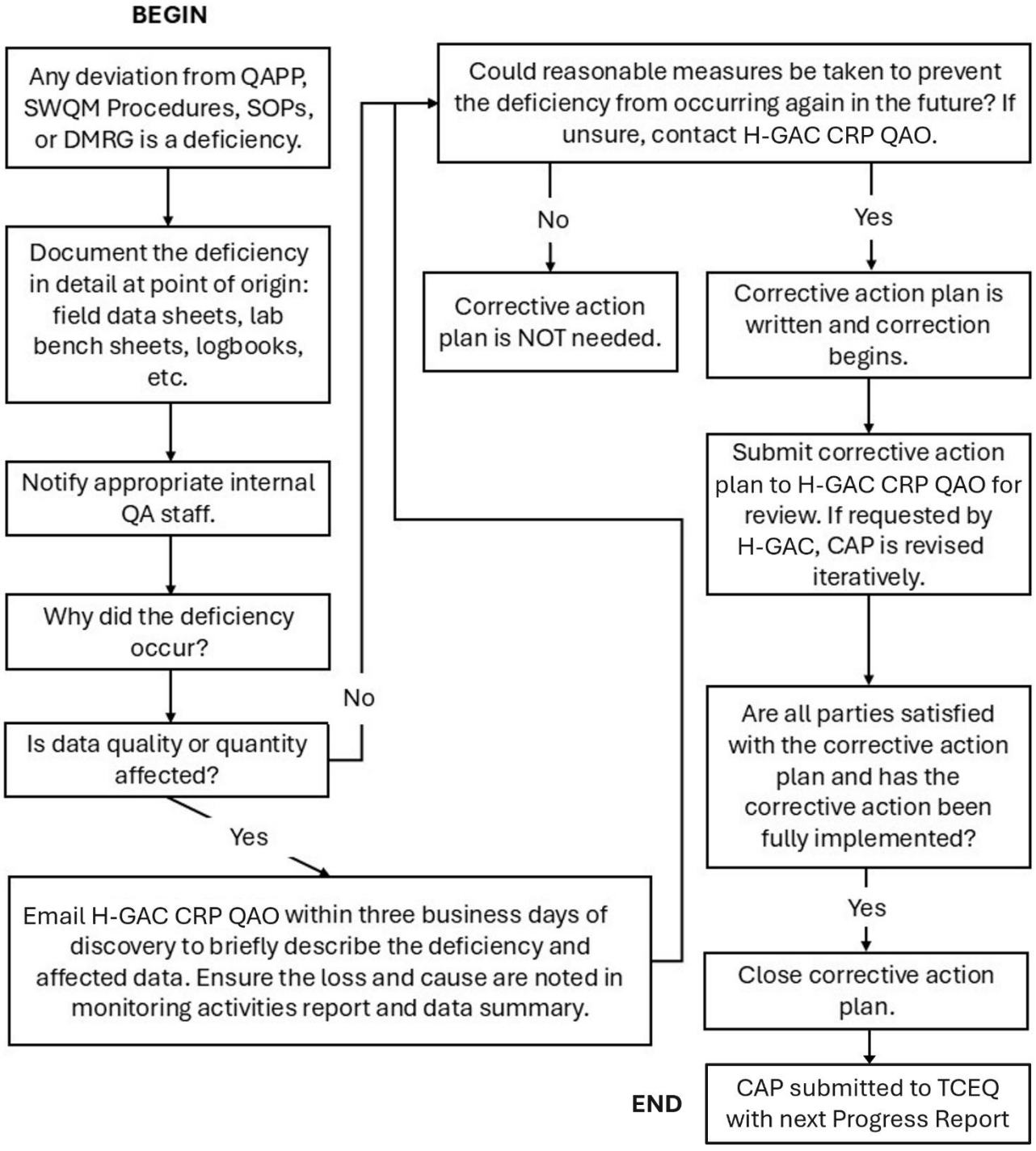


Figure C1.3 Corrective Action Process for Deficiencies at Sub-participant Organizations

Sub-participants should use the CAP form included in Figure C1.1 and coordinate with the H-GAC CRP QAO to receive the CAP Report No.



C2 Reports to Management

Table C2.1 QA Management Reports

Type of Report	Frequency (daily, weekly, monthly, quarterly, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation	Report Recipients
Quarterly project reports from sub-participants	Quarterly	Within 10 days of end of quarter	Sub-participant PM	H-GAC QAO
Corrective Action Plans	As Needed	With quarterly reports to TCEQ or sooner depending on severity	Sub-participant Field & Laboratory Staff; H-GAC Staff & QAO	H-GAC QAO; TCEQ CRP PM
Progress Reports	Quarterly	December 15, 2025 March 15, 2026 June 15, 2026 September 15, 2026 December 15, 2026 March 15, 2027 June 15, 2027 August 15, 2027	H-GAC PM or Designee	TCEQ CRP PM
Monitoring Systems Audit Report and Response	Once per biennium	Copies of Monitoring System Audit reports to be included with quarterly report to TCEQ	H-GAC QAO	TCEQ CRP PM
Data Summary	With data delivery	As Needed	H-GAC DM	TCEQ CRP PM

Reports to H-GAC Project Management

H-GAC CRP QAO is required to report the status of implementation of the procedures discussed in this project plan and, thereby, the status of data quality. This information is gathered during quarterly process reports from each sub-participant as well as information provided at meetings of the Regional Monitoring Workgroup. All local program representatives are required to give oral presentations which include information about their quarterly monitoring activities. H-GAC schedules internal bi-weekly meetings to update the H-GAC's team members regarding status of deliverables and tasks.

During review and evaluation of submitted data, H-GAC's DM and/or H-GAC's QAO will investigate suspected problems with the data. The QAO for each participating local agency is informed either informally (phone call) or by e-mail memoranda of any quality assurance problems encountered. With the local agency's help the issue will be investigated further and a resolution adopted. The resolution for each issue will be documented on the Data Summary Report that accompanies each dataset submitted to TCEQ. When H-GAC's DM submits data to TCEQ, a summary of this information will be transmitted by H-GAC's DM or QAO to H-GAC's PM.

Information regarding the monitoring activities of sub-participants will then be reported to the TCEQ PM by means of quarterly progress reports required under the CRP. The results of field and/or laboratory bi-annual monitoring system audits will be detailed in reports to the local program managers and/or the person who directly supervises field activities. This information will also be reported to the TCEQ by means of status reports to be included in the quarterly progress reports. Responses from local agencies regarding the audit reports and findings will also be included in the quarterly progress reports to TCEQ.

Reports to TCEQ Project Management

All reports detailed in this section are contract deliverables and are transferred to the TCEQ in accordance with

contract requirements.

Progress Report
Summarizes the H-GAC's activities for each task; reports monitoring status, problems, delays, deficiencies, status of open CAPs, and documentation for completed CAPs; and outlines the status of each task's deliverables.

Monitoring Systems Audit Report and Response
Following any audit performed by the H-GAC, a report of findings, recommendations and response is sent to the TCEQ in the quarterly progress report following the completion of the audit.

Data Summary
Contains basic identifying information about the data set and comments regarding inconsistencies and errors identified during data verification and validation steps or problems with data collection efforts (e.g., deficiencies).

Reports by TCEQ Project Management

Contractor Evaluation
The H-GAC participates in a contractor evaluation by the TCEQ annually for compliance with administrative and programmatic standards. Results of the evaluation are submitted to the TCEQ Financial Administration Division, Procurement and Contracts Section.

D1 Data Review, Verification, and Validation

All field and laboratory data will be reviewed and verified for integrity, continuity, reasonableness, and conformance to project requirements, and then validated against the project objectives and measurement performance specifications which are listed in Section A6 of this QAPP. Only those data which are supported by appropriate quality control data and meet the measurement performance specifications defined for this project will be considered acceptable and will be reported to the TCEQ for entry into SWQMIS.

The procedures for verification and validation of data are described below. Local agency DMs and H-GAC CRP DM are responsible for ensuring that field data are properly reviewed, verified, and submitted in the required format to the TCEQ CRP PM. Likewise, the Laboratory Managers of HCPCS, HHD, RCUD, TRIES, and Eastex laboratories are responsible for ensuring that laboratory data are reviewed, verified, and submitted in the required format to H-GAC CRP DM. Finally, H-GAC CRP QAO and/or DM are responsible for confirming the validation of all collected data and ensuring that all reported data meet the data quality objectives of the project and are suitable for reporting to TCEQ.

Verification and Validation Methods

All field and laboratory data will be reviewed, verified and validated to ensure they conform to project specifications.

Data review, verification, and validation will be performed using self-assessments as well as peer and management review as appropriate to the project task. The data review tasks to be performed by field and laboratory staff are listed in the first two columns of Table D1.1. Potential errors are identified by examination of documentation and by manual examination of corollary or unreasonable data; this analysis may be computer-assisted. If a question arises or an error is identified, the manager of the task responsible for generating the data is contacted to resolve the issue. Issues which can be corrected are corrected and documented. If an issue cannot be corrected, the task manager consults with the higher-level project management to establish the appropriate course of action, or the data associated with the issue are rejected and not reported to the TCEQ for storage in SWQMIS. Field and laboratory reviews, verifications, and validations are documented.

After the field and laboratory data are reviewed, another level of review is performed once the data are combined

into a data set. This review step, as specified in Table D1.1, is performed by the H-GAC DM and QAO. Data review, verification, and validation tasks to be performed on the data set include, but are not limited to, the confirmation of laboratory and field data review, evaluation of field QC results, additional evaluation of anomalies and outliers, analysis of sampling and analytical gaps, and confirmation that all parameters and sampling sites are included in the QAPP.

The Data Review Checklist (see Appendix F) covers three main types of review: data format and structure, data quality review, and documentation review. The Data Review Checklist is completed and sent with the water quality data submitted to the TCEQ to ensure that the review process is being performed.

Another element of the data validation process is consideration of any findings identified during the monitoring systems audit conducted by the TCEQ CRP Lead QAS. Any issues requiring corrective action must be addressed, and the potential impact of these issues on previously collected data will be assessed. After the data are reviewed and documented, the H-GAC PM validates that the data meet the data quality objectives of the project and are suitable for reporting to TCEQ.

If any requirements or specifications of the CRP are not met, based on any part of the data review, the responsible party should document the nonconforming activities and submit the information to the H-GAC DM with the data in the data summary (See Appendix F). All failed QC checks, missing samples, missing analytes, missing parameters, and suspect results should be discussed in the data summary.

Data review tasks outlined in Table D1.1 are consistent among H-GAC and all monitoring sub-participants. For a detailed list of the roles and responsibilities of each sub-participant organization please refer to A8 Description of Responsibilities.

Table D1.1: Data Review Tasks for H-GAC and all sub-participant monitoring partners (HCPCS, HHD, RCUD, SJRA, Eastex, EIH, and TRIES).

Data to be Verified	Field Task (to be completed by the field staff, and/or field supervisor)	Laboratory Task (to be completed by the sample custodian, laboratory technician, or laboratory manager)	QA Task (to be completed by the sub-participant lab and/or field QAO)	QA Task (to be completed by the H-GAC QAO)	Data Manager Task (to be completed by the sub-participant DM)	Data Manager Task (to be completed by the H-GAC DM)
Sample documentation complete; samples labeled, sites identified	X	X	X		X	
Standards and reagents traceable	X	X	X			
Chain of custody complete/acceptable	X	X	X		X	X
NELAP Accreditation is current		X	X			
Sample preservation and handling acceptable	X	X	X			
Holding times not exceeded	X	X	X		X	X
Collection, preparation, and analysis consistent with SOPs and QAPP	X	X	X	X	X	X
Field documentation (e.g., biological, stream habitat) complete	X		X		X	
Laboratory instrument calibration data complete		X	X		X	
QC samples analyzed at required frequency		X	X		X	
QC results meet performance and program specifications	X	X	X		X	
Analytical sensitivity (LOQ/AWRL) consistent with QAPP		X	X		X	X
Results, calculations, transcriptions checked	X	X	X	X	X	X
Laboratory bench-level review performed		X	X			
All laboratory samples analyzed for all scheduled parameters		X	X	X	X	X
Corollary data agree	X	X	X	X	X	X
Nonconforming activities documented			X	X		
Outliers confirmed and	X	X	X	X	X	X

documented; reasonableness check performed						
Dates formatted correctly	X	X			X	X
Depth reported correctly and in correct units	X				X	X
TAG IDs correct						X
TCEQ Station ID number assigned	X	X	X	X	X	X
Valid parameter codes					X	X
Codes for submitting entity(ies), collecting entity(ies), and monitoring type(s) used correctly						X
Time based on 24-hour clock	X	X			X	X
Check for transcription errors	X	X	X	X	X	X
Sampling and analytical data gaps checked (e.g., all sites for which data are reported are on the coordinated monitoring schedule)			X	X	X	X
Field instrument pre- and post-calibration check results within limits	X		X		X	
10% of data manually reviewed			X	X	X	X

D2 Reconciliation with User Requirements

Data produced in this project, and data collected by other organizations (e.g., USGS, TCEQ, etc.), will be analyzed and reconciled with project data quality requirements. Data which do not meet requirements will not be submitted to SWQMIS nor will be considered appropriate for any of the uses noted in Section A4.

Appendix A: Measurement Performance Specifications (Table A6.1–7)

Measurement performance specifications define the data quality needed to satisfy project objectives. To this end, measurement performance specifications are qualitative and quantitative statements that:

- clarify the intended use of the data
- define the type of data needed to support the end use
- identify the conditions under which the data should be collected

Appendix A of the QAPP addresses measurement performance specifications, including:

- analytical methodologies
- AWRLs
- limits of quantitation
- bias limits for LCSs
- precision limits for laboratory control sample duplicates (LCSDs)
- completeness goals
- qualitative statements regarding representativeness and comparability

The items identified above should be considered for each type of monitoring activity. The CRP encourages that data be collected to address multiple objectives to optimize resources; however, caution should be applied when attempting to collect data for multiple purposes because measurement performance specifications may vary according to the purpose. For example, limits of quantitation may differ for data used to assess standards attainment and for trend analysis. When planning projects, first priority will be given to the main use of the project data and the data quality needed to support that use, then secondary goals will be considered.

Procedures for laboratory analysis must be in accordance with the most recently published edition of Standard Methods for the Examination of Water and Wastewater, 40 CFR 136, or otherwise approved independently. Only data collected that have a valid TCEQ parameter code assigned in Tables A6 are stored in SWQMIS.

TABLE A6.1a Measurement Performance Specifications for Houston-Galveston Area Council (H-GAC)					
Field Parameters					
Parameter*	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
TEMPERATURE, WATER (DEGREES CENTIGRADE)	DEG C	water	SM 2550 B and TCEQ SOP V1	00010	Field
TRANSPARENCY, SECCHI DISC (METERS)	meters	water	TCEQ SOP V1	00078	Field
SPECIFIC CONDUCTANCE,FIELD (US/CM @ 25C)	us/cm	water	EPA 120.1 and TCEQ SOP, V1	00094	Field
OXYGEN, DISSOLVED (MG/L)	mg/L	water	SM 4500-O G and TCEQ SOP V1	00300	Field
PH (STANDARD UNITS)	s.u.	water	EPA 150.1 and TCEQ SOP V1	00400	Field
DAYS SINCE PRECIPITATION EVENT (DAYS)	days	other	TCEQ SOP V1	72053	Field
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE	meters	water	TCEQ SOP V2	82903	Field
MAXIMUM POOL WIDTH AT TIME OF STUDY (METERS)**	meters	other	TCEQ SOP V2	89864	Field
MAXIMUM POOL DEPTH AT TIME OF STUDY(METERS)**	meters	other	TCEQ SOP V2	89865	Field
POOL LENGTH, METERS**	meters	other	TCEQ SOP V2	89869	Field
% POOL COVERAGE IN 500 METER REACH**	%	other	TCEQ SOP V2	89870	Field
WIND INTENSITY (1=CALM,2=SLIGHT,3=MOD.,4=STRONG)	NU	other	NA	89965	Field
PRESENT WEATHER (1=CLEAR,2=PTCLDY,3=CLDY,4=RAIN,5=OTHER)	NU	other	NA	89966	Field
WATER SURFACE(1=CALM,2=RIPPLE,3=WAVE,4=WHITECAP)	NU	water	NA	89968	Field
WATER ODOR (1=SEWAGE, 2=OILY/CHEMICAL, 3=ROTTEN EGGS, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER (WRITE IN COMMENTS))	NU	water	NA	89971	Field
WATER COLOR 1=BRWN 2=RED 3=GRN 4=BLCK 5=CLR 6=OT	NU	water	NA	89969	Field

* Reporting to be consistent with SWQM guidance and based on measurement capability.
** To be routinely reported when collecting data from perennial pools.

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).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416).

TABLE A6.1b Measurement Performance Specifications for Houston-Galveston Area Council (H-GAC)					
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 A6.1c 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 2540D	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	0.06	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**	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.

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 A6.1e Measurement Performance Specifications for Houston-Galveston Area Council (H-GAC)					
24 Hour Parameters in Water					
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
TEMPERATURE, WATER (DEGREES CENTIGRADE), 24HR AVG	DEG C	Water	TCEQ SOP V1	00209	field
WATER TEMPERATURE, DEGREES CENTIGRADE, 24HR MAX	DEG C	Water	TCEQ SOP V1	00210	field
TEMPERATURE, WATER (DEGREES CENTIGRADE) 24HR MIN	DEG C	Water	TCEQ SOP V1	00211	field
SPECIFIC CONDUCTANCE, US/CM, FIELD, 24HR AVG	uS/cm	Water	TCEQ SOP V1	00212	field
SPECIFIC CONDUCTANCE, US/CM, FIELD, 24HR MAX	uS/cm	Water	TCEQ SOP V1	00213	field
SPECIFIC CONDUCTANCE, US/CM, FIELD, 24HR MIN	uS/cm	Water	TCEQ SOP V1	00214	field
PH, S.U., 24HR MAXIMUM VALUE	std. units	Water	TCEQ SOP V1	00215	field
PH, S.U., 24HR, MINIMUM VALUE	std. units	Water	TCEQ SOP V1	00216	field
SALINITY, 24-HR, MAXIMUM, PPT	ppt	Water	TCEQ SOP V1	00217	field
SALINITY, 24-HR, AVERAGE, PPT	ppt	Water	TCEQ SOP V1	00218	field
SALINITY, 24-HR, MINIMUM, PPT	ppt	Water	TCEQ SOP V1	00219	field
SALINITY, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	00220	field
WATER TEMPERATURE, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	00221	field
SPECIFIC CONDUCTANCE, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	00222	field
pH, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	00223	field
DISSOLVED OXYGEN, 24-HOUR MIN. (MG/L) MIN. 4 MEA	mg/l	Water	TCEQ SOP V1	89855	field
DISSOLVED OXYGEN, 24-HOUR MAX. (MG/L) MIN. 4 MEA	mg/l	Water	TCEQ SOP V1	89856	field
DISSOLVED OXYGEN, 24-HOUR AVG. (MG/L) MIN. 4 MEA	mg/l	Water	TCEQ SOP V1	89857	field
DISSOLVED OXYGEN, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	89858	field
References: TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).					

TABLE A6.2a Measurement Performance Specifications for Harris County Pollution Control Services (HCPCS)					
Field Parameters					
Parameter*	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
TEMPERATURE, WATER (DEGREES CENTIGRADE)	DEG C	water	SM 2550 B and TCEQ SOP V1	00010	Field
TRANSPARENCY, SECCHI DISC (METERS)	meters	water	TCEQ SOP V1	00078	Field
SPECIFIC CONDUCTANCE,FIELD (US/CM @ 25C)	us/cm	water	EPA 120.1 and TCEQ SOP, V1	00094	Field
OXYGEN, DISSOLVED (MG/L)	mg/L	water	SM 4500-O G and TCEQ SOP V1	00300	Field
PH (STANDARD UNITS)	s.u.	water	EPA 150.1 and TCEQ SOP V1	00400	Field
SALINITY - PARTS PER THOUSAND	PPT	water	SM 2520 and TCEQ SOP V1	00480	Field
DAYS SINCE PRECIPITATION EVENT (DAYS)	days	other	TCEQ SOP V1	72053	Field
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE	meters	water	TCEQ SOP V2	82903	Field
WIND INTENSITY (1=CALM,2=SLIGHT,3=MOD.,4=STRONG)	NU	other	NA	89965	Field
PRESENT WEATHER (1=CLEAR,2=PTCLDY,3=CLDY,4=RAIN,5=OTHER)	NU	other	NA	89966	Field
WATER SURFACE(1=CALM,2=RIPPLE,3=WAVE,4=WHITECAP)	NU	water	NA	89968	Field
TIDE STAGE 1=LOW,2=FALLING,3=SLACK,4=RISING,5=HI	NU	water	NA	89972	Field
WATER ODOR (1=SEWAGE, 2=OILY/CHEMICAL, 3=ROTTEN EGGS, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER (WRITE IN COMMENTS))	NU	water	NA	89971	Field
WATER COLOR 1=BRWN 2=RED 3=GRN 4=BLCK 5=CLR 6=OT	NU	water	NA	89969	Field

* Reporting to be consistent with SWQM guidance and based on measurement capability.

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).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416).

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 2540D	00530	5	4	NA	NA	NA	HCPCS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM4500 NH3-D	00610	0.1	0.1	70-130	20	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	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	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 D-6503	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 A6.3a Measurement Performance Specifications for City of Houston, Health Department (HHD)					
Field Parameters					
Parameter*	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
TEMPERATURE, WATER (DEGREES CENTIGRADE)	DEG C	water	SM 2550 B and TCEQ SOP V1	00010	Field
TRANSPARENCY, SECCHI DISC (METERS)	meters	water	TCEQ SOP V1	00078	Field
SPECIFIC CONDUCTANCE,FIELD (US/CM @ 25C)	us/cm	water	EPA 120.1 and TCEQ SOP, V1	00094	Field
OXYGEN, DISSOLVED (MG/L)	mg/L	water	SM 4500-O G and TCEQ SOP V1	00300	Field
PH (STANDARD UNITS)	s.u.	water	EPA 150.1 and TCEQ SOP V1	00400	Field
SALINITY - PARTS PER THOUSAND	PPT	water	SM 2520 and TCEQ SOP V1	00480	Field
DAYS SINCE PRECIPITATION EVENT (DAYS)	days	other	TCEQ SOP V1	72053	Field
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE	meters	water	TCEQ SOP V2	82903	Field
MAXIMUM POOL WIDTH AT TIME OF STUDY (METERS)**	meters	other	TCEQ SOP V2	89864	Field
MAXIMUM POOL DEPTH AT TIME OF STUDY(METERS)**	meters	other	TCEQ SOP V2	89865	Field
POOL LENGTH, METERS**	meters	other	TCEQ SOP V2	89869	Field
% POOL COVERAGE IN 500 METER REACH**	%	other	TCEQ SOP V2	89870	Field
WIND INTENSITY (1=CALM,2=SLIGHT,3=MOD.,4=STRONG)	NU	other	NA	89965	Field
PRESENT WEATHER (1=CLEAR,2=PTCLDY,3=CLDY,4=RAIN,5=OTHER)	NU	other	NA	89966	Field
WATER SURFACE(1=CALM,2=RIPPLE,3=WAVE,4=WHITECAP)	NU	water	NA	89968	Field
TIDE STAGE 1=LOW,2=FALLING,3=SLACK,4=RISING,5=HI	NU	water	NA	89972	Field
WATER ODOR (1=SEWAGE, 2=OILY/CHEMICAL, 3=ROTTEN EGGS, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER (WRITE IN COMMENTS))	NU	water	NA	89971	Field
WATER COLOR 1=BRWN 2=RED 3=GRN 4=BLCK 5=CLR 6=OT	NU	water	NA	89969	Field

* Reporting to be consistent with SWQM guidance and based on measurement capability.
** To be routinely reported when collecting data from perennial pools.

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).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416).

TABLE A6.3b Measurement Performance Specifications for City of Houston, Health Department (HHD)					
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
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 A6.3c 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 2540D	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**	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.

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

Field Parameters

Parameter*	Units	Matrix	Method	Parameter Code	Lab
TEMPERATURE, WATER (DEGREES CENTIGRADE)	DEG C	water	SM 2550 B and TCEQ SOP V1	00010	Field
TRANSPARENCY, SECCHI DISC (METERS)	meters	water	TCEQ SOP V1	00078	Field
SPECIFIC CONDUCTANCE,FIELD (US/CM @ 25C)	us/cm	water	EPA 120.1 and TCEQ SOP, V1	00094	Field
OXYGEN, DISSOLVED (MG/L)	mg/L	water	SM 4500-O G and TCEQ SOP V1	00300	Field
PH (STANDARD UNITS)	s.u.	water	EPA 150.1 and TCEQ SOP V1	00400	Field
DAYS SINCE PRECIPITATION EVENT (DAYS)	days	other	TCEQ SOP V1	72053	Field
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE	meters	water	TCEQ SOP V2	82903	Field
RESERVOIR STAGE (FEET ABOVE MEAN SEA LEVEL)***	FT ABOVE MSL	water	TWDB	00052	Field
RESERVOIR PERCENT FULL***	% RESERVOIR CAPACITY	water	TWDB	00053	Field
RESERVOIR ACCESS NOT POSSIBLE LEVEL TOO LOW ENTER 1 IF REPORTING	NS	other	TCEQ Drought Guidance	00051	Field
MAXIMUM POOL WIDTH AT TIME OF STUDY (METERS)**	meters	other	TCEQ SOP V2	89864	Field
MAXIMUM POOL DEPTH AT TIME OF STUDY(METERS)**	meters	other	TCEQ SOP V2	89865	Field
POOL LENGTH, METERS**	meters	other	TCEQ SOP V2	89869	Field
% POOL COVERAGE IN 500 METER REACH**	%	other	TCEQ SOP V2	89870	Field
WIND INTENSITY (1=CALM,2=SLIGHT,3=MOD.,4=STRONG)	NU	other	NA	89965	Field
PRESENT WEATHER (1=CLEAR,2=PTCLDY,3=CLDY,4=RAIN,5=OTHER)	NU	other	NA	89966	Field
WATER SURFACE(1=CALM,2=RIPPLE,3=WAVE,4=WHITECAP)	NU	water	NA	89968	Field
WATER ODOR (1=SEWAGE, 2=OILY/CHEMICAL, 3=ROTTEN EGGS, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER (WRITE IN COMMENTS))	NU	water	NA	89971	Field
WATER COLOR 1=BRWN 2=RED 3=GRN 4=BLCK 5=CLR 6=OT	NU	water	NA	89969	Field

* Reporting to be consistent with SWQM guidance and based on measurement capability.
** To be routinely reported when collecting data from perennial pools.
*** As published by the Texas Water Development Board on their website https://www.waterdatafortexas.org/reservoirs/statewide

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).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416).

TABLE A6.4b Measurement Performance Specifications for City of Houston, Regulatory Compliance and Utility Development (RCUD)					
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
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 A6.4c 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 2320B	00410	20	20	NA	20	NA	RCUD
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540D	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	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**	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.

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 A6.5a Measurement Performance Specifications for San Jacinto River Authority (SJRA)					
Field Parameters					
Parameter*	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
TEMPERATURE, WATER (DEGREES CENTIGRADE)	DEG C	water	SM 2550 B and TCEQ SOP V1	00010	Field
TRANSPARENCY, SECCHI DISC (METERS)	meters	water	TCEQ SOP V1	00078	Field
SPECIFIC CONDUCTANCE,FIELD (US/CM @ 25C)	us/cm	water	EPA 120.1 and TCEQ SOP, V1	00094	Field
OXYGEN, DISSOLVED (MG/L)	mg/L	water	SM 4500-O G and TCEQ SOP V1	00300	Field
PH (STANDARD UNITS)	s.u.	water	EPA 150.1 and TCEQ SOP V1	00400	Field
DAYS SINCE PRECIPITATION EVENT (DAYS)	days	other	TCEQ SOP V1	72053	Field
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE	meters	water	TCEQ SOP V2	82903	Field
RESERVOIR STAGE (FEET ABOVE MEAN SEA LEVEL)**	FT ABOVE MSL	water	TWDB	00052	Field
RESERVOIR PERCENT FULL**	% RESERVOIR CAPACITY	water	TWDB	00053	Field
RESERVOIR ACCESS NOT POSSIBLE LEVEL TOO LOW ENTER 1 IF REPORTING	NS	other	TCEQ Drought Guidance	00051	Field
WIND INTENSITY (1=CALM,2=SLIGHT,3=MOD.,4=STRONG)	NU	other	NA	89965	Field
PRESENT WEATHER (1=CLEAR,2=PTCLDY,3=CLDY,4=RAIN,5=OTHER)	NU	other	NA	89966	Field
WATER SURFACE(1=CALM,2=RIPPLE,3=WAVE,4=WHITECAP)	NU	water	NA	89968	Field
WATER ODOR (1=SEWAGE, 2=OILY/CHEMICAL, 3=ROTTEN EGGS, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER (WRITE IN COMMENTS))	NU	water	NA	89971	Field
WATER COLOR 1=BRWN 2=RED 3=GRN 4=BLCK 5=CLR 6=OT	NU	water	NA	89969	Field

* Reporting to be consistent with SWQM guidance and based on measurement capability.
** As published by the Texas Water Development Board on their website https://www.waterdatafortexas.org/reservoirs/statewide

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).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416).

TABLE A6.5b Measurement Performance Specifications for San Jacinto River Authority (SJRA)					
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
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 A6.5c 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 2320B	00410	20	20	NA	20	NA	RCUD
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540D	00530	5	2.5	NA	NA	NA	RCUD
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540D	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	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	0.06	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**	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**	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.

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 A6.6a Measurement Performance Specifications for Environmental Institute of Houston (EIH)					
Field Parameters					
Parameter*	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
TEMPERATURE, WATER (DEGREES CENTIGRADE)	DEG C	water	SM 2550 B and TCEQ SOP V1	00010	Field
TRANSPARENCY, SECCHI DISC (METERS)	meters	water	TCEQ SOP V1	00078	Field
SPECIFIC CONDUCTANCE,FIELD (US/CM @ 25C)	us/cm	water	EPA 120.1 and TCEQ SOP, V1	00094	Field
OXYGEN, DISSOLVED (MG/L)	mg/L	water	SM 4500-O G and TCEQ SOP V1	00300	Field
PH (STANDARD UNITS)	s.u.	water	EPA 150.1 and TCEQ SOP V1	00400	Field
SALINITY - PARTS PER THOUSAND	PPT	water	SM 2520 and TCEQ SOP V1	00480	Field
DAYS SINCE PRECIPITATION EVENT (DAYS)	days	other	TCEQ SOP V1	72053	Field
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE	meters	water	TCEQ SOP V2	82903	Field
MAXIMUM POOL WIDTH AT TIME OF STUDY (METERS)**	meters	other	TCEQ SOP V2	89864	Field
MAXIMUM POOL DEPTH AT TIME OF STUDY(METERS)**	meters	other	TCEQ SOP V2	89865	Field
POOL LENGTH, METERS**	meters	other	TCEQ SOP V2	89869	Field
% POOL COVERAGE IN 500 METER REACH**	%	other	TCEQ SOP V2	89870	Field
WIND INTENSITY (1=CALM,2=SLIGHT,3=MOD.,4=STRONG)	NU	other	NA	89965	Field
PRESENT WEATHER (1=CLEAR,2=PTCLDY,3=CLDY,4=RAIN,5=OTHER)	NU	other	NA	89966	Field
WATER SURFACE(1=CALM,2=RIPPLE,3=WAVE,4=WHITECAP)	NU	water	NA	89968	Field
TIDE STAGE 1=LOW,2=FALLING,3=SLACK,4=RISING,5=HI	NU	water	NA	89972	Field
WATER ODOR (1=SEWAGE, 2=OILY/CHEMICAL, 3=ROTTEN EGGS, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER (WRITE IN COMMENTS))	NU	water	NA	89971	Field
WATER COLOR 1=BRWN 2=RED 3=GRN 4=BLCK 5=CLR 6=OT	NU	water	NA	89969	Field

* Reporting to be consistent with SWQM guidance and based on measurement capability.
** To be routinely reported when collecting data from perennial pools.

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).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416).

TABLE A6.6b Measurement Performance Specifications for Environmental Institute of Houston (EIH)					
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 A6.6c 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 2540D	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	0.06	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**	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.

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 A6.6e Measurement Performance Specifications for Environmental Institute of Houston (EIH)					
24 Hour Parameters in Water					
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
TEMPERATURE, WATER (DEGREES CENTIGRADE), 24HR AVG	DEG C	Water	TCEQ SOP V1	00209	field
WATER TEMPERATURE, DEGREES CENTIGRADE, 24HR MAX	DEG C	Water	TCEQ SOP V1	00210	field
TEMPERATURE, WATER (DEGREES CENTIGRADE) 24HR MIN	DEG C	Water	TCEQ SOP V1	00211	field
SPECIFIC CONDUCTANCE, US/CM, FIELD, 24HR AVG	uS/cm	Water	TCEQ SOP V1	00212	field
SPECIFIC CONDUCTANCE, US/CM, FIELD, 24HR MAX	uS/cm	Water	TCEQ SOP V1	00213	field
SPECIFIC CONDUCTANCE, US/CM, FIELD, 24HR MIN	uS/cm	Water	TCEQ SOP V1	00214	field
PH, S.U., 24HR MAXIMUM VALUE	std. units	Water	TCEQ SOP V1	00215	field
PH, S.U., 24HR, MINIMUM VALUE	std. units	Water	TCEQ SOP V1	00216	field
SALINITY, 24-HR, MAXIMUM, PPT	ppt	Water	TCEQ SOP V1	00217	field
SALINITY, 24-HR, AVERAGE, PPT	ppt	Water	TCEQ SOP V1	00218	field
SALINITY, 24-HR, MINIMUM, PPT	ppt	Water	TCEQ SOP V1	00219	field
SALINITY, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	00220	field
WATER TEMPERATURE, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	00221	field
SPECIFIC CONDUCTANCE, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	00222	field
pH, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	00223	field
DISSOLVED OXYGEN, 24-HOUR MIN. (MG/L) MIN. 4 MEA	mg/l	Water	TCEQ SOP V1	89855	field
DISSOLVED OXYGEN, 24-HOUR MAX. (MG/L) MIN. 4 MEA	mg/l	Water	TCEQ SOP V1	89856	field
DISSOLVED OXYGEN, 24-HOUR AVG. (MG/L) MIN. 4 MEA	mg/l	Water	TCEQ SOP V1	89857	field
DISSOLVED OXYGEN, # OF MEASUREMENTS IN 24-HRS	NU	Water	TCEQ SOP V1	89858	field
References: TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).					

TABLE A6.7a Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES)					
Field Parameters					
Parameter*	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
TEMPERATURE, WATER (DEGREES CENTIGRADE)	DEG C	water	SM 2550 B and TCEQ SOP V1	00010	Field
TRANSPARENCY, SECCHI DISC (METERS)	meters	water	TCEQ SOP V1	00078	Field
SPECIFIC CONDUCTANCE,FIELD (US/CM @ 25C)	us/cm	water	EPA 120.1 and TCEQ SOP, V1	00094	Field
OXYGEN, DISSOLVED (MG/L)	mg/L	water	SM 4500-O G and TCEQ SOP V1	00300	Field
PH (STANDARD UNITS)	s.u.	water	EPA 150.1 and TCEQ SOP V1	00400	Field
DAYS SINCE PRECIPITATION EVENT (DAYS)	days	other	TCEQ SOP V1	72053	Field
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE	meters	water	TCEQ SOP V2	82903	Field
MAXIMUM POOL WIDTH AT TIME OF STUDY (METERS)**	meters	other	TCEQ SOP V2	89864	Field
MAXIMUM POOL DEPTH AT TIME OF STUDY(METERS)**	meters	other	TCEQ SOP V2	89865	Field
POOL LENGTH, METERS**	meters	other	TCEQ SOP V2	89869	Field
% POOL COVERAGE IN 500 METER REACH**	%	other	TCEQ SOP V2	89870	Field
WIND INTENSITY (1=CALM,2=SLIGHT,3=MOD.,4=STRONG)	NU	other	NA	89965	Field
PRESENT WEATHER (1=CLEAR,2=PTCLDY,3=CLDY,4=RAIN,5=OTHER)	NU	other	NA	89966	Field
WATER SURFACE(1=CALM,2=RIPPLE,3=WAVE,4=WHITECAP)	NU	water	NA	89968	Field
WATER ODOR (1=SEWAGE, 2=OILY/CHEMICAL, 3=ROTTEN EGGS, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER (WRITE IN COMMENTS))	NU	water	NA	89971	Field
WATER COLOR 1=BRWN 2=RED 3=GRN 4=BLCK 5=CLR 6=OT	NU	water	NA	89969	Field

* Reporting to be consistent with SWQM guidance and based on measurement capability.
** To be routinely reported when collecting data from perennial pools.

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).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416).

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
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 2540D	00530	5	2.5	NA	NA	NA	TRIES
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540D	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	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	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

* 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 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***	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.

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).

Appendix B: Task 3 Work Plan & Sampling Process Design and Monitoring Schedule (Plan)

Objective: Water quality monitoring will focus on the characterization of a variety of locations and conditions. This will include a combination of the following:

- Planning and coordinating basin-wide monitoring.
- Routine, regularly scheduled monitoring to collect long-term information and support statewide assessment of water quality.
- Systematic, regularly scheduled short-term monitoring to screen water bodies for issues.
- Permit support monitoring to provide information for setting permit effluent limits; and
- Special study, intensive monitoring targeted to:
    - identify sources and causes of pollution;
    - assess priority water quality issues;
    - obtain background water quality information;
    - provide information for setting site-specific permit effluent limits; and
    - evaluate statewide, regional, and site-specific water quality standards.

Task Description: The Performing Party will coordinate and develop water quality monitoring strategies through the RMW and present strategies to the CRP Steering Committee for review and concurrence. To avoid duplication of monitoring efforts, the Performing Party will continue to coordinate monitoring efforts with other area data providers. The Performing Party also will continue to arrange regional training opportunities and workshops which support cooperative monitoring efforts (e.g., field methods, biological data collection, and habitat assessment).

The Performing Party will complete the following subtasks:

Routine Monitoring—In FY2026, the Performing Party will collect quarterly samples at a minimum of twenty one (21) water quality monitoring sites throughout the Performing Party's service area. Sampling efforts will include basic field parameters, flow, conventional chemical parameters, and bacteria. Most sites are located in the upper portions of watersheds or watersheds that fall outside the jurisdiction of local partner agencies.

In addition to the Performing Party's ambient monitoring program, six (6) local agencies are involved in this multi-basin monitoring effort. The Performing Party subcontracts with several entities to conduct monitoring and coordinates with others as in-kind contributors to conduct monitoring. The six participating agencies typically monitor a combined total of around 290 monitoring sites in the region (this number is subject to change based upon accessibility). Each agency's monitoring activities will be coordinated through the RMW and coordinated monitoring process. The coordination reduces monitoring duplication and allows all local agencies to see the data collection efforts of and data availability from other local agencies. Routine monitoring is scheduled at varying frequencies, which are determined by the parameters of concern for individual streams and/or proximity to a monitoring agency's field office and lab. Frequencies vary from quarterly for some parameters to monthly in highly impacted urban areas. Baseline monitoring will include the collection of field parameters at all sites and the collection of bacteria, flow, and conventional chemical parameters at sites where indicated. Additional details concerning the monitoring activities conducted by partner agencies are outlined in the Performing Party's Multi-Basin QAPP.

In FY2027, the Performing Party and area partners are expected to monitor at a similar level of effort as in FY2026. The actual number of sites, location, frequency, and parameters collected for FY2027 will be based on priorities identified at the CRP Steering Committee and Coordinated Monitoring meetings and included in the amended Appendix B schedule of the Performing Party's Multi-Basin QAPP.

All monitoring will be completed in accordance with the H-GAC Multi-Basin QAPP, the TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods (RG-415) and the TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data (RG-416).

24-Hour Dissolved Oxygen Monitoring—There are priority assessment units with dissolved oxygen impairments or concerns in the Performing Party's monitoring area. More data collection is needed to determine or verify the impairments. The Performing Party and/or sub-participants will conduct 24-hour dissolved oxygen

monitoring at a minimum of four (4) stations, four times per year, throughout the two-year Contract period. The sites will be determined once the budget is approved and site locations are coordinated and prioritized with TCEQ.

Permit Support Monitoring—During FY2026 and/or FY2027, the Performing Party may conduct monitoring activities to support TCEQ's Water Quality Division by collecting field parameters and discharge measurements at selected waterbodies identified by TCEQ. The sites will be determined once the budget is approved and site locations are coordinated and prioritized with TCEQ.

Regional Monitoring Workgroup (RMW)—The RMW will meet during three of four quarters each year to discuss monitoring needs, problems, successes and changes. The third quarter meeting is conducted as the coordinated monitoring meeting (see below). The RMW is composed of Performing Party staff and representatives from local participating agencies, currently including Harris County Pollution Control Services, Environmental Institute of Houston, City of Houston-Health Department, City of Houston-Regulatory Compliance and utility Development, Texas Research Institute for Environmental Studies, and the San Jacinto River Authority, as well as H-GAC's contract lab and TCEQ Region 12. Meeting notices will be sent to TCEQ, United States Geological Survey (USGS), Texas Parks and Wildlife Department, Texas Department of Health, GBEP, and other interested parties to invite input on monitoring discussions and strategies. Each agency/organization will be asked to send representatives from their field investigation staff and laboratory staff. The RMW will discuss CRP monitoring tasks and deliverables, basin monitoring priorities, training, and upcoming projects. This workgroup is designed to function as the mechanism through which data management needs and priorities are discussed. The Performing Party will include meeting summaries in the corresponding quarterly Progress Report.

RMW meeting results will be incorporated in presentations to the CRP Steering Committee for review and concurrence with various basin interests. This review process will be used to assess the current monitoring plan and adjust regional monitoring strategies as needed.

Coordinated Monitoring Meeting—The Performing Party will hold an annual coordinated monitoring meeting as described in the FY2026-2027 CRP Guidance. Qualified monitoring organizations will be invited to attend the working meeting in which monitoring needs and purposes will be discussed segment by segment and station by station. Information from participants and stakeholders will be used to select stations and parameters that will enhance overall water quality monitoring coverage, eliminate duplication of effort, and address basin priorities. A summary of the changes to the monitoring schedule will be provided to the participants within two weeks of the meeting. Changes to the monitoring schedule will be entered into the statewide Coordinated Monitoring Schedule (CMS; cms.lcra.org) and communicated to meeting attendees. Changes to monitoring schedules that occur during the year will be entered into the CMS and communicated to meeting attendees. All requirements related to meetings will be followed and required meetings will be conducted in-person or via TCEQ approved virtual format.

Monitoring Activities—Each progress report will include a description of activities including all types of monitoring performed, number of sampling events, and the types of monitoring conducted in the quarter. The Performing Party will complete and submit a monitoring activities report as an attachment to the progress report.

Special Studies—Special studies are developed, as needed, based on local stakeholder input and the results of TCEQ or the Performing Party assessments. Status reports of each special study conducted will describe activities completed during the quarter. The status reports will be submitted along with the progress report. To help keep the public and basin stakeholders informed, the Performing Party's website will be updated in a timely manner to include key elements of special studies' reports or summaries (e.g., status reports, executive summary, maps, data analysis, final reports). Special studies will be coordinated with and approved by the TCEQ PM prior to implementation.

Site Characterizations—Review of local monitoring data indicates there are many sites throughout the region where elevated levels of bacteria or low levels of dissolved oxygen are chronic conditions. Additionally, increased development and modifications to waterways can impact hydrology of rivers and streams in the region. Local entities have expressed interest in investigating the causes and impacts of these issues. Beginning with some of the most problematic sites, the Performing Party and other CRP partners may conduct "site specific" characterizations at locations if determined necessary by data analysis. Habitat information, field verification of

land cover, hydrology alterations, and identification of potential sources of pollution may be evaluated. Additional monitoring data may be collected from these small sub-watersheds as needed to supply data to support TCEQ's assessment process. Data collected during these intensive surveys may be submitted at TCEQ's request. The Performing Party will also include summaries of any activities in the corresponding quarterly progress report.

A short report of approximately one to five pages in length along with photographs will be submitted following completion of each characterization assessment. The reports will be submitted to TCEQ to assist with determining the appropriate water quality strategies to be pursued. An appendix to the multi-basin QAPP will be developed to provide the details of these characterizations as needed.
Deliverables and Due Dates:

September 1, 2025 through August 31, 2026

A. Conduct water quality monitoring, submit monitoring activities report, summarize activities, and submit with progress report—December 15, 2025; March 15 and June 15, 2026
B. RMW meeting notice—two weeks in advance of RMW meetings
C. Coordinated Monitoring Meeting—between March 15 and April 30, 2026
D. Coordinated Monitoring Meeting Summary of Changes—within 2 weeks following the meeting
E. Email notification that Coordinated Monitoring Schedule updates are complete—May 31, 2026
F. Special study status reports (if applicable)—December 15, 2025; March 15 and June 15, 2026
G. Site characterization reports (if applicable)—coordinate due date(s) with TCEQ PM

September 1, 2026 through August 31, 2027

A. Conduct water quality monitoring, submit monitoring activities report, summarize activities, and submit with progress report—September 15 and December 15, 2026; March 15, June 15, and August 15, 2027
B. RMW meeting notice—two weeks in advance of RMW meetings
C. Coordinated Monitoring Meeting—between March 15 and April 30, 2027
D. Coordinated Monitoring Meeting Summary of Changes—within 2 weeks following the meeting
E. Email notification that Coordinated Monitoring Schedule updates are complete—May 31, 2027
F. Special study status reports (if applicable)—September 15 and December 15, 2026; March 15, June 15, and August 15, 2027
G. Site characterization reports (if applicable)—coordinate due date(s) with TCEQ PM

Sample Design Rationale FY 2026

The sample design is based on the legislative intent of CRP. Under the legislation, the Basin Planning Agencies have been tasked with providing data to characterize water quality conditions in support of the Texas Integrated Report of Surface Water Quality, and to identify significant long-term water quality trends. Based on Steering Committee input, achievable water quality objectives and priorities and the identification of water quality issues are used to develop work plans which are in accord with available resources. As part of the Steering Committee process, the H-GAC coordinates closely with the TCEQ and other participants to ensure a comprehensive water monitoring strategy within the region.

The following changes or additions have been made to the monitoring schedule since the previous FY. These changes have come about because of concerns or requests of TCEQ staff, steering committee members, or monitoring partners and are detailed below.

- Routine monitoring at station 11251, monitored by RCUD, has been discontinued due to safety concerns resulting from road construction which removed the shoulder. This site has been replaced with site 11250 which is located further downstream on the same AU.
- Routine monitoring at station 16422, monitored by SJRA, has been discontinued and replaced with a new site 22570 which is located further downstream on the same AU to better spatially distribute monitoring stations within this segment.
- Routine monitoring at station 16629, monitored by SJRA, has been discontinued. This station was original associated with permit required monitoring and is no longer needed as it is within close

proximity to another station within the same AU.

- Routine monitoring at station 22493, monitored by SJRA, will now include conventional parameters.
- Adding quarterly TKN and Chlorophyll-a monitoring at stations 16638, 16640, 16641, 16643, 16644, and 16645.
- Routine monitoring has been discontinued by HHD at stations 11302, 11306, 11345, and 11362 due to duplication of effort by the TCEQ Regional Office.
- Routine monitoring at stations 16662 and 16666 monitored by HHD will now have conventional parameters collected.
- Routine monitoring at station 17977 monitored by HHD will no longer have conventional parameters collected due to shallow water.
- Routine monitoring at station 20452, monitored by H-GAC, has been discontinued due to challenges collecting instantaneous discharge during high flow due to safety concerns. This site has been replaced with a new site 22614 which is located further downstream on the same AU.
- Routine monitoring at station 17937, monitored by H-GAC, has been discontinued due to on-going construction at the site that has restricted access. This site has been replaced with an existing station 17936 which is located further upstream on the same AU.
- Routine monitoring has been added at site 13943, monitored by RCUD, to include a station within AU 1002_05 which was previously not monitored.
- Routine monitoring has been added at site 17338, monitored by TRIES, to include a station within AU 1012C_01 which was previously not monitored.
- 24-hr dissolved oxygen monitoring at stations 12155 and 16475, monitored by EIH, has been discontinued because sufficient data have been collected to support assessment of this AU.
- 24-hr dissolved oxygen monitoring at station 16676, monitored by H-GAC, has been discontinued because sufficient data have been collected to support assessment of this AU.
- 24-hr dissolved oxygen monitoring has been added at site 22474, monitored by H-GAC, to provide data to support Aquatic Use assessment of AU 1006L_01.

Site Selection Criteria

This data collection effort involves monitoring routine water quality using procedures that are consistent with the TCEQ SWQM program. Some general guidelines are followed when selecting sampling sites, as outlined below, and discussed thoroughly in SWQM Procedures, Volumes I and II. Overall consideration is given to accessibility and safety. All monitoring activities have been developed in coordination with the CRP Steering Committee and with the TCEQ. The site selection criteria specified are those the TCEQ would like considered to produce data which is complementary to that collected by the state and which may be used in assessments, etc.

1. Locate stream sites so that samples can be safely collected from the centroid of flow when possible. Centroid is defined as the midpoint of that portion of stream width which contains 50 percent of the total flow. If multiple potential sites on a stream segment are appropriate for monitoring, choose one that would best represent the water body, and not a site that displays unusual conditions or contaminant source(s). Avoid backwater areas or eddies when selecting a stream site.
2. At a minimum for reservoirs, locate sites near the dam (reservoirs) and in the major arms. Larger reservoirs might also include stations in the middle and upper (riverine) areas. Select sites that best represent the water body by avoiding coves and back water areas. A single monitoring site is considered representative of 25 percent of the total reservoir acres, but not more than 5,120 acres.
3. Monitoring sites are selected to maximize stream coverage or basin coverage. Very long segments may require more stations. As a rule of thumb, stream segments between 25 and 50 miles long require two stations, and longer than 50 miles require three or more depending on the existence of areas with significantly different sources of contamination or potential water quality concerns. Major hydrological features, such as the confluence of a major tributary or an instream dam, may also limit the spatial extent of an assessment based on one station. Urban areas with numerous potential point sources may require more stations to accurately monitor water quality conditions and collect data that can aid in the identification of potential pollutant sources.
4. Because historical water quality data can be very useful in assessing use attainment or impairment, it may be best to use sites that are on current or past monitoring schedules.
5. All classified segments (including reservoirs) should have at least one Monitoring site that adequately characterizes the water body, and monitoring should be coordinated with the TCEQ or other qualified

monitoring entities reporting routine data to TCEQ.

6. Monitoring sites may be selected to bracket sources of pollution, influence of tributaries, changes in land uses, and hydrological modifications.
7. Sites should be accessible. When possible, stream sites should have a USGS or IBWC stream flow gauge. If not, it should be possible to conduct flow measurement during routine visits.

Monitoring Sites for FY 2026

Table B1.1 Sample Design and Schedule, FY 2026

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
HARRIS COUNTY FLOOD CONTROL DISTRICT CHANNEL D138 / CHIMNEY DITCH IMMEDIATELY UPSTREAM OF CAVERSHAM DRIVE BETWEEN THE NORTHBOUND AND SOUTHBOUND SECTIONS OF CHIMNEY ROCK ROAD IN HOUSTON	21180	1007W_01	10	12	HG	HG	BS				4	4			
KENNEDY GULLY OF HALLS BAYOU AT WOODLYN ROAD IN NORTHEAST HOUSTON	22474	1006L_01	10	12	HG	HG	BS				4	4			Added in FY26
HUNTING BAYOU 20 M UPSTREAM OF THE TRAIL/BIKE BRIDGE NEAR THE DEAD END OF SAYERS STREET, 60 M UPSTREAM OF THE CONFLUENCE WITH HUNTING BAYOU ABOVE TIDAL MAIN SEGMENT	22542	1007R_01	10	12	HG	HG	BS				4	4			
CEDAR BAYOU ABOVE TIDAL 30 METERS DOWNSTREAM OF FM 1942 AT EAST BANK	11118	0902_01	9	12	HG	UI	BS				4	4			
HARDEMAN SLOUGH IMMEDIATELY DOWNSTREAM OF ALLENHURST RD NE OF FM 2540 NEAR ALLENHURST COMMUNITY	12135	1305A_01	13	12	HG	UI	BS				4	4			
LAKE MADELINE AT CORNER OF BELUCHE DRIVE AND DOMINIQUE DRIVE IN GALVESTON	16564	2424B_01	24	12	HG	UI	BS					4			
WEST BERNARD CREEK AT WHARTON CR 225 EAST OF HUNGERFORD	20721	1302B_01	13	12	HG	UI	BS				4	4			
MOUND CREEK AT BRAZORIA CR 450/JACKSON SETTLEMENT ROAD 1.22 KILOMETERS UPSTREAM OF FM 1301 IN WEST OF WEST COLUMBIA	20723	1302E_01	13	12	HG	UI	BS				4	4			
SAN JACINTO RIVER TIDAL IMMEDIATELY DOWNSTREAM OF IH 10 BRIDGE EAST OF CHANNELVIEW	11193	1001_02	10	12	HG	HC	RT	12	12	12					

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
SAN JACINTO RIVER TIDAL 23 METERS SOUTH AND 735 METERS EAST OF INTERSECTION OF WALLISVILLE ROAD AND 7TH STREET	11198	1001_02	10	12	HG	HC	RT	12	12	12					
SAN JACINTO RIVER TIDAL IMMEDIATELY DOWNSTREAM OF US 90 BRIDGE EAST OF SHELDON	11200	1001_01	10	12	HG	HC	RT	12	12	12			4		
SAN JACINTO RIVER TIDAL AT MAGNOLIA GARDENS 1.78 KM UPSTREAM OF US BUS 90U/ BEAUMONT HIGHWAY IN HOUSTON	11201	1001_01	10	12	HG	HC	RT	12	12	12					
HOUSTON SHIP CHANNEL AT BAYTOWN TUNNEL/CM 103 1.84 KM NORTH AND 1.17 KM EAST OF INTERSECTION OF SH 225 AND SH 146	11254	1005_03	10	12	HG	HC	RT	12	12	12					
HOUSTON SHIP CHANNEL AT SAN JACINTO PK WEST OF THE BATTLESHIP TX 317 M N AND 303 M W OF INTERSECTION OF BATTLEGROUND RD AND MARKER DR	11264	1006_02	10	12	HG	HC	RT	12	12	12					
HOUSTON SHIP CHANNEL AT CONFLUENCE WITH GREENS BAYOU/CM 152	11271	1006_01	10	12	HG	HC	RT	12	12	12					
HOUSTON SHIP CHANNEL/BUFFALO BAYOU HSC AT WASHBURN TUNNEL	11283	1007_01	10	12	HG	HC	RT	12	12	12					
HSC/BUFFALO BAYOU IN TURNING BASIN 2.82 K UPSTREAM OF CONFLUENCE WITH BRAYS BAYOU 433 M S AND 182 M W OF INTERSECT OF SIGNET AND DORSETT	11292	1007_07	10	12	HG	HC	RT	12	12	12					
CLEAR LAKE AT SH 146 DRAWBRIDGE	13332	2421A_01	24	12	HG	HC	RT	6	6	6			4	4	
TABBS BAY MIDWAY BETWEEN GOOSE CREEK AND UPPER HOG ISLAND	13338	2426_01	24	12	HG	HC	RT	6	6	6			4	4	
BLACK DUCK BAY AT MID BAY 0.6 KM NE OF SH 146 BRIDGE AND 0.6 KM SE OF END OF OKLAHOMA ST IN BAYTOWN	13340	2428_01	24	12	HG	HC	RT	6	6	6			4	4	

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
BURNETT BAY AT MID BAY 1.3 KM SSW OF CONFLUENCE WITH SPRING GULLY AND 1.6 KM SE OF LYNCHBURG ROAD	13344	2430_01	24	12	HG	HC	RT	6	6	6			4	4	
ARMAND BAYOU TIDAL 25 M WEST OF CLEAR LAKE PARK FISHING PIER IN MUD LAKE/PASADENA LAKE IN HARRIS COUNTY	15455	1113_01	11	12	HG	HC	RT	6	6	6			4	4	
CLEAR CREEK TIDAL AT THE CONFLUENCE WITH CLEAR LAKE 30 M NORTH AND 266 M WEST OF DAVIS ROAD AT VEGA COURT IN LEAGUE CITY IN HARRIS COUNTY	16573	1101_04	11	12	HG	HC	RT	6	6	6			4	4	
HOUSTON SHIP CHANNEL AT CARGILL TERMINAL NORTH OF TIDAL ROAD	16617	1006_01	10	12	HG	HC	RT	12	12	12					
HOUSTON SHIP CHANNEL W OF EXXON DOCKS AND N OF ALEXANDER ISLAND 316 M S AND 1.55 KM W OF INTERSECTION OF BAYWAY DR AND BAYTOWN AVE	16618	1005_03	10	12	HG	HC	RT	12	12	12					
HOUSTON SHIP CHANNEL AT LYNCHBURG FERRY INN SOUTH OF LYNCHBURG RD 658 M N AND 802 M E OF INTERSECTION OF BATTLEGROUND RD AND TIDAL RD	16619	1005_01	10	12	HG	HC	RT	12	12	12					
HOUSTON SHIP CHANNEL/BUFFALO BAYOU AT MAYO SHELL RD 1.42 KM S AND 41 M W OF INTERSECTION OF MAYO SHELL RD AND CLINTON DR IN HOUSTON	16620	1007_01	10	12	HG	HC	RT	12	12	12					
SAN JACINTO RIVER TIDAL AT CONFLUENCE WITH HSC 226 M S AND 1.07 KM W OF INTERSECTION OF S LYNCHBURG RD AND POQUENO RD IN HOUSTON	16621	1005_01	10	12	HG	HC	RT	12	12	12					
SAN JACINTO RIVER TIDAL AT BANANA BEND ROAD AT END OF PAVEMENT IN HOUSTON	16622	1001_02	10	12	HG	HC	RT	12	12	12			4	4	
SAN JACINTO RIVER TIDAL MID STREAM AT TERMINUS OF SHADY LANE IN	17919	1001_02	10	12	HG	HC	RT	12	12	12					

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
CHANNELVIEW 9 M S AND 648 M W OF INTERSECTION OF SHADY LN AND PARK DR															
CRYSTAL BAY IN BAYTOWN 383 METERS WEST AND 137 METERS SOUTH OF THE INTERSECTION OF BAYSHORE DRIVE AND CROW ROAD	17921	2430A_01	24	12	HG	HC	RT	6	6	6					
SCOTT BAY 1.2 KM SW OF INTERSECTION OF BAYWAY DRIVE AND PARK STREET IN BAYTOWN	17922	2429_01	24	12	HG	HC	RT	6	6	6			4	4	
UPPER SAN JACINTO BAY UNDERNEATH ELECTRICAL TRANSMISSION LINES 2.1 KM E/NE OF INTERSECTION OF MILLER CUTOFF RD AND OLD CLARK RD	17923	2427_01	24	12	HG	HC	RT	6	6	6			4	4	
LOWER SAN JACINTO BAY MID CHANNEL SOUTH OF SH 146 1 KM NE OF INTERSECTION OF SH 225 AND STRANG ROAD IN LAPORTE	17924	2427_01	24	12	HG	HC	RT	6	6	6			4	4	
BARBOURS CUT NEAR NORTH BANK 0.5 KM NNW OF THE INTERSECTION OF BARBOURS CUT BLVD AND MAPLE ST	17925	2436_01	24	12	HG	HC	RT	6	6	6					
GOOSE CREEK NEAR SH 146 340 M SOUTH OF THE INTERSECTION OF SH 146 AND WEST MAIN IN BAYTOWN	17927	2426C_01	24	12	HG	HC	RT	6	6	6					
HARRIS COUNTY FLOOD CONTROL DITCH A TRIBUTARY TO TAYLOR BAYOU 385 M UPSTREAM OF CONFLUENCE WEST OF SH 146 AT PORT ROAD IN HARRIS COUNTY	20012	2425E_01	24	12	HG	HC	RT	6	6	6					
TAYLOR BAYOU MID CHANNEL 400 M DOWNSTREAM OF PORT ROAD BRIDGE IN HARRIS COUNTY	20013	2425A_02	24	12	HG	HC	RT	6	6	6					
CLEAR LAKE UNNAMED INLET 115 M SOUTHWEST OF THE INTERSECTION OF NASA ROAD 1 AND OCEANVIEW DRIVE IN SEABROOK IN HARRIS COUNTY	20014	2425_01	24	12	HG	HC	RT	6	6	6					

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
TAYLOR LAKE MID LAKE AT BLUE WINDOWS 230 M SOUTH OF LAKEWAY DRIVE AT RAY SHELL COURT/HARBOR COVE CIRCLE IN HARRIS COUNTY	20015	2425A_01	24	12	HG	HC	RT	6	6	6			4	4	
CARPENTERS BAYOU AT MOUTH OF BARGE CANAL 32 METERS WEST AND 666 METERS SOUTH FROM THE INTERSECTION OF DE ZAVALLA ROAD AND HARDING ROAD/HARDING STREET IN HARRIS COUNTY	20797	1006_07	10	12	HG	HC	RT	12	12	12					
BUFFALO BAYOU IMMEDIATELY DOWNSTREAM OF GREEN BUSH ROAD 3.1 MILES SOUTHEAST OF KATY	11145	1014B_01	10	12	HG	HG	RT	4	4	4	4		4		
CANEY CREEK IMMEDIATELY UPSTREAM OF FM 2090 WEST OF SPLENDORA	11335	1010_03	10	12	HG	HG	RT	4	4	4	4		4		
LAKE CREEK AT EGYPT COMMUNITY ROAD 8.3 MILES SOUTHWEST OF CONROE	11367	1015_01	10	12	HG	HG	RT	4	4	4	4		4		
EAST FORK SAN JACINTO RIVER IMMEDIATELY DOWNSTREAM OF SH 150 WEST OF COLDSPRING	17431	1003_03	10	10	HG	HG	RT	4	4	4	4		4		
MOUND CREEK AT HONEA ROAD/EGYPT COMMUNITY ROAD 6.7 MI NORTH OF THE INTERSECTION OF HONEA ROAD AND FM 1488	17936	1015A_01	10	12	HG	HG	RT	4	4	4	4		4		Replaced 17937 in FY26 due to on-going construction
LAKE CREEK AT SH 105 1.0 KM NORTHEAST OF FM 1486 NEAR DOBBIN AND 8.0 KM WEST OF MONTGOMERY TEXAS	18192	1015_02	10	12	HG	HG	RT	4	4	4	4				
SPRING CREEK AT ROBERTS CEMETERY ROAD WEST-NORTHWEST OF TOMBALL	18868	1008_02	10	12	HG	HG	RT	4	4	4	4				
CANEY CREEK AT COUNTY LINE ROAD IN MONTGOMERY COUNTY EAST TO THE CITY OF WILLIS	20453	1010_02	10	12	HG	HG	RT	4	4	4	4				

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
PEACH CREEK AT COUNTY LINE ROAD-FM 3081 NORTHEAST OF CONROE IN MONTGOMERY COUNTY	20454	1011_01	10	12	HG	HG	RT	4	4	4	4				
LITTLE CYPRESS CREEK AT MUESCHKE ROAD 4.4 KILOMETERS NORTH OF SH 290 NORTHWEST OF CYPRESS	20456	1009E_01	10	12	HG	HG	RT	4	4	4	4				
CYPRESS CREEK AT KATY HOCKLEY ROAD 7 KILOMETERS SOUTH OF SH 290 WEST OF CYPRESS	20457	1009_01	10	12	HG	HG	RT	4	4	4	4				
WALNUT CREEK AT DECKER PRAIRIE ROSEHL ROAD NORTHWEST OF TOMBALL	20462	1008I_01	10	12	HG	HG	RT	4	4	4	4		4		
BRUSHY CREEK AT GLENMONT ESTATES BOULEVARD 265 METERS NORTH AND 35 METERS WEST TO THE INTERSECTION OF ARNDT LANE AND ANN CIRCLE WEST OF TOMBALL	20463	1008J_01	10	12	HG	HG	RT	4	4	4	4		4		
HORSEPEN CREEK AT FM 529 1.9 KILOMETERS EAST OF SH 6 NORTHWEST OF HOUSTON	20465	1014C_01	10	12	HG	HG	RT	4	4	4	4				
WHITE OAK CREEK AT MEMORIAL DRIVE IN CONROE	20731	1004J_01	10	12	HG	HG	RT	4	4	4	4		4		
WINTERS BAYOU AT TONY TAP ROAD NEAR CLEVELAND	21417	1003A_01	10	10	HG	HG	RT	4	4	4	4		4		
MILL CREEK AT FM 149 NORTH OF TOMBALL	21957	1008A_01	10	12	HG	HG	RT	4	4	4	4		4		
SPRING BRANCH IMMEDIATELY DOWNSTREAM OF SHAKEY HOLLOW WEST OF WOODBRANCH VILLAGE IN MONTGOMERY COUNTY	21965	1010C_01	10	12	HG	HG	RT	4	4	4	4		4		
LUCE BAYOU AT GRAND PARKWAY/SH-99 NORTHEAST OF LAKE HOUSTON	22429	1002B_02	10	12	HG	HG	RT	4	4	4	4		4		
LUCE BAYOU AT HWY 321 APPROXIMATELY 1.1 KM SOUTH OF COUNTY ROAD 2322	22430	1002B_03	10	12	HG	HG	RT	4	4	4	4		4		

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
CANEY CREEK UPSTREAM OF SYCAMORE STREET WEST OF THE CITY OF WOODBRANCH	22614	1010_04	10	12	HG	HG	RT	4	4	4	4				Added in FY 26, Replaced site 20452 (Caney at Firetower)
GARNERS BAYOU AT NORTH SAM HOUSTON PARKWAY/SHLOOP8 NE OF HOUSTON	11125	1016A_03	10	12	HG	HH	RT	6	6	6	6				Flow from USGS gage 8076180
HALLS BAYOU AT JENSEN DRIVE IN HOUSTON	11126	1006D_02	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8076500
HALLS BAYOU 87 METERS UPSTREAM OF TIDWELL ROAD IN SETTEGAST	11127	1006D_01	10	12	HG	HH	RT	6	6	6					
HUNTING BAYOU IMMEDIATELY DOWNSTREAM OF IH 10 EAST OF HOUSTON	11128	1007R_04	10	12	HG	HH	RT	6	6	6					
HUNTING BAYOU AT NORTH LOOP EAST/IH 610 IN HOUSTON	11129	1007R_03	10	12	HG	HH	RT	6	6	6	6				Flow from USGS gage 8075770
SIMS BAYOU AT TELEPHONE ROAD/SH 35 IN HOUSTON	11132	1007D_03	10	12	HG	HH	RT	6	6	6	6				Flow from USGS gage 8075500
SIMS BAYOU AT CULLEN BLVD/FM 865 SOUTH OF HOUSTON	11133	1007D_02	10	12	HG	HH	RT	6	6	6					
SIMS BAYOU AT HIRAM CLARKE RD IN HOUSTON	11135	1007D_01	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8075400
BRAYS BAYOU IMMEDIATELY DOWNSTREAM OF ALMEDA ROAD SOUTHWEST OF HOUSTON	11138	1007B_01	10	12	HG	HH	RT	6	6	6					
BRAYS BAYOU AT SOUTH MAIN ST IN HOUSTON	11139	1007B_01	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8075000
BRAYS BAYOU AT SOUTH GESSNER DRIVE IN HOUSTON	11140	1007B_01	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8074810
LITTLE WHITE OAK BAYOU AT TRIMBLE STREET/NORTH EDGE OF HOLLYWOOD CEMETERY IN HOUSTON	11148	1013A_01	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8074540
VOGEL CREEK IMMEDIATELY DOWNSTREAM OF WEST LITTLE YORK ROAD	11155	1017C_01	10	12	HG	HH	RT	6	6	6					

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
ROLLING FORK CREEK IMMEDIATELY DOWNSTREAM OF LAKE LANE	11157	1017F_01	10	12	HG	HH	RT	6		6					Shallow site
SOUTH MAYDE CREEK IMMEDIATELY DOWNSTREAM OF MEMORIAL DRIVE	11163	1014H_01	10	12	HG	HH	RT	6	6	6			4		
BRAYS/KEEGANS BAYOU IMMEDIATELY DOWNSTREAM OF ROARK ROAD NEAR US 59 AT BELTWAY 8 IN SOUTHWEST HOUSTON	11169	1007C_01	10	12	HG	HH	RT	6	6	6	6				Flow from USGS gage 8074800
LITTLE VINCE BAYOU IMMEDIATELY DOWNSTREAM OF NORTH MAIN STREET IN PASADENA TX	11172	1007_08	10	12	HG	HH	RT	6	6	6					
WILLOW CREEK IMMEDIATELY UPSTREAM OF GOSLING ROAD	11185	1008H_01	10	12	HG	HH	RT	6	6	6			4		
RUMMEL CREEK IMMEDIATELY DOWNSTREAM OF MEMORIAL DRIVE IN WEST HOUSTON	11188	1014N_01	10	12	HG	HH	RT	6	6	6					
GREENS BAYOU IMMEDIATELY DOWNSTREAM OF GREEN RIVER ROAD/LEY ROAD IN HOUSTON	11279	1006_03	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8076700
HUNTING BAYOU TIDAL AT FEDERAL ROAD BRIDGE IN HOUSTON	11298	1007_03	10	12	HG	HH	RT	6	6	6					
BRAYS BAYOU TIDAL AT SCOTT STREET IN HOUSTON	11309	1007_04	10	12	HG	HH	RT	6	6	6					
SPRING CREEK IMMEDIATELY DOWNSTREAM OF RILEY FUZZEL ROAD	11312	1008_04	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8068520
SPRING CREEK 1.13 KM UPSTREAM OF SH 249 NEAR DRAGONFLY RD IN SPRING CREEK PARK	11315	1008_02	10	12	HG	HH	RT	6	6	6			4		
SPRING CREEK IMMEDIATELY UPSTREAM OF DECKER PRAIRIE ROSEHILL ROAD	11323	1008_02	10	12	HG	HH	RT	6	6	6					
CYPRESS CREEK AT STEUBNER-AIRLINE ROAD IN HOUSTON	11330	1009_03	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8068900
CYPRESS CREEK AT SH 249	11331	1009_02	10	12	HG	HH	RT	6	6	6					

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
CYPRESS CREEK IMMEDIATELY DOWNSTREAM OF GRANT ROAD NEAR CYPRESS	11332	1009_02	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8068800
BUFFALO BAYOU TIDAL AT SHEPHERD DRIVE IN HOUSTON	11351	1013_01	10	12	HG	HH	RT	6	6	6	6				Flow from USGS gage 8074000
BUFFALO BAYOU AT VOSS ROAD	11356	1014_01	10	12	HG	HH	RT	6	6	6					
BUFFALO BAYOU IMMEDIATELY DOWNSTREAM OF WEST BELTWAY 8 IN HOUSTON	11360	1014_01	10	12	HG	HH	RT	6	6	6	6				Flow from USGS gage 8073600
BUFFALO BAYOU AT WILCREST DRIVE IN HOUSTON	11361	1014_01	10	12	HG	HH	RT	6	6	6					
BUFFALO BAYOU AT ELDRIDGE ROAD IN HOUSTON	11363	1014_01	10	12	HG	HH	RT	6	6	6					
BUFFALO BAYOU AT SH 6	11364	1014_01	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8072500
GREENS BAYOU AT TIDWELL ROAD IN HARRIS CO	11369	1016_03	10	12	HG	HH	RT	6	6	6					
GREENS BAYOU IMMEDIATELY DOWNSTREAM OF MT HOUSTON PARKWAY	11370	1016_03	10	12	HG	HH	RT	6	6	6					
GREENS BAYOU AT US 59 NORTH OF HOUSTON	11371	1016_02	10	12	HG	HH	RT	6	6	6			4		
GREENS BAYOU AT WEST GREENS PARKWAY	11376	1016_01	10	12	HG	HH	RT	6	6	6					
WHITEOAK BAYOU AT NORTH SHEPHERD STREET IN HOUSTON	11389	1017_04	10	12	HG	HH	RT	6	6	6					
WHITEOAK BAYOU AT NORTH HOUSTON ROSSLYN ROAD	11394	1017_01	10	12	HG	HH	RT	6	6	6			4		
WHITEOAK BAYOU IMMEDIATELY DOWNSTREAM OF TAHOE DRIVE	11396	1017_01	10	12	HG	HH	RT	6	6	6					
ARMAND BAYOU AT GENOA-RED BLUFF RD NE OF ELLINGTON AFB	11404	1113A_01	11	12	HG	HH	RT	6	6	6					

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
ARMAND BAYOU AT FAIRMONT PARKWAY ALONG MEDIAN AT MIDPOINT BETWEEN BRIDGES	11405	1113A_01	11	12	HG	HH	RT	6	6	6			4		
ARMAND BAYOU TIDAL AT BAY AREA BLVD NORTH OF NASA AT MIDDLE OF MEDIAN BETWEEN 2 BRIDGES EASTERN SHORE	11503	1113_02	11	12	HG	HH	RT	6	6	6					
GREENS BAYOU 184 METERS DOWNSTREAM OF KNOBCREST DRIVE	13778	1016_02	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8075900
LITTLE CYPRESS CREEK IMMEDIATELY DOWNSTREAM OF KLUGE ROAD IN HOUSTON	14159	1009E_01	10	12	HG	HH	RT	6	6	6			4		
WHITEOAK BAYOU IMMEDIATELY DOWNSTREAM OF WEST 43RD STREET IN NORTHWEST HOUSTON	15829	1017_03	10	12	HG	HH	RT	6	6	6			4		
WHITEOAK BAYOU AT WEST TIDWELL ROAD IN NORTHWEST HOUSTON	15831	1017_02	10	12	HG	HH	RT	6	6	6					
BUFFALO BAYOU TIDAL IMMEDIATELY UPSTREAM OF JENSEN DRIVE IN HOUSTON	15841	1007_07	10	12	HG	HH	RT	6	6	6					
BUFFALO BAYOU TIDAL AT SABINE STREET NORTH OF ALLEN PARKWAY IN HOUSTON	15843	1013_01	10	12	HG	HH	RT	6	6	6					
BUFFALO BAYOU AT CHIMNEY ROCK ROAD IN HOUSTON	15845	1014_01	10	12	HG	HH	RT	6	6	6					
BUFFALO BAYOU IMMEDIATELY DOWNSTREAM OF BRIAR FOREST DRIVE IN WEST HOUSTON	15846	1014_01	10	12	HG	HH	RT	6	6	6					
TURKEY CREEK 200 METERS UPSTREAM OF MEMORIAL DRIVE AT BRIDGE IN MEMORIAL OAKS CEMETERY	15847	1014K_01	10	12	HG	HH	RT	6	6	6					
BRAYS BAYOU IMMEDIATELY DOWNSTREAM OF SH 6 IN WEST HOUSTON	15848	1007B_02	10	12	HG	HH	RT	6	6	6			4		
BRAYS BAYOU AT DAIRY ASHFORD STREET IN WEST HOUSTON	15850	1007B_01	10	12	HG	HH	RT	6	6	6					

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
BRAYS BAYOU AT WILCREST DRIVE IN WEST HOUSTON	15851	1007B_01	10	12	HG	HH	RT	6	6	6					
BRAYS BAYOU IMMEDIATELY DOWNSTREAM OF BEECHNUT STREET IN WEST HOUSTON	15852	1007B_01	10	12	HG	HH	RT	6	6	6					
BRAYS BAYOU IMMEDIATELY DOWNSTREAM OF HILLCROFT STREET IN WEST HOUSTON	15853	1007B_01	10	12	HG	HH	RT	6	6	6					
BRAYS BAYOU IMMEDIATELY DOWNSTREAM OF SOUTH RICE AVENUE IN WEST HOUSTON	15854	1007B_01	10	12	HG	HH	RT	6	6	6					
BRAYS BAYOU IMMEDIATELY DOWNSTREAM OF STELLA LINK ROAD IN HOUSTON	15855	1007B_01	10	12	HG	HH	RT	6	6	6					
HALLS BAYOU AT HOMESTEAD ROAD IN NORTHEAST HOUSTON	15862	1006D_01	10	12	HG	HH	RT	6	6	6					
HALLS BAYOU AT HIRSCH RD IN NORTHEAST HOUSTON	15863	1006D_01	10	12	HG	HH	RT	6	6	6					
HALLS BAYOU AT MESA DR IN NORTHEAST HOUSTON	15864	1006D_01	10	12	HG	HH	RT	6	6	6					
HUNTING BAYOU AT JENSEN DRIVE IN NORTHEAST HOUSTON	15867	1007R_02	10	12	HG	HH	RT	6	6	6					
HUNTING BAYOU AT CAVALCADE ST IN NORTHEAST HOUSTON	15869	1007R_01	10	12	HG	HH	RT	6	6	6					
HUNTING BAYOU AT LOCKWOOD DRIVE IN NORTHEAST HOUSTON	15873	1007R_03	10	12	HG	HH	RT	6	6	6					
SIMS BAYOU IMMEDIATELY DOWNSTREAM OF ALMEDA ROAD IN SOUTH HOUSTON	15876	1007D_02	10	12	HG	HH	RT	6	6	6					
SIMS BAYOU AT MARTIN LUTHER KING JUNIOR BOULEVARD IN SOUTH HOUSTON	15877	1007D_03	10	12	HG	HH	RT	6	6	6	6		4		Flow from USGS gage 8075470
SIMS BAYOU AT SWALLOW STREET IN SOUTHEAST HOUSTON	15878	1007D_03	10	12	HG	HH	RT	6	6	6					
BRAYS BAYOU AT SOUTH WAYSIDE DRIVE 802 METERS UPSTREAM OF IH 45 IN SOUTHEAST HOUSTON	16479	1007_04	10	12	HG	HH	RT	6	6	6					

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
GARNERS BAYOU IMMEDIATELY UPSTREAM OF OLD HUMBLE ROAD AT CONFLUENCE WITH RIENHARDT BAYOU IN NORTHEAST HOUSTON	16589	1016A_02	10	12	HG	HH	RT	6	6	6					
UNNAMED TRIBUTARY OF GREENS BAYOU AT MESA DR/E. HOUSTON-DYERSDALE ROAD IN NORTHEAST HOUSTON	16590	1016B_01	10	12	HG	HH	RT	6	6	6					
SPRING BRANCH CREEK IMMEDIATELY UPSTREAM OF WIRT ROAD 331 METERS DOWNSTREAM OF IH 10 IN WEST HOUSTON	16592	1014O_01	10	12	HG	HH	RT	6	6	6					
COLE CREEK IMMEDIATELY UPSTREAM OF BOLIVIA BLVD 792 METERS UPSTREAM OF CONFLUENCE WITH WHITEOAK BAYOU IN NW HOUSTON	16593	1017B_02	10	12	HG	HH	RT	6	6	6					
BRICKHOUSE GULLY AT US 290 IN NORTHWEST HOUSTON 2.03 KM UPSTREAM OF CONFLUENCE WITH WHITEOAK BAYOU	16594	1017A_01	10	12	HG	HH	RT	6		6	6				Flow via USGS gage 8074250; Shallow site
UNNAMED TRIBUTARY OF WHITE OAK BAYOU AT W 14TH IN WEST HOUSTON 516 METERS UPSTREAM OF CONFLUENCE WITH WHITE OAK BAYOU	16596	1017E_01	10	12	HG	HH	RT	6	6	6					
NEWMAN BRANCH / NEIMANS BAYOU AT MEMORIAL DRIVE IN WEST HOUSTON	16597	1014M_01	10	12	HG	HH	RT	6	6	6					
LITTLE WHITE OAK BAYOU AT WHITE OAK DRIVE IN NORTH HOUSTON	16648	1013A_01	10	12	HG	HH	RT	6	6	6					
COUNTRY CLUB BAYOU/TRIBUTARY OF BRAYS BAYOU IMMEDIATELY UPSTREAM OF SOUTH WAYSIDE DRIVE/US90A IN CENTRAL HOUSTON	16650	1007K_01	10	12	HG	HH	RT	6	6	6					
COUNTRY CLUB BAYOU/TRIBUTARY OF BRAYS BAYOU AT HUGHES STREET IN CENTRAL HOUSTON	16651	1007K_01	10	12	HG	HH	RT	6	6	6					

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
WILLOW WATERHOLE AT MCDERMED DRIVE IN SOUTHWEST HOUSTON	16652	1007E_01	10	12	HG	HH	RT	6		6					Shallow site
KUHLMAN GULLY/TRIBUTARY OF BRAYS BAYOU AT BROCK STREET 311 METERS UPSTREAM OF WHEELER STREET IN SOUTHEAST CENTRAL HOUSTON	16653	1007G_01	10	12	HG	HH	RT	6	6	6					
UNNAMED TRIBUTARY OF BRAYS BAYOU AT DUMFRIES DRIVE IN SOUTH WEST HOUSTON	16654	1007L_01	10	12	HG	HH	RT	6	6	6					
UNNAMED TRIBUTARY OF SIMS BAYOU AT DULCIMER STREET IN SOUTH HOUSTON	16655	1007N_01	10	12	HG	HH	RT	6	6	6					
SIMS BAYOU SOUTH BRANCH AT TIFFANY DRIVE IN SOUTH HOUSTON	16656	1007A_01	10	12	HG	HH	RT	6		6					Shallow site
UNNAMED TRIBUTARY OF HUNTING BAYOU IMMEDIATELY UPSTREAM OF JOHN RALSTON ROAD IN EAST HOUSTON	16657	1007M_01	10	12	HG	HH	RT	6		6					Shallow site
PLUM CREEK/TRIBUTARY OF SIMS BAYOU AT OLD GALVESTON ROAD IN SOUTHEAST HOUSTON	16658	1007I_01	10	12	HG	HH	RT	6	6	6					
PINE GULLY/TRIBUTARY OF SIMS BAYOU AT OLD GALVESTON ROAD IN SOUTHEAST HOUSTON	16659	1007H_01	10	12	HG	HH	RT	6	6	6					
BERRY BAYOU/TRIBUTARY OF SIMS BAYOU IMMEDIATELY UPSTREAM OF AHRENS DRIVE IN SOUTH EAST HOUSTON	16660	1007_06	10	12	HG	HH	RT	6	6	6					
BERRY BAYOU IMMEDIATELY UPSTREAM OF SOUTH RICHEY STREET IN SOUTH EAST HOUSTON	16661	1007F_01	10	12	HG	HH	RT	6	6	6					
BIG GULCH AT WALLISVILLE ROAD IN EAST HOUSTON	16662	1006F_01	10	12	HG	HH	RT	6	6	6					Added conventionals for FY 26

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
SPRING GULLY AT WEST TERMINUS OF BARNESWORTH DRIVE IN NORTHEAST HOUSTON	16663	1006H_01	10	12	HG	HH	RT	6	6	6			4		
GOODYEAR CREEK TIDAL IMMEDIATELY UPSTREAM OF IH 10 IN EAST HOUSTON	16664	1006_05	10	12	HG	HH	RT	6	6	6					
UNNAMED TRIBUTARY OF HALLS BAYOU IMMEDIATELY DOWNSTREAM OF LANGLEY ROAD IN NORTH HOUSTON	16665	1006J_01	10	12	HG	HH	RT	6	6	6					
UNNAMED TRIBUTARY OF HALLS BAYOU AT TALTON STREET IN NORTH EAST HOUSTON	16666	1006I_01	10	12	HG	HH	RT	6	6	6					Added conventionals for FY 26
UNNAMED TRIB OF BUFFALO BAYOU NEAR GLENWOOD CEMETARY ST 120 METERS SOUTH AND 110 METERS WEST OF INTERSECTION OF LUBBOCK ST AND WEST SAWYER ST IN CENTRAL HOUSTON	16675	1013C_01	10	12	HG	HH	RT	6	6	6					
UNNAMED TRIBUTARY OF GREENS BAYOU AT SMITH RD IN NORTHEAST HOUSTON	16676	1016D_01	10	12	HG	HH	RT	6	6	6					
SPRING GULLY AT SPRING CREEK OAKS DRIVE IN TOMBALL	17481	1009D_01	10	12	HG	HH	RT	6	6	6					
LANGHAM CREEK AT SH 6 IN NORTHWEST HOUSTON	17482	1014E_01	10	12	HG	HH	RT	6	6	6	6				
BEAR CREEK AT OLD GREENHOUSE ROAD WEST OF HOUSTON	17484	1014A_01	10	12	HG	HH	RT	6	6	6					
UNNAMED TRIBUTARY OF HORSEPEN BAYOU TIDAL AT PENN HILLS	17485	1113C_01	11	12	HG	HH	RT	6	6	6					
BIG ISLAND SLOUGH AT HILLRIDGE ROAD IN SOUTHEAST HOUSTON	17486	1113E_01	11	12	HG	HH	RT	6	6	6					
WILLOW SPRING AT BANDRIDGE ROAD IN SOUTHEAST HOUSTON	17487	1113D_01	11	12	HG	HH	RT	6		6					Shallow site

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
SPRING CREEK IMMEDIATELY DOWNSTREAM OF KUYKENDAHL ROAD NORTHEAST OF HOUSTON	17489	1008_03	10	12	HG	HH	RT	6	6	6			4		
HALLS BAYOU AT AIRLINE ROAD IN NORTH HOUSTON	17490	1006D_02	10	12	HG	HH	RT	6	6	6					
HALLS BAYOU AT DEER TRAIL DRIVE IN NORTH HOUSTON	17491	1006D_02	10	12	HG	HH	RT	6	6	6	6				Flow from USGS gage 8076200
BUFFALO BAYOU AT SOUTH MASON ROAD WEST OF HOUSTON	17492	1014B_01	10	12	HG	HH	RT	6	6	6					
MASON CREEK 151 METERS DOWNSTREAM OF PARK PINE DRIVE WEST OF HOUSTON	17494	1014L_01	10	12	HG	HH	RT	6	6	6					
GREENS BAYOU IMMEDIATELY UPSTREAM OF MILLS ROAD WEST OF HOUSTON	17495	1016_01	10	12	HG	HH	RT	6	6	6					
FAULKEY GULLY OF CYPRESS CREEK 105 METERS DOWNSTREAM OF LAKEWOOD FOREST DRIVE NORTHWEST OF HOUSTON	17496	1009C_01	10	12	HG	HH	RT	6	6	6					
SIMS BAYOU UPSTREAM TIDAL AT SOUTH POST OAK ROAD IN SOUTHWEST HOUSTON	17976	1007D_01	10	12	HG	HH	RT	6	6	6					
UNNAMED TRIBUTARY OF BUFFALO BAYOU IMMEDIATELY DOWNSTREAM OF EMILE ST ON NORTH BANK 120 M SOUTH OF CLINTON DRIVE IN CENTRAL HOUSTON	17977	1007O_01	10	12	HG	HH	RT	6	-	6					Shallow site, removed conventionals in FY26
UNNAMED TRIBUTARY OF HUNTING BAYOU AT MINDEN STREET APPROXIMATELY 0.3 KM EAST OF LOCKWOOD AND S OF N 610 LOOP EAST	18689	1007V_01	10	12	HG	HH	RT	6		6					Shallow site
BINTLIFF DITCH TRIBUTARY OF BRAYS BAYOU UNDER CENTER OF BISSONNET ST BRIDGE 317 M NE OF BISSONNET AT FONDREN RD IN SW HOUSTON	18690	1007T_01	10	12	HG	HH	RT	6		6					Shallow site
MIMOSA DITCH TRIBUTARY OF BRAYS BAYOU AT NEWCASTLE DR IN SOUTHWEST HOUSTON	18691	1007U_01	10	12	HG	HH	RT	6		6					Shallow site

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
POOR FARM DITCH TRIBUTARY OF BRAYS BAYOU AT EASTBOUND NORTH BRAESWOOD BLVD APPROX 200 M E OF BUFFALO SPEEDWAY IN SW HOUSTON	18692	1007S_01	10	12	HG	HH	RT	6		6					Shallow site
KEEGANS BAYOU AT SYNOTT ROAD 1.1 KM SOUTH OF THE INTERSECTION OF SYNOTT ROAD AND BISSONET STREET IN SOUTHWEST HOUSTON	20211	1007C_01	10	12	HG	HH	RT	6	6	6					
BUFFALO BAYOU NORTH SHORE IMMEDIATELY UNDERNEATH THE SOUTHBOUND FEEDER ROAD BRIDGE OF IH 610 WEST IN HOUSTON	20212	1014_01	10	12	HG	HH	RT	6	6	6					
WILLOW CREEK AT TUWA ROAD APPROXIMATELY 859 METERS DOWNSTREAM OF FM 2920 ROAD IN NORTHERN HARRIS COUNTY	20730	1008H_01	10	12	HG	HH	RT	6	6	6					
SIMS BAYOU AT GALVESTON ROAD IN HOUSTON	20736	1007_02	10	12	HG	HH	RT	6	6	6					
GREENS BAYOU AT WALLISVILLE ROAD APPROX 150 METERS NORTHEAST OF THE INTERSECTION OF DATTNER ROAD AND WALLISVILLE ROAD IN HOUSTON	21008	1006_03	10	12	HG	HH	RT	6	6	6					
HARRIS COUNTY FLOOD CONTROL DISTRICT CHANNEL D138 / CHIMNEY DITCH IMMEDIATELY UPSTREAM OF CAVERSHAM DRIVE BETWEEN THE NORTHBOUND AND SOUTHBOUND SECTIONS OF CHIMNEY ROCK ROAD IN HOUSTON	21180	1007W_01	10	12	HG	HH	RT	6	6	6					
SOUTH MAYDE CREEK AT SOUTH PARK VIEW DRIVE WEST OF HOUSTON	21813	1014H_02	10	12	HG	HH	RT	6	6	6					
UNNAMED TRIBUTARY OF GREENS BAYOU AT ALDINE WESTFIELD RD	22090	1016C_01	10	12	HG	HH	RT	6	6	6					

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
UNNAMED TRIBUTARY OF WHITE OAK BAYOU 18 METERS SOUTH AND 18 METERS WEST OF HELBERG RD DEAD END	22094	1017D_01	10	12	HG	HH	RT	6	6	6					
TURKEY CREEK AT CLAY ROAD IN NORTHWEST HOUSTON	22169	1014K_02	10	12	HG	HH	RT	6	6	6			4		
CYPRESS CREEK AT FRY ROAD 3.3 KM UPSTREAM OF US 290/NORTHWEST FWY	22393	1009_01	10	12	HG	HH	RT	6	6	6	6		4		
BUFFALO BAYOU TIDAL AT CONGRESS ST BRIDGE IN HOUSTON	22396	1013_01	10	12	HG	HH	RT	6	6	6					
KENNEDY GULLY OF HALLS BAYOU AT WOODLYN ROAD IN NORTHEAST HOUSTON	22474	1006L_01	10	12	HG	HH	RT	6		6					Shallow site
CRYSTAL CREEK AT FM 1314	11181	1004D_01	10	12	HG	HW	RT	6	6	6			4		
LUCE BAYOU/SAN JACINTO RIVER EAST FORK AT HUFFMAN-NEW CANEY ROAD	11187	1002_01	10	12	HG	HW	RT	6	6	6					
LAKE HOUSTON NORTH SIDE OF MISSOURI PACIFIC RAILROAD BRIDGE 137 METERS SOUTH AND 1.36 KM WEST OF INTERSECTION OF PINO LN AND SUNOCO RD	11208	1002_03	10	12	HG	HW	RT	12	12	12			4	4	
LAKE HOUSTON AT FM 1960 WEST END PASS BRIDGE 269 M N AND 731 M E OF INTERSECTION OF ATASCOCITA SHORES AND FM 1960/CITY HO SITE 9	11211	1002_02	10	12	HG	HW	RT	12	12	12					
LAKE HOUSTON AT FM 1960 EAST END PASS BRIDGE 235 M S AND 950 M WEST OF INTERSECTION OF FM 1960 AND FAIRLAKE LANE/CITY HO SITE 13	11212	1002_01	10	12	HG	HW	RT	12	12	12					
EAST FORK SAN JACINTO RIVER AT FM 1485	11235	1003_01	10	12	HG	HW	RT	6	6	6	6		4		Flow from USGS gage 8070200
EAST FORK SAN JACINTO RIVER IMMEDIATELY UPSTREAM OF TX-105 BUSINESS ROUTE / W SOUTHLINE STREET WEST OF CLEVELAND	11238	1003_02	10	12	HG	HW	RT	6	6	6	6		4		Flow from USGS gage 8070000

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
WEST FORK SAN JACINTO RIVER IMMEDIATELY UPSTREAM OF SH 242	11243	1004_01	10	12	HG	HW	RT	6	6	6			4		
WEST FORK SAN JACINTO RIVER AT FM 2854 WEST OF CONROE	11250	1004_02	10	12	HG	HW	RT	6	6	6	6				Added in FY 26 to replace site 11251, USGS gage site 08067653
SPRING CREEK BRIDGE AT IH 45 20 MILES NORTH OF HOUSTON	11313	1008_03	10	12	HG	HW	RT	6	6	6	6		4		Flow from USGS gage 8068500
CYPRESS CREEK BRIDGE ON IH 45 15 MI NORTH OF HOUSTON	11328	1009_03	10	12	HG	HW	RT	6	6	6	6		4		Flow from USGS gage 8069000
CANEY CREEK IMMEDIATELY DOWNSTREAM OF FM 1485	11334	1010_04	10	12	HG	HW	RT	6	6	6					
PEACH CREEK BRIDGE AT FM 2090 IN SPLENDORA	11337	1011_01	10	12	HG	HW	RT	6	6	6	6		4		Flow from USGS gage 08071000
LAKE HOUSTON SITE AL NEAR DAM 1.24 KM NORTH AND 361 METERS EAST OF INTERSECTION OF RIVER TRAIL AND EISENHOWER PARK ROAD	13943	1002_05	10	12	HG	HW	RT	12	12	12					Added in FY 26
LAKE HOUSTON 90 M S AND 349 M W OF INTERSECTION OF MAGNOLIA PT DR AND DIAMOND WAY CANEY CREEK ARM IN HOUSTON	16623	1002_07	10	12	HG	HW	RT	12	12	12					
PEACH CREEK IMMEDIATELY UPSTREAM OF OLD HWY 105	16625	1011_01	10	12	HG	HW	RT	6	6	6					
STEWARTS CREEK 175 METERS DOWNSTREAM OF SH LOOP 336 SOUTHEAST OF CONROE	16626	1004E_02	10	12	HG	HW	RT	6	6	6			4		
LK HOUSTON W OF LK SHADOWS SUBDIVISION MID LAKE NW OF HOUSTON 2.09 KM N AND 1.38 KM E OF INTERSECT OF LK HOUSTON PKWY AND DITE CAYLIN	16668	1002_04	10	12	HG	HW	RT	12	12	12					

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
LAKE HOUSTON IN THE WEST FORK SAN JACINTO RIVER CHANNEL 270 M EAST AND 60 M NORTH OF MISTY COVE AT ATASCOCITA PLACE DR	18667	1002_02	10	12	HG	HW	RT	12	12	12			4	4	
LAKE HOUSTON/LUCE BAYOU 123 M NORTH AND 188 M WEST OF LAKEWATER DR AT WATERWOOD DR IN WATER WONDERLAND SUBDIVISION IN HARRIS COUNTY	18670	1002_01	10	12	HG	HW	RT	12	12	12			4	4	
LAKE HOUSTON WEST FORK SAN JACINTO RIVER ARM UNDER POWER LINES 567 METERS EAST AND 538 METERS NORTH FROM THE INTERSECTION OF BELLEAU WOOD DRIVE AND SOUTHSHORE DRIVE IN HOUSTON	20782	1002_06	10	12	HG	HW	RT	12	12	12					
CANEY CREEK AT MILLMAC ROAD NORTHEAST OF CUT AND SHOOT	21465	1010_02	10	12	HG	HW	RT	6	6	6			4		
LUCE BAYOU 224 METERS NORTHWEST OF END OF CRY BABY LANE IN HUFFMAN	22224	1002_01	10	12	HG	HW	RT	12	12	12					
LAKE CONROE AT DAM MID CHANNEL 85 M OUT FROM MIDDLE TAINTER GATE 922 M N AND 426 M E OF INTERSECTION OF DAM SITE RD AND SH 105	11342	1012_11	10	12	HG	SJ	RT	12	12	12			4	4	
LAKE CONROE AT FM 1375 IN THE MAIN CHANNEL 4TH PILING FROM THE EAST 541 M SOUTH AND 1.40 KM W OF INTERSECTION OF KAGLE RD AND FM 1375 USGS SITE GC	11344	1012_01	10	12	HG	SJ	RT	12	12	12			4	4	
LAKE WOODLANDS AT WESTERN REACH 110 METERS NORTH AND 100 METERS EAST OF INTERSECTION OF MEADOW COVE DR AND PLEASURE COVE DR IN THE WOODLANDS	16481	1008F_04	10	12	HG	SJ	RT	12	4	4					
LAKE WOODLANDS AT SOUTH END 23 METERS NORTH AND 50 METERS EAST OF	16482	1008F_03	10	12	HG	SJ	RT	12	4	4			4	4	

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
THE WEST EDGE OF DAM IN THE WOODLANDS															
LAKE WOODLANDS AT MID POINT 130 METERS NORTH AND 30 METERS EAST OF THE NORTHERN INTERSECTION OF E SHORE DR AND CAPE HARBOR PL IN THE WOODLANDS	16483	1008F_02	10	12	HG	SJ	RT	12	4	4					
LAKE WOODLANDS AT NORTH END 111 METERS DOWNSTREAM OF RESEARCH FOREST DRIVE IN THE WOODLANDS	16484	1008F_01	10	12	HG	SJ	RT	12	4	4					
LOWER PANTHER BRANCH AT FOOTBRIDGE 265 M UPSTREAM OF SAWDUST RD APPROX 200 M UPSTREAM OF PERMIT WQ0011401-001 LOCATED AT 2436 SAWDUST ROAD	16627	1008C_02	10	12	HG	SJ	RT	12	4	4					
UPPER PANTHER BRANCH APPROX 170 METERS DOWNSTREAM OF PERMIT WQ0012597-001 LOCATED AT 5402 RESEARCH FOREST DR	16630	1008B_01	10	12	HG	SJ	RT	12	4	4					
BEAR BRANCH 20 METERS DOWNSTREAM OF RESEARCH FOREST DRIVE	16631	1008E_01	10	12	HG	SJ	RT	12	4	4	12				Flow from USGS gage 8068390
LAKE CONROE AT APRIL POINT MID CHANNEL 559 M N AND 586 M E OF INTERSECTION OF APRIL POINT PLACE AND APRIL HILL	16638	1012_08	10	12	HG	SJ	RT	12	12	12			4	4	SJRA is adding TKN and Chlorophyll-a at this site in FY26
LAKE CONROE AT SOUTH END OF LAKE ON EAST SIDE 201 METERS SOUTH AND 732 METERS WEST OF INTERSECTION OF S VALLEY DRIVE AND CREST DRIVE	16639	1012_11	10	12	HG	SJ	RT	12	12	12			4	4	
LAKE CONROE S OF BENTWATER ISLAND WEST COVE S OF FM 1097 BRIDGE 769 M N AND 89 M E OF INTERSECTION OF WATERFRONT AND SPRINGTIME DR	16640	1012_06	10	12	HG	SJ	RT	12	12	12			4	4	SJRA is adding TKN and Chlorophyll-a at this site in FY26

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
LAKE CONROE AT AQUARIUS POINT MID CHANNEL N OF FM 830 BOAT RAMP 437 M N AND 924 M W OF INTERSECT OF FM 830 AND LAKEVIEW MANOR DR	16641	1012_07	10	12	HG	SJ	RT	12	12	12			4	4	SJRA is adding TKN and Chlorophyll-a at this site in FY26
LAKE CONROE AT LAKE MID POINT MID CHANNEL AT FM 1097 BRIDGE 57 M S AND 520 M W OF INTERSECTION OF FM 1097 AND BLUEBERRY HILL	16642	1012_05	10	12	HG	SJ	RT	12	12	12			4	4	
LAKE CONROE AT HUNTERS POINT CANEY CREEK ARM E OF SCOTTS RIDGE BOAT RAMP 640 M N AND 558 M E OF INTERSECT OF TEEL RD AND HUNTERS TRL	16643	1012_04	10	12	HG	SJ	RT	12	12	12			4	4	SJRA is adding TKN and Chlorophyll-a at this site in FY26
LAKE CONROE AT PARADISE POINT MID CHANNEL 396 METERS S AND 309 M WEST INTERSECTION OF PARADISE VIEW DRIVE AND PARADISE POINT DRIVE	16644	1012_03	10	12	HG	SJ	RT	12	12	12			4	4	SJRA is adding TKN and Chlorophyll-a at this site in FY26
LAKE CONROE AT MOUTH OF SANDY BRANCH COVE 2.63 KM EAST OF INTERSECTION OF HARDY SMITH ROAD AND F S 218 A	16645	1012_02	10	12	HG	SJ	RT	12	12	12			4	4	SJRA is adding TKN and Chlorophyll-a at this site in FY26
BEAR BRANCH IMMEDIATELY UPSTREAM OF THE BEAR BRANCH RESERVIOR DAM ABOUT 115 METERS UPSTREAM OF KUYKENDAHL ROAD	22493	1008E_01	10	12	HG	SJ	RT	12	4	4					
LOWER PANTHER BRANCH 70 METERS FROM THE CUL-DE-SAC ON GROGANS POINT RD	22570	1008C_01	10	12	HG	SJ	RT	12	4	4					New site in FY26 to replace 16422
EAST FORK SAN JACINTO RIVER AT FM 2090 IN LIBERTY COUNTY	11236	1003_01	10	12	HG	TF	RT	4	4	4	4				
EAST FORK SAN JACINTO RIVER IMMEDIATELY DOWNSTREAM OF FM 945 5.6 MILES NORTH OF CLEVELAND	11237	1003_03	10	10	HG	TF	RT	4	4	4	4				

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
EAST FORK SAN JACINTO RIVER IMMEDIATELY DOWNSTREAM OF US 59 AT RED GULLY	14242	1003_02	10	12	HG	TF	RT	4	4	4	4				
LAKE RAVEN ALLIGATOR BRANCH ARM APPROXIMATELY 173 METERS NORTH AND 16 METERS WEST OF NORTH END OF DAM SOUTH OF HUNTSVILLE	17338	1012C_01	10	12	HG	TF	RT	4	4	4			4	4	Added in FY26, sample from end of boat ramp dock in Huntsville State Park
TARKINGTON BAYOU AT SH 105/SH 321 SOUTHEAST OF CLEVELAND	20466	1002A_01	10	12	HG	TF	RT	4	4	4	4		4		Added in FY24
WINTERS BAYOU AT FM 2929 / FOUR NOTCH ROAD 4.8 KILOMETERS SOUTH OF PHELPS IN WALKER COUNTY	21933	1003A_01	10	12	HG	TF	RT	4	4	4	4				
BOSWELL CREEK AT FOUR NOTCH ROAD / BOSWELL ROAD 13 KILOMETERS NORTHEAST OF NEW WAVERLY IN WALKER COUNTY	21934	1003C_01	10	12	HG	TF	RT	4	4	4	4				
WINTERS BAYOU AT FM 2693 IN SAN JACINTO COUNTY	21935	1003A_01	10	10	HG	TF	RT	4	4	4	4				
WINTERS BAYOU AT DABNEY BOTTOM RD IN SAN JACINTO COUNTY	21937	1003A_01	10	10	HG	TF	RT	4	4	4	4				
NEBLETTS CREEK AT FM 1725 IN SAN JACINTO COUNTY	21938	1003B_01	10	10	HG	TF	RT	4	4	4	4				
EAST FORK SAN JACINTO RIVER AT NORTH BUTCH ARTHUR ROAD IN SAN JACINTO COUNTY	21939	1003_02	10	10	HG	TF	RT	4	4	4	4				
TARKINGTON BAYOU AT FM 787 APPROXIMATELY 1.1 KM EAST OF CAMPBELL ST IN CLEVELAND TX	22431	1002A_02	10	12	HG	TF	RT	4	4	4	4		4		Added in FY24
CEDAR BAYOU TIDAL MID CHANNEL 45 M DOWNSTREAM OF SH 146 NORTHEAST OF BAYTOWN	11115	0901_01	9	12	HG	UI	RT	4	4	4					

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
CEDAR BAYOU ABOVE TIDAL 30 M DOWNSTREAM OF FM 1942 AT EAST BANK	11118	0902_01	9	12	HG	UI	RT	4	4	4	4				
CEDAR BAYOU ABOVE TIDAL 45 M DOWNSTREAM OF FM 1960 NORTHEAST OF HUFFMAN	11123	0902_01	9	12	HG	UI	RT	4	4	4	4		4		
MOSES BAYOU AT NORTHBOUND SH 146 BRIDGE AT MID-BRIDGE NORTH OF LA MARQUE	11400	2431A_01	24	12	HG	UI	RT	4	4	4					
HIGHLAND BAYOU AT FAIRWOOD ROAD IN LA MARQUE IN GALVESTON COUNTY	11415	2424A_03	24	12	HG	UI	RT	4	4	4					
MUSTANG BAYOU AT FM 2917 SOUTH OF ALVIN	11423	2432A_01	24	12	HG	UI	RT	4	4	4	4		4		
CEDAR CREEK AT FM 517 W OF DICKINSON	11434	1103E_01	11	12	HG	UI	RT	4	4	4	4				
GUM BAYOU AT FM 517 E OF DICKINSON	11436	1103D_01	11	12	HG	UI	RT	4	4	4			4		
DICKINSON BAYOU TIDAL AT SH 146 BRIDGE EAST OF DICKINSON	11455	1103_01	11	12	HG	UI	RT	4	4	4			4		
DICKINSON BAYOU TIDAL AT IH 45	11462	1103_04	11	12	HG	UI	RT	4	4	4					
CHOCOLATE BAYOU TIDAL FM 2004 BRIDGE SOUTH OF ALVIN	11478	1107_01	11	12	HG	UI	RT	4	4	4			4	4	
OYSTER CREEK TIDAL AT THAT-WAY DRIVE 0.5 MILES BELOW FM 2004	11486	1109_01	11	12	HG	UI	RT	4	4	4			4		
OYSTER CREEK IMMED. DOWNSTREAM OF SH 35 WEST OF ANGLETON	11490	1110_01	11	12	HG	UI	RT	4	4	4	4		4		
OYSTER CREEK AT SIMS RD / BRAZORIA CR 30 WEST OF ANGLETON	11491	1110_02	11	12	HG	UI	RT	4	4	4	4		4		
OYSTER CREEK AT FM 1462 WEST OF ROSHARON	11493	1110_03	11	12	HG	UI	RT	4	4	4	4		4		
HARDEMAN SLOUGH IMMEDIATELY DOWNSTREAM OF ALLENHURST RD NE OF FM 2540 NEAR ALLENHURST COMMUNITY	12135	1305A_01	13	12	HG	UI	RT	4	4	4	4				

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
LINNVILLE BAYOU 35 M DOWNSTREAM OF SIMS ROAD / CR 153 APPROXIMATELY 5.20 KM UPSTREAM OF MOUTH	12138	1304A_01	13	12	HG	UI	RT	4	4	4	4		4		
CANEY CREEK IMMEDIATELY UPSTREAM OF CONCRETE BRIDGE 210 M DOWNSTREAM OF LINVILLE BAYOU CONFLUENCE AND ADJACENT TO FM 521	12151	1304_02	13	12	HG	UI	RT	4	4	4					
CANEY CREEK AT SERGEANT JOE PARKS JR MEMORIAL HIGHWAY / FM 457 IN MATAGORDA COUNTY	12153	1305_01	13	12	HG	UI	RT	4	4	4	4		4		
CANEY CREEK ABOVE TIDAL 35 M DOWNSTREAM OF ASHWOOD RD/FM 3156 1.24 KM SOUTHWEST OF MATAGORDA CR1728 ASHWOOD	12155	1305_03	13	12	HG	UI	RT	4	4	4	4		4		
WEST BAY OFFAT BAYOU MID BAYOU OPPOSITE LAKE MADELINE CANAL	13322	2424D_02	24	12	HG	UI	RT	4	4	4			4	4	
WEST BAY AT RANGE MARKER D BETWEEN SOUTH DEER ISLAND AND TEICHMAN POINT	14622	2424_02	24	12	HG	UI	RT	4	4	4			4	4	
OFFATTS BAYOU OFF CM 18	14645	2424D_03	24	12	HG	UI	RT	4	4	4					
HIGHLAND BAYOU TIDAL AT FM 519 335 METERS NORTH OF SH 6 IN CITY OF HITCHCOCK IN GALVESTON COUNTY	15941	2424A_04	24	12	HG	UI	RT	4	4	4			4		
SAN BERNARD RIVER IMMEDIATELY DOWNSTREAM OF FM 3013 ON THE COLORADO-AUSTIN COUNTY LINE APPROXIMATELY 15KM SW OF SEALY	16370	1302_03	13	12	HG	UI	RT	4	4	4	4				
GUM TREE BRANCH AT WHARTON CR 242 APPROXIMATELY 5.9 KM SE OF LISSIE	16371	1302A_01	13	12	HG	UI	RT	4	4	4	4				
GEISLER BAYOU AT FM517 BRIDGE 0.19MI UPSTREAM OF DICKINSON BAYOU IN DICKINSON	16470	1103C_01	11	12	HG	UI	RT	4	4	4					
BENSONS BAYOU AT FM 517 / PINE DR IN DICKINSON	16471	1103A_01	11	12	HG	UI	RT	4	4	4					

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
MARYS CREEK AT MARYS CROSSING IN NORTH FRIENDSWOOD	16473	1102B_01	11	12	HG	UI	RT	4	4	4	4		4		
ROBINSONS BAYOU AT FM270 IN LEAGUE CITY	16475	1101D_01	11	12	HG	UI	RT	4	4	4					
HIGHLAND BAYOU 80 M NORTHEAST OF SH 6 BRIDGE CENTERPOINT IN BAYOU VISTA WEST OF IH 45 IN GALVESTON COUNTY	16488	2424A_01	24	12	HG	UI	RT	4	4	4			4	4	
MARCHAND BAYOU TIDAL AT FM519 IN HITCHCOCK	16490	2424C_01	24	12	HG	UI	RT	4	4	4					
HIGHLAND BAYOU AT FM 2004 IN HITCHCOCK IN GALVESTON COUNTY	16491	2424A_05	24	12	HG	UI	RT	4	4	4			4		
CHIGGER CREEK AT FM528 BRIDGE IN FRIENDSWOOD	16493	1101B_01	11	12	HG	UI	RT	4	4	4	4				
HIGHLAND BAYOU AT END OF BAYOU LANE FREDDIESVILLE	16562	2424A_02	24	12	HG	UI	RT	4	4	4					
LAKE MADELINE AT CORNER OF BELUCHE DRIVE AND DOMINIQUE DRIVE IN GALVESTON	16564	2424B_01	24	12	HG	UI	RT	4	4	4			4	4	
CLEAR CREEK TIDAL AT BROOKDALE DR APPROX 0.1MI DOWNSTREAM OF GRISSOM RD IN COUNTRYSIDE PARK IN CANOE LAUNCHING AREA IN LEAGUE CITY	16576	1101_02	11	12	HG	UI	RT	4	4	4			4		
MAGNOLIA CREEK AT W BAY AREA BLVD LEAGUE CITY APPROX 250 M UPSTREAM OF WWTP PERMIT WQ0010568-003	16611	1101A_01	11	12	HG	UI	RT	4	4	4	4				
COWART CREEK 9 METERS UPSTREAM FROM CASTLEWOOD DRIVE BRIDGE IN FRIENDSWOOD	16677	1102A_02	11	12	HG	UI	RT	4	4	4	4				
HICKORY SLOUGH AT ROBINSON DRIVE IN PEARLAND	17068	1102C_01	11	12	HG	UI	RT	4	4	4	4				
CHOCOLATE BAY 200 M NORTHWEST OF HORSE GROVE POINT AND 5.1 KM DOWNSTREAM OF FM 2004	17086	2432_01	24	12	HG	UI	RT	4	4	4			4	4	

Site Description	Station ID	Segment _AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
MOSES BAYOU AT SH 3 IN TEXAS CITY	17910	2431E_01	24	12	HG	UI	RT	4	4	4	4				
NEW BAYOU AT FM 2004 S/SW OF HITCHCOCK	17911	2432E_01	24	12	HG	UI	RT	4	4	4					
PERSIMMON BAYOU AT FM 2004 S/SW OF HITCHCOCK	17913	2432D_01	24	12	HG	UI	RT	4	4	4					
COW BAYOU AT NASA ROAD 1 IN WEBSTER 100 M EAST OF FM 270/EL CAMINO REAL	17928	1101C_01	11	12	HG	UI	RT	4	4	4					
AUSTIN BAYOU AT FM 2004 APPROXIMATELY 4 MILES SOUTHEAST OF ANGLETON TEXAS IN BRAZORIA COUNTY	18048	1105B_01	11	12	HG	UI	RT	4	4	4			4	4	
BASTROP BAYOU OFF BAYOU WOOD DR DUE EAST OF BRAZORIA CR 201 AT BASTROP BAYOU DR APPROX 1.1 KM UPSTREAM OF SH 288B IN RICHWOOD VILLAGE	18502	1105_01	11	12	HG	UI	RT	4	4	4					
BASTROP BAYOU TIDAL APPROXIMATELY 15 M OFF NORTH BANK AND 1.55 KM UPSTREAM OF FM 2004 IN RICHWOOD VILLAGE	18503	1105_01	11	12	HG	UI	RT	4	4	4					
BASTROP BAYOU TIDAL MID CHANNEL AT NORTH END OF BASTROP BEACH ROAD 350 M DOWNSTREAM OF FM 523 SE OF ANGLETON	18504	1105_01	11	12	HG	UI	RT	4	4	4					
BASTROP BAYOU TIDAL 38 M NORTH OF N END OF COMPASS DR/BRAZORIA CR 504 APPROXIMATELY 4.4 KM DOWNSTREAM OF FM 523 SE OF ANGLETON	18505	1105_01	11	12	HG	UI	RT	4	4	4			4	4	
AUSTIN BAYOU IMMEDIATELY UPSTREAM OF DANBURY-ANGLETON ROAD/BRAZORIA CR 210 EAST OF DANBURY	18506	1105C_01	11	12	HG	UI	RT	4	4	4	4		4		
FLORES BAYOU IMMEDIATELY UPSTREAM OF DANBURY-ANGLETON ROAD/BRAZORIA CR 210 EAST OF ANGLETON	18508	1105A_01	11	12	HG	UI	RT	4	4	4	4				
MUSTANG BAYOU IMMEDIATELY UPSTREAM OF EAST SOUTH STREET 85 METERS WEST OF SOUTHBOUND SH 35 IN ALVIN USGS ID 8077890	18554	2432A_02	24	12	HG	UI	RT	4	4	4	4				

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
UNNAMED TRIBUTARY OF CLEAR CREEK TIDAL IN FOREST PARK CEMETERY IMMEDIATELY UPSTREAM OF S FEEDER RD OF I 45/GULF FWY S OF NASA RD 1 IN WEBSTER	18591	1101F_01	11	12	HG	UI	RT	4	4	4	4				
UNNAMED TRIBUTARY OF MOSES LAKE AT STATE LOOP 197/25TH AVE NORTH 432 M EAST OF NORTHBOUND SH 146 IN TEXAS CITY	18592	2431C_01	24	12	HG	UI	RT	4	4	4					
HIGHLAND BAYOU DIVERSION CANAL MID CHANNEL AT SECOND STREET BRIDGE 467 M UPSTREAM OF PRICE ROAD WWTP RELEASE IN HITCHCOCK	18593	2424G_01	24	12	HG	UI	RT	4	4	4					
MARYS CREEK BYPASS AT EAST BROADWAY ST/FM 518 WEST OF SUNSET MEADOWS DR IN PEARLAND	18639	1102F_01	11	12	HG	UI	RT	4	4	4	4				
WILLOW BAYOU AT BAKER ST 404 M UPSTREAM OF FM 2004 SOUTH OF SANTA FE IN GALVESTON COUNTY	18668	2432B_01	24	12	HG	UI	RT	4	4	4	4				
ENGLISH BAYOU MID BAYOU 250 M EAST AND 83 M SOUTH OF 61ST ST BRIDGE CENTERPOINT IN GALVESTON	18695	2424E_01	24	12	HG	UI	RT	4	4	4			4	4	
CLEAR CREEK ABOVE TIDAL AT YOST ROAD TERMINUS IN PEARLAND IN BRAZORIA COUNTY	20010	1102_03	11	12	HG	UI	RT	4	4	4	4				
SAN BERNARD RIVER TIDAL AT SH 35 SOUTHWEST OF WEST COLUMBIA	20460	1301_01	13	12	HG	UI	RT	4	4	4					
WEST BERNARD CREEK AT WHARTON CR 225 EAST OF HUNGERFORD	20721	1302B_01	13	12	HG	UI	RT	4	4	4	4		4		
PEACH CREEK AT WHARTON CR 117/CHUDALLA ROAD/ARCHER ROAD 89 METERS SOUTH OF THE INTERSECTION OF WHARTON CR 117/CHUDALLA ROAD/ARCHER ROAD AND WHARTON CR 121/ WHARTON CR 119/DONALDSON ROAD IN EAST OF WHARTON	20722	1302D_01	13	12	HG	UI	RT	4	4	4	4		4		

Site Description	Station ID	Segment_AU	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	TKN	Chlorophyll-a	Comments
MOUND CREEK AT BRAZORIA CR 450/JACKSON SETTLEMENT ROAD 1.22 KILOMETERS UPSTREAM OF FM 1301 IN WEST OF WEST COLUMBIA	20723	1302E_01	13	12	HG	UI	RT	4	4	4	4		4		
BORDENS GULLY AT SPRUCE DRIVE IN DICKINSON	20724	1103B_01	11	12	HG	UI	RT	4	4	4	4		4		
UNNAMED TRIBUTARY OF GUM BAYOU AT OWENS DRIVE 1.51 KILOMETERS UPSTREAM OF CONFLUENCE WITH GUM BAYOU IN DICKINSON	20728	1103G_01	11	12	HG	UI	RT	4	4	4					
CARY BAYOU IMMEDIATELY UPSTREAM OF RACCOON DRIVE BRIDGE IN BAYTOWN	21079	0901A_01	9	12	HG	UI	RT	4	4	4			4		
CHOCOLATE BAYOU IMMEDIATELY UPSTREAM OF BRAZORIA CR 171 / MUSTANG CHOCOLATE BAYOU ROAD IN LIVERPOOL	21178	1107_01	11	12	HG	UI	RT	4	4	4					
MUSTANG BAYOU AT THE HEIGHTS-MANVEL ROAD /CARDINAL DRIVE BRIDGE NEAR ALVIN	21416	2432A_03	24	12	HG	UI	RT	4	4	4	4				
UNNAMED TRIBUTARY OF BASTROP BAYOU TIDAL AT BRAZORIA CR 213 / SHELL ROAD 7.0 KILOMETERS EAST OF ANGLETON	21735	1105D_01	11	12	HG	UI	RT	4	4	4	4		4		
TURKEY CREEK AT BEAMER ROAD 1.5 KM SOUTHEAST OF FM 1959/DIXIE FARM ROAD IN FRIENDSWOOD	21925	1102D_01	11	12	HG	UI	RT	4	4	4	4				
AUSTIN BAYOU TIDAL 1.60 KILOMETERS UPSTREAM OF THE CONFLUENCE WITH BASTROP BAYOU TIDAL IN BRAZORIA COUNTY	22012	1105B_01	11	12	HG	UI	RT	4	4	4			4	4	
ARMAND BAYOU TIDAL 100 M BELOW THE CONFLUENCE WITH SPRING GULLY	22187	1113_03	11	12	HG	UI	RT	4	4	4			4	4	
MOSES BAYOU ABOVE TIDAL APPROXIMATELY 60 METERS SOUTH OF EXPLORER DRIVE CUL-DE-SAC WEST OF HWY 3 / GALVESTON RD IN TEXAS CITY	22497	2431E_01	24	12	HG	UI	RT	4	4	4	4				Added in FY25

Appendix C: Station Location Map

Station Location Map

A map of stations monitored by the H-GAC and their regional sub-participants are provided below. The map was generated by the H-GAC. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact the H-GAC DM, Jessie Casillas at 713-993-4594.

H-GAC's FY2026 Regional Coordinated Monitoring Stations

Coordinated Monitoring Stations

- City of Houston, Houston Health Department (HH)
- Environmental Institute of Houston (UI)
- Houston-Galveston Area Council (HG)
- Texas Research Institute for Environmental Studies (TF)
- San acinto River Authority (S)
- Harris County Pollution Control Services (HC)
- City of Houston, Regulatory Compliance and Utility Development (HW)
- HG 24-Hour Dissolved Oxygen Site
- UI 24-Hour Dissolved Oxygen Site

N

0 5 10 20 30 40 KM

Developed By: Water Resources Group
Phone: (713) 993-4594 Email: Jessica.Casillas@h-gac.com
Data Source: H-GAC
Last Update: July 25, 2025

Houston-Galveston Area Council

Appendix D: Field Data Sheets

H-GAC – Ambient Monitoring Data Sheet

Date (mm/dd/yyyy): _____/_____/_____ Station ID and description: _____

Time (hh:mm):_____ Samples Collected by:_____

Total Water Depth at sampling location	meters		# of Days Since Last Significant Rainfall	
FIELD MEASUREMENTS If depth <0.5: take one measurement at 1/3 total depth. If ≥ 0.5 but < 1.5: take one measurement at 0.3m from surface If ≥ 1.5m deep - perform profile at 0.3m from bottom, middle, and 0.3m from surface If ≥ 3m deep take profile at 0.3m from bottom, then every whole meter until 0.3m from surface (eg:4.2 = 3.9m, 3m, 2m, 1m, 0.3m)				
Sampling Depth	meters			
Water Temperature	ºC			
Specific Conductance	µS/cm			
pH	standard units			
Dissolved Oxygen	mg/L			

Secchi disk or tube	Water Color	Water Odor	Present Weather	Wind Intensity	Water Surface	Flow Severity
meters	1 – brownish 2 – reddish 3 – greenish 4 – blackish 5 – clear 6 – other	1 – sewage 2 – oily/chemical 3 – rotten egg 4 – musky 5 – fishy 6 – none 7 – other	1 – clear 2 – partly cloudy 3 – cloudy 4 – raining 5 – other	1 – calm 2 – slight 3 –moderate 4 – strong	1 – calm 2 – ripples 3 – waves	1 – no flow 2 – low 3 – normal 4 – flood 5 – high 6 – dry

Flow Method	1 – gage 2 – electric 3 – mechanical 4 – weir/flume 5 – Doppler	
USGS Gage #		
Flow Equipment	1 – M9 River Surveyor 2 – Flow Tracker 3 – OTT MF Pro 4 – RS5	
Flow (Field)	cfs	
Flow (Post Processing)	cfs	

If site has isolated pools (>10 m in length and 0.4m deep) record the following within a 500 meter reach OR the visible distance if not accessible. If not isolated pools = NA		
Maximum Pool Width	meters	
Maximum Pool Depth	meters	
Pool Length	meters	
Percent Pool Coverage in 500 meter Reach	%	
Comments or Observation		

Fresh (non-tidal) _____

Marine (tidal) _____

Containers	Preservatives	Analyses	Requested

Multiparameter Sonde Handheld SN: _____

H-GAC 24 Hour Dissolved Oxygen Monitoring Data Sheet

Station ID and description: _____

Deployment Date (mm/dd/yyyy): ____/____/_____ Time (hh:mm):_____ Deployed By: _____

Sonde Serial Number: _____ Fresh (non-tidal) _____ Tidal _____

Flow (cfs):_____ Flow Method: _____ (USGS Gage = 1, ADP=5)

Flow Severity: _____ (1 – no flow; 2 – low; 3 – normal; 4 – flood; 5 – high; 6 – dry)

Total depth (m): _____

Retrieval Date: **(mm/dd/yyyy)**: ____/____/_____ Time (hh:mm):_____ Retrieved By: _____

Total depth (m): _____

Data Check – Performed in field at time of retrieval (initial each line)

_____ Series reviewed to verify that sonde stayed in water during entire deployment

_____ Series reviewed to verify that all readings have a valid DO mg/L values

_____ Series reviewed to verify that a minimum of one reading (preferred 4) were collected each hour for 24 hours

COMMENTS

Data Processing – Performed at office

Data reviewed and clipped to 24 hours by: _____

Start and End of clipped 24hrs of data:

*Start Date (mm/dd/yyyy)_____ Start Time (hh:mm) _____ Start Depth (m)_____ Start DO (mg/L)_____

End Date (mm/dd/yyyy)_____ End Time (hh:mm) _____ End Depth (m)_____ End DO (mg/L)_____

Data Entered in CRP Database By:_____ Date:_____

*****Start Date, Start Time, and Start Depth are entered in the database, even though column header says "END". Also enter station ID, flow severity, flow value, flow method, and comments. Leave all other cells blank.

Pollution Control Services Department
101 S. Richey, Suite H
Pasadena, Texas 77506
Office: 713-920-2831 FAX: 713-274-6475

Sample Data and Custody Record

Id: _____ Type: _____ Permit No: _____ Date: _____ Time: _____ AM PM

Site Id: _____ Name: - _____ Key Map: _____

Site Info: _____

Sample Location: _____ Outfall: _____

Sample Location Info: _____

Outcome: ☐ Collected ☐ Collected (sample compromised) ☐ Field Test Only ☐ No Flow

Primary Investigator: _____ Additional Investigators: _____

Tests and Measurements

☐ Temperature (°C) ☐ Dissolved Oxygen (mg/L) ☐ Specific Conductivity (µS) ☐ Water Depth (meters)

☐ pH (standard units) ☐ Salinity (ppt) ☐ SECCHI Disk Transparency (meters)

Field Observations–Water

☐ Water Color 1-Brownish 2-Reddish 3-Greenish 4-Blackish 5-Clear 6-Other _____

☐ Surface Conditions 1-Clear 2-Scum 3-Foam 4-Debris 5-Sheen

☐ Water Odor 1-Sewage 2-Oily/Chemical 3-Rotten Egg 4-Musky 5-Fishy 6-None 7-Other _____

☐ Turbidity 1-Low 2-Medium 3-High

☐ Water Surface 1-Calm 2-Ripples 3-Waves 4-White Caps

Field Observations–Weather and Other

☐ Present Weather 1-Clear 2-Partly Cloudy 3-Cloudy 4-Rain 5-Other _____

☐ Wind Intensity 1-Calm 2-Slight 3-Moderate 4-Strong ☐ 89978(Number of people observed)

☐ Tide Stage 1-Low 2-Falling 3-Slack 4-Rising 5-High ☐ 89979 (Evidence of activity)

☐ Days Since Last Significant Rainfall Source: _____

Matrix: ☐ Air ☐ Drinking Water ☐ Liquid ☐ Oil ☐ Other Solid ☐ Particulate ☐ Sludge ☐ Soil ☐ Water ☐ Other

Collection Method ☐ Grab ☐ Composite

Samples Collected:

Bottle No.	Container Type	Container Size	Preservative	Ice ?	Analysis Requested	Direct Coll. Req.	Collection Type	Split	Sample By
				Y / N			D / I	Y / N	
				Y / N			D / I	Y / N	
				Y / N			D / I	Y / N	
				Y / N			D / I	Y / N	
				Y / N			D / I	Y / N	

Inspection ID: 201528 (Page 1 of 2 Pages) Rev 0

Custody

Relinquished By: _____ Received By: _____

Date/Time: _____ AM PM Date/Time: _____ AM PM

Samples placed in restricted area by: _____ (initial)

Legend

Collection Type
D - Direct
I - Indirect

Preservatives
H2SO4 H3PO4
HCL NaOH
HNO3 Na2S2O3
none

Container Sizes
1/2 gal
1 gal
1 qt
40 mL
100 mL
250 mL
500 mL
4 oz
8 oz
n/a

Container Types
P - Plasitc
G - Glass
Can - Canister
C - Cartridge
PB - Plastic Bag
S - Slide
O - Other

Lab Quality Check

Container: _____ ☐ Observed Temperature (°C)

☐ Corrected Temperature (°C)

Thermometer Id: _____ pH Paper Id: _____

Samples Received with Proper pH? ☐ Yes ☐ No

Samples Received on Ice? ☐ Yes ☐ No

Run No.:
Field No.:
Station ID:

City of Houston
Houston Health Department
Bureau of Pollution Control and Prevention
7411 Park Place Blvd
832.393.5730 FAX 832-393-5726

FIELD FORM & CHAIN OF CUSTODY FORM

HOUSTON HEALTH DEPARTMENT

Location Name:

Date: _____ **Time (hhmm):** _____ **Samples Collected by:** _____

Number of Days Since Last Rain Fall: _____ **Field Meter #:** _____ **Calibration Date:** _____

FIELD OBSERVATIONS

Flow Severity	Tidal Stage	Color	Odor	Water Surface	Current Weather	Wind Intensity
1 – no flow 2 – low 3 – normal 4 – flood 5 – high 6 – dry*	1 – low 2 – falling 3 – slack 4 – rising 5 – high	1 – brownish 2 – reddish 3 – greenish 4 – blackish 5 – clear 6 – other*	1 – sewage 2 – oily/chemical 3 – rotten egg 4 – musky 5 – fishy 6 – none 7 – other*	1 – calm 2 – ripples 3 – waves 4 - whitecaps	1 – clear 2 – partly cloudy 3 – cloudy 4 – rain 5 - other	1 – calm 2 – slight 3 – moderate 4 - strong

Flow Method	Flow (cfs)	Secchi Depth (cm)	Sample Depth (ft)	Total Depth (ft)

1 – flow-gauge station
5 - Doppler

INSTRUMENT READINGS

Temp (°C)	Conductivity (mS/cm)	pH (s.u.)	Salinity (PSS)	Dissolved Oxygen (mg/L)
(1.0 to 38.0°C)	(0.03 to 60 mS/cm)	(5.0 to 10.0 s.u.)	(0.009 to 45.0 PSS)	(0.5 to 15.0 mg/L)

***Other Observations:**

_____
_____
_____
_____
_____

Request for Analysis (circle what is requested)

1 – pH
2 – Conductivity
3 - TSS
4 – $N\text{-}NO_3$
5 – Cl^-
6 – SO_4
7 – $N\text{-}NH_3$
8 – $T\text{-}PO_4$
9 – $N\text{-}NO_2$
10 – *E. coli*
11 – Enterococcus

No. of Containers:

____ 100 mL sterile plastic ___ 1 gallon plastic
____ 1 L plastic ____ 1 L plastic w/ H_2SO_4
____ 1 L plastic (TKN) bottle w/ H_2SO_4 (Analyzed by H-GAC contract Lab)

Acid ID#: H_2SO_4

For lab use only:

Samples Received on Ice? Yes / No Thermometer ID:_____
Temp (°C) _____Corrected Temp (°C) _____Corrected Factor(°C) _____

Samples relinquished by: _____ **Date/Time:** _____

Lab Sample No.: _____ **Received by:** _____ **Date/Time:** _____

FF&COC version 18 Sept24

*Note: If site is dry, photo should be taken. If water present within 400 m, and pool is 10+m long, and 0.4+m deep, collect sample and record Maximum pool width, depth, length, and percent pool coverage in 500 m reach (if measurable) in observations section.

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 06/01/25 **Document ID:** 150 **Version:** 1.13

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 (ft)	Total Depth (ft)	Water Temp °C	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																	

Comments:

1-no flow	1-low	1-brownish	1-sewage	1-clear	1-calm	1-calm
2-low	2-medium	2-reddish	2-oily/chemic	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			

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 :**_____

San Jacinto River Authority - Lake Conroe Division
LAKE CONROE MONITORING FIELD SHEET

Form updated: June 4, 2025

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

◆Reservoir Stage (Feet above mean sea level:_____ ◆Reservoir Percent Full:_____ ◆Reservoir Accessibility Yes_____ No_____

Sample No.	Total Depth (m)	Time (hh:mm)	Sample Depth (m)	Temp (°C)	Sp Cond (µS)	pH	D.O. (mg/L)	Present Weather	Wind Intensity	Water Surface	Water Color	Water Odor
Station Name								1-clear	1-calm	1-calm	1-brownish	1-sewage
								2-partly cloudy	2-slight	2-ripple	2-reddish	2-oily/chemical
								3-cloudy	3-moderate	3-waves	3-greenish	3-rotten egg
								4-rain	4-strong	4-whitecaps	4-blackish	4-musty
								5-other			5-clear	5-fishy
TCEQ ID									Secchi Depth (m)		6-oter	6-none
												7-other

Comments:

Sample No.	Total Depth (m)	Time (hh:mm)	Sample Depth (m)	Temp (°C)	Sp Cond (µS)	pH	D.O. (mg/L)	Present Weather	Wind Intensity	Water Surface	Water Color	Water Odor
Station Name								1-clear	1-calm	1-calm	1-brownish	1-sewage
								2-partly cloudy	2-slight	2-ripple	2-reddish	2-oily/chemical
								3-cloudy	3-moderate	3-waves	3-greenish	3-rotten egg
								4-rain	4-strong	4-whitecaps	4-blackish	4-musty
								5-other			5-clear	5-fishy
TCEQ ID									Secchi Depth (m)		6-oter	6-none
												7-other

Comments:

Surveyor SN:_____ Sonde SN:_____ Sheet reviewed by:_____ Data entered by:_____Date:_____ Data reviewed by:_____ Date:_____

Water Quality Laboratory
San Jacinto River Authority
Woodlands-Clean Rivers Program Field Sheet

Date of Sampling: ______________________ Samples Collected ______________________________ Days Since Last Significant Rainfall: _________ Reservoir Stage (ft above mean sea level): ___________

Reservoir Percent Full: ______________

Sample No.	Station Name	TCEQ ID	Time (hh:mm)	Total Depth (m)	Secchi Depth (m)	Water Color	Water Odor	Present Weather	Water Surface	Wind Intensity

	Sample Depth (m)	Temp (°C)	Sp Cond (µS)	pH	D.O. (mg/L)
Surface					
Mid-Depth					
Bottom					

Comments:

Sample No.	Station Name	TCEQ ID	Time (hh:mm)	Total Depth (m)	Secchi Depth (m)	Water Color	Water Odor	Present Weather	Water Surface	Wind Intensity

	Sample Depth (m)	Temp (°C)	Sp Cond (µS)	pH	D.O. (mg/L)
Surface					
Mid-Depth					
Bottom					

Comments:

Sample No.	Station Name	TCEQ ID	Time (hh:mm)	Total Depth (m)	Secchi Depth (m)	Water Color	Water Odor	Present Weather	Water Surface	Wind Intensity

	Sample Depth (m)	Temp (°C)	Sp Cond (µS)	pH	D.O. (mg/L)
Surface					
Mid-Depth					
Bottom					

Comments:

Sample No.	Station Name	TCEQ ID	Time (hh:mm)	Total Depth (m)	Secchi Depth (m)	Water Color	Water Odor	Present Weather	Water Surface	Wind Intensity

	Sample Depth (m)	Temp (°C)	Sp Cond (µS)	pH	D.O. (mg/L)
Surface					
Mid-Depth					
Bottom					

Comments:

Present Weather: 1 = clear, 2 = partly cloudy, 3 = cloudy, 4 = rain , 5 = other

Form updated: June 4, 2025

Water Color: 1 = brownish, 2 = reddish, 3 = greenish, 4 = blackish, 5 = clear, 6 = other

Water Odor: 1 = sewage, 2 = Oily / chemical, 3 = rotten egg, 4 = musky, 5 = fishy, 6 = none, 7 = other

Water Surface: 1 = calm, 2 = ripples, 3 = waves, 4 = whitecaps

Wind Intensity: 1 = calm, 2 = slight, 3 = moderate, 4 = strong

Surveyor SN: ____________ Sonde SN: ____________Sheet reviewed by: ________________ Data Entered by: _______________ Date: ____________ Data Reviewed by: _______________ Date: _____________

Environmental Institute of Houston, University of Houston-Clear Lake

Clean Rivers Program Field Datasheet

Station ID:_____ Date (mm/dd/yyyy):_____ Sample Time (hh:mm): _____

Location:_____ Lat:_____ Long:_____

Collected By (First initial, last name):_____

FIELD MEASUREMENTS If depth <0.5: take one measurement at 1/3 total depth. If ≥ 0.5 but < 1.5: take one measurement at 0.3m from surface
If ≥ 1.5m deep - perform profile at 0.3m from bottom, middle, and 0.3m from surface
If ≥ 3m deep take profile at 0.3m from bottom, then every whole meter until 0.3m from surface (eg:4.2 = 3.9m, 3m, 2m, 1m, 0.3m)

	1	2	3	4	5	6
Temp (C)						
Conductivity (uS)						
Salinity (psu)						
DO (%sat)						
DO mg/L						
pH						
Depth (m)						

FIELD OBSERVATIONS

	TOTAL DEPTH (m)		FLOW SEVERITY 1-no flow 2-low 3-normal 4-flood 5-high 6-dry
	WATER ODOR 1-sewage 2-oily/chemical 3-rotten egg 4-musky 5-fishy 6-none 7-other		FLOW (cfs)
	WATER SURFACE 1-calm 2-ripples 3-waves 4-whitecap		FLOW METHOD 1-gage 2-electric 3-mechanical 4-weir/flume 5-doppler
	WIND INTENSITY 1-calm 2-slight 3-moderate 4-strong		SECCHI DISK appear (m)
	WATER COLOR 1-brownish 2-reddish 3-greenish 4-blackish 5-clear 6-other		SECCHI DISK disappear (m)
	DAYS SINCE LAST SIG. RAINFALL		RECREATIONAL USE 1=1° observed, 2=2° observed, 3=non-contact observed, 4=1° evidence, 5=2° evidence, 6=non-contact evidence, 7=no evidence
	PRESENT WEATHER 1-clear 2-partly cloudy 3-cloudy 4-rain 5-other		TIDE STAGE 1-low 2-falling 3-slack 4-rising 5-high

WATER SAMPLES

☐ **FRESH** (Non-Tidal) ☐ *E. coli* ☐ **MARINE** (Tidal) ☐ *Enterococcus*

Container	Preservative	Analysis Requested	Comments

ADDITIONAL INFORMATION & REMARKS

* If site has isolated pools (> 10 m in length and 0.4m deep) record:
Lat _____ Long_____ of largest pool in reach. Maximum pool width_____(m), Maximum pool depth _____ (m), Pool length _____(m), and percent pool coverage in 500m reach _____%.

Environmental Institute of Houston,
University of Houston-Clear Lake
Stream Flow (Discharge) Measurement Form

Stream:____ Date:_______________

Station:____

Description:____

Time Begin:_____________ Time End:_____________ Meter Type:___________________________________

Observers:__________________________________ Stream Width*:__________ Section Width (W):__________

Observations:____

Section Midpoint (ft)(m)	Section Depth (ft) (m) (cm) (D)	Observational Depth** (ft)(m)	Velocity (V)		Flow (Q) (m^3/s)(ft^3/s) Q = (W)(D)(V)
			At Point (ft/s)(m/s)	Average (ft/s)(m/s)	

m3/s x 35.3 =ft3/s

Total Flow (Discharge) (Σ Q)	*
Field Discharge (Σ Q)	

***See Attached Discharge Sheet**

Modified from TCEQ-20117 (Rev. 04/22/2004)

Page 1 of 1

Texas Research Institute for Environmental Studies - Sam Houston State University

Clean Rivers Program or Total Maximum Daily Load
Field Data/Sampling Sheet

Station ID:_____ Date:_____ Time of Water Sample Collection:_____

Location:_____ LAT:_____ LONG:_____

Collected By:_____

FIELD MEASUREMENTS (If < 0.5m (50cm) - record at 1/3 of depth from the surface. If between 0.5m (50cm) & 1.5m (150cm) deep - record @ 0.3m (30 cm) from surface).

	1	2	3	4	5
Temp (C)					
Conductivity (uS)					
DO mg/L					
pH					
Sample Depth (cm/m)					

FIELD OBSERVATIONS

_____ TOTAL DEPTH (cm/m)

_____ WATER ODOR 1-sewage 2-oily/chemical 3-rotten egg 4-musky 5-fishy 6-none 7-other

_____ WATER SURFACE 1-calm 2-ripples 3-waves 4-whitecap

_____ WIND INTENSITY 1-calm 2-slight 3-moderate 4-strong

_____ WATER COLOR 1-brownish 2-reddish 3-greenish 4-blackish 5-clear 6-other

_____ PRESENT WEATHER 1-clear 2-partly cloudy 3-cloudy 4-rain 5-other

_____ DAYS SINCE LAST SIG. RAINFALL (> or = 0.50 inches)

_____ PRESENT WEATHER

_____ FLOW SEVERITY 1-no flow 2-low 3-normal 4-flood 5-high 6-dry

_____ FLOW (cfs)

_____ FLOW METHOD 1-gage 2-electric 3-mechanical 4-weir/flume 5-doppler

_____ SECCHI TUBE (cm/m)

_____ Primary Contact Rec. Observed (# of people observed)

_____ Evidence of Primary Contact Rec. Observed 0= no evidence observed, 1= evidence observed

WATER SAMPLES

☐ **FRESH** (Non-Tidal)

☐ *E. coli*

_____ *E. coli* Field Split Collected (yes/no)

Container	Preservative	Analysis Requested	Comments

ADDITIONAL INFORMATION & REMARKS

* If site is dry, determine if there is any pool in a 500m reach, If pool(s) exists (> 10m long and 0.4m deep) record: Lat ___Long_____of largest pool in reach Maximum pool width_____(m), Maximum pool depth _____(m), Pool length _____(m), and percent pool coverage in 500m reach _____%.

Surface Water Quality Monitoring
TRIES Stream Flow (Discharge) Measurement Form

Stream:________________________________ Date:______________

Station:________________________________

Description:________________________________

Time Begin:____________ Time End:____________ Meter Type:____________________

Observers:____________________ Stream Width*:__________ Section Width (W):__________

Observations:________________________________

____

Section Midpoint (ft) (m) (cm)	Section Depth (ft) (m) (cm) (D)	Observational Depth** (ft) (m) (cm)	Velocity (V)		Flow (Q) (m^3/s) (ft^3/s) Q = (W)(D)(V)
			At Point (ft/s)(m/s)	Average (ft/s)(m/s)	

m3/s x 35.3 =ft3/s

Field Discharge (Σ Q)	

*Stream Width: < 330 cm (3.3m), take 10 flow measurements; >330 cm (3.3m), take 20-30 flow measurements

Stream Depth: >76 cm, take flow measurements at 20 and 80 percent of total depth; for 20% of depth, multiply the total depth by 2, set wading to this value and take velocity reading. For 80% of depth, divide total depth by 2, set wading rod to this value and take velocity reading

Appendix E: Chain of Custody Forms

The following sub-participants have their chain of custody forms integrated into their field forms, see Appendix D for HCPCS, HHD, and RCUD COC forms. All sub-participants use Eastex environmental for all or part of their sample analysis.

EASTEX ENVIRONMENTAL LABORATORY, INC.

P.O. Box 1089 * Coldspring, TX 77331 (936) 653-3249 * (800) 525-0508
P.O. Box 631375 * Nacogdoches, TX 75963-1375 (936) 569-8879 * FAX (936) 569-8951
www.eastexlabs.com

White Copy-Follows Samples
Yellow Copy-Laboratory
Pink Copy-Client Copy

REPORT TO:

Company:
Address:
Attn:
Phone#:
Email:
P.O. #:
Sampler's Name (print):
Sampler's Signature:
Project Name: Clean Rivers Program

INVOICE TO:

Company:
Address:
Attn:
Phone#:

Remarks:

INSTRUCTIONS:

C or G: C= Composite G= Grab
Matrix: DW=Drinking Water WW=Wastewater SO=Soil/Sludge OT= Other
Container Size: 1=Gallon 2=1/2 Gallon 3=Quart/Liter 4=500mL 5=250mL 6=125mL (4oz) 7=60mL (2 oz) 8= 40mL Vial 9=Other
Type: P= Plastic G= Glass T= Teflon S= Sterile
Preservatives: C=Chilled S=Sulfuric Acid N=Nitric Acid B=Base/Caustic Z= Zn Acetate ST=Sodium Thiosulfate H=HCL O= Other

ANALYSIS REQUESTED

			Field Data								Containers				
Work Order ID	Sample ID	Date	Time	Matrix	C or G	DO	pH	Cl2	Flow	Temp	#	Size	Type	Pres	

Relinquished By: Received By: Date Time Received Iced: YES / NO

Relinquished By: Received By: Date Time Received Iced: YES / NO

Relinquished By: Received By and/or Checked In By: Date Time Received Iced: YES / NO

LAB USE ONLY	Sample Condition Acceptable: YES / NO	Temp °C	*Therm ID	Logged In By:	Date	Time
Alternate Check In:	Date Time					

*Thermometer has 0.0 factor and recorded temperature is actual temperature

Chain of Custody Revision 3: 05/01/18

Eastex Environmental Laboratory, Inc.

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 06/01/25 **Document ID:** 150 **Version:** 1.13

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 (ft)	Total Depth (ft)	Water Temp °C	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/chemic	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 :**_____

CHAIN OF CUSTODY

ONLY FOR USE WITH WATER SAMPLES

2424 Sam Houston Ave Ste B8 Huntsville, TX 77340 | 936.294.3979 | trieslab@shsu.edu

TRIES Lab

CLIENT INFORMATION

Company: | **Address:**

Phone: | **City/State/Zip:**

Report Contact Name: | **Report Contact Email:**

Invoice Contact Name: | **Invoice Contact Email:**

WORK ORDER INFORMATION

Sampled By: | **Transported By*:** *For shipped samples leave Transported By blank.

Turnaround Requested: **Standard (10 Days)** **Expedite* (5 Days)** *Call lab for details.

Special Instructions:

REQUESTED SERVICES

STEP 1 - Enter your responses to the below four columns with blue headings.

STEP 2 - Provide the services you require for each sample in the corresponding columns of that row. A list of available services can be found on the back of this sheet.

INSERT REQUESTED SERVICES BELOW

Sample Description	Sampling Date	Sampling Time	Grab or Composite									LAB USE ONLY								
												ID	Bottle ID	Preservation Code	Acid Type	Acid Volume (mL)	Obs °C / CF °C	pH	Qualifiers	Remarks

SAMPLE TRACKING

Relinquished by: **Name:** **Date/Time:** **Received by:** **Name:** **Date/Time:**

Lab Use Only

Shipped: Delivered: Container Tape Present: Container Tape Intact: Cooler Temp (°C): Broken: Leaking: Preserved: Matching COC & Labels Sufficient Quantity: Lab Bottle Kit:

Lab Preservation Date: Preserved Time: Thermometer ID: pH strips lot: HN03 Lot: HCl Lot: H2S04 Lot: TRIES Log Number:

Preservation Codes: C = 0 to <6 °C A = pH<2 HNO3 B=pH<2 HCl D= pH<2 H2SO4

Control Number: AP-FORM-045 Revision: 0 Effective Date: 01/30/2025

Appendix F: Data Review Checklist and Summary Shells

Data Review Checklist

This checklist is to be used by the sub-participants in order to review and summarize data being submitted to the H-GAC. This table may not contain all of the data review tasks being conducted.

H-GAC Clean Rivers Program Sub-participant Data Summary and Data Review Checklist

A completed data summary and data review checklist form is required for each data submission from a sub-participant to H-GAC per the Houston-Galveston Area Council (H-GAC) Multi-Basin Quality Assurance Project Plan (QAPP). This form should accompany the data file(s), digital copies of Field Sheets, Chain-of-Custody Forms, Calibration Sheets, Lab Data Reports, and other supporting documents.

Sub-Participant:_____

Data Start Date:_____ Data End Date:_____

Total Number of Events in this Data Submittal:_____
(Total number of sample sites monitored times the number of monitoring visits to each site)

Total Number of Results in this Data Submittal:_____
(Each event contains multiple field and/or laboratory results)

Summary of discrepancies, outliers, or missing data (continues on page 5):

Station ID	Sample Date	Parameter	Description of Issue	CAP Report No.
EXAMPLE *12345*	*05/14/2026*	*E. coli*	*Bottle broke in transit, sample contaminated, no result reported.*	*26-004*

Data packet submitted to H-GAC on _____ by:

*Name*_____*Signature*_____*Date*_____

Field Data Review Checklist

1. Was calibration and post-calibration completed for each field day and within 24hrs of each other?

   ___Yes ___No, they are listed in the summary of discrepancies table and noted in the comments.

2. Were there any post-calibration failures?

   ___No ___Yes, they are listed in the summary of discrepancies table and noted in the comments.

   Sonde SN and date of sampling affected by failure:_____

3. Summarize the maximum variation (Absolute value of the maximum variation between the value of standard at post-calibration and the post-calibration initial reading) between the value of the standard at post-calibration and the post-calibration initial reading by probe for data in this submittal:

Parameter	Maximum variation
Dissolved Oxygen (≥ 6% = fail)	_____
pH (≥ 0.5 standard units = fail)	_____
Specific Conductance (≥ 5% = fail)	_____
Temperature (≥ 0.2 ºC = flag, ≥ 0.5 ºC = fail)	_____

4. Were water samples preserved (iced or acidified as applicable) within 15 minutes of collection?

   ___Yes ___No, they are listed in the summary of discrepancies table and noted in the comments.

5. Were all field sheets completed using indelible ink?

   ___Yes ___No, this must be corrected by re-writing the datasheet in indelible ink and retaining the original before submitting the data!

6. Were errors on field sheets, calibration sheets, and COCs documents corrected using a single line, initials, and date?

   ___Yes ___No, this must be corrected before submitting the data!

7. Were empty sections of field sheets, calibration sheets, and chain of custody documents closed-out with a diagonal line, initials, and date?

   ___Yes ___No, this must be corrected before submitting the data!

8. Have field sheets, calibration sheets, and chain of custody documents changed since the last data submittal to H-GAC?

   ___No ___Yes, updated documents are attached with this data submittal.

9. Were there any field data results that were not reported?

   ___No ___Yes, they are listed in the summary of discrepancies table and noted in the comments.

Person who reviewed the field datasheets and results for accuracy and completeness:

*Name*_____ *Signature*_____ *Date*_____

Laboratory Data Review Checklist

1. Were any samples analyzed that exceeded holding time requirements as defined in the current Houston-Galveston Area Council (H-GAC) Multi-Basin Quality Assurance Project Plan (QAPP)?

   ___No ___Yes, they are listed in the summary of discrepancies table and noted in the comments.

2. Were samples received at the lab "in ice" and in the process of cooling to 4ºC ± 2ºC?

   ___Yes ___No, they are listed in the summary of discrepancies table and noted in the comments.

3. Were errors and empty sections on laboratory bench sheets, and chain of custody documents corrected using a single line, initials, and date?

   ___Yes ___No, this must be corrected before submitting the data!

4. Are "less-than" values reported at or below the LOQ as defined in the current QAPP?

   ___Yes ___No, they are listed in the summary of discrepancies table and noted in the comments.

5. Are there any results in this data submittal that are greater than the maximum screening values or less than the minimum screening values?

   ___No ___Yes, they are listed in the summary of discrepancies table and noted in the comments.

6. Are there any results in the data submittal that "Best Professional Judgment" would indicate a possible error or outlier that requires further investigation?

   ___No ___Yes, they are listed in the summary of discrepancies table and noted in the comments.

7. Were all blank results acceptable as specified in the current QAPP?

   ___Yes ___No, they are listed in the summary of discrepancies table and noted in the comments.

8. Are all necessary QA/QC documentation provided with this data submittal?

   ___Yes ___No, they are listed in the summary of discrepancies table and noted in the comments.

9. Was the laboratory's NELAP accreditation current for all analyses conducted?

   ___Yes ___No, they are listed in the summary of discrepancies table and noted in the comments.

10. Were there any field data results that were not reported?

    ___No ___Yes, they are listed in the summary of discrepancies table and noted in the comments.

Person who reviewed the lab sheets and results for accuracy and completeness:

*Name*_____ *Signature*_____ *Date*_____

Data Entry, Formatting, and Structure Checklist

1. Are all sampling STARTTIMEs and ENDTIMEs data entered using 24-hour clock format with leading zeros as necessary?

   ___Yes ___No, this must be corrected before submitting the data!

2. Are all depths reported in meters?

   ___Yes ___No, this must be corrected before submitting the data!

3. Were any surface samples collected from depths greater than 0.3 meters?

   ___No ___Yes, they are listed in the summary of discrepancies table and noted in the comments.

4. Have all asterisks (*) been removed from the database being submitted to H-GAC?

   ___Yes ___No, this must be corrected before submitting the data!

5. Are all stations in the dataset listed in the current Houston-Galveston Area Council (H-GAC) Multi Basin Quality Assurance Project Plan (QAPP)?

   ___Yes ___No, they are listed in the summary of discrepancies table and noted in the comments.

6. Were there any scheduled parameters that were not reported?

   ___No ___Yes, they are listed in the summary of discrepancies table and noted in the comments.

7. Were data reviewed for outliers and all outliers identified and documented in the comments and the summary of discrepancies table?

   ___Yes ___No, this must be done before submitting the data!

8. Have all calibration datasheets, field datasheets, flow datasheets, COCs, and laboratory QA/QC documents associated with the submitted data been provided to H-GAC with the data submission?

   ___Yes ___No, these must be submitted with each data submittal!

9. Have at least 10% of data in the data set been reviewed against field and laboratory data sheets?

   ___Yes ___No, this must be done before submitting the data!

10. Have there been any changes to the structure or formatting of the database/data spreadsheet since your last submission?

    ___No ___Yes, they are itemized below.

Detailed summary of changes to database/data spreadsheet:

Person who reviewed the database for accuracy and completeness:

*Name*_____ *Signature*_____ *Date*_____

Summary of discrepancies, outliers, or missing data (continued from page 1):

Station ID	Sample Date	Parameter	Description of Issue	CAP Report No.

Data Summary

This Data Summary sheet checklist is used by the Planning Agency to review and accompany data submitted to the TCEQ. This table may not contain all of the data review tasks being conducted.

Houston-Galveston Area Council
Clean Rivers Program
Data Summary

Data Information

Data Source:

Date Submitted:

Tag ID Range:

Date Range:

Comments

Houston-Galveston Area Council
CRP Data Manager_____ Date _____

Houston-Galveston Area Council
CRP Quality Assurance Officer_____ Date _____