

Amendment # 3 Update to the Houston-Galveston Area Council (H-GAC) Multi-Basin Clean Rivers Program FY 2020/2021 QAPP

***Prepared by the H-GAC in Cooperation
with the Texas Commission on
Environmental Quality (TCEQ)***

Effective: Immediately upon approval by all parties

Questions concerning this QAPP should be directed to:
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CRP Quality Assurance Officer
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Justification

This document updates personnel changes within the TCEQ and some of H-GAC's local partner agencies. Plus, it corrects a typographical error found in one of the local partner's A7 tables for their Nitrite LOQ.

Summary of Changes

Section/Figure/Table	Page	Change	Justification
Section A1	2	<p>Replace Kelly Rodibaugh, Project Quality Assurance Specialist, with Rebecca DuPont. Add 'Acting' in front of title.</p> <p>Replace Kelly Rodibaugh, Project Manager, with Jenna Wadman.</p>	<p>Personnel change at TCEQ</p> <p>Personnel change at TCEQ.</p>
Section A1	4	<p>Replace Michael Cantu, HCPCS CRP Project Manager, with Dr. Latrice Babin.</p> <p>Replace Michael Cantu, HCPCS Laboratory Manager, with Dr. Latrice Babin. Add 'Acting' in front of HCPCS Laboratory Manager.</p>	<p>Personnel change at HCPCS.</p> <p>Personnel change at HCPCS.</p>
Section A1	5	<p>Replace Daisy James, CRP Project Manager, with Nguyen Ly. Add 'Acting' in front of title.</p> <p>Replace Nguyen Ly, HHD Field Quality Assurance Officer, with Darryl Tate.</p>	<p>Personnel change at HHD.</p> <p>Personnel change at HHD.</p>
Section A3	13	<p>Replace Kelly Rodibaugh, Project Manager, with Jenna Wadman. Change/correct the phone number for Jenna.</p>	<p>Personnel changes at TCEQ.</p>
Section A4	14-15	<p>Replace Kelly Rodibaugh, CRP Project Manager, with Jenna Wadman.</p> <p>Replace Kelly Rodibaugh, with Rebecca DuPont, as Acting CRP Project Quality Assurance Specialist.</p> <p>Replace Bill Hoffman with Jessica Casillas as H-GAC Data Manager.</p>	<p>Personnel change at TCEQ.</p> <p>Personnel change at TCEQ.</p> <p>Personnel change at H-GAC.</p>

Section A4	16	Replace Michael Cantu with Dr. Latrice Babin as the CRP Project Manager and Acting Manager - Laboratory Services.	Personnel change at HCPCS.
Section A4	17	Replace Daisy James with Nguyen Ly as 'Acting' CRP Project Manager. Replace Nguyen Ly with Darryl Tate as the CRP QAO. Replace Blanca Hinojosa with Jane Marzano as the CRP Data Manager.	Personnel change at HHD. Personnel change at HHD. Personnel change at HHHD.
Figure A4.1	21	Replace Kelly Rodibaugh with Rebecca DuPont as the 'Acting' TCEQ Project QA Specialist. Replace Kelly Rodibaugh with Jenna Wadman as the TCEQ CRP Project Manager. Replace Bill Hoffman with Jessica Casillas as the H-GAC Data Manager.	Title change at TCEQ. Personnel changes at TCEQ. Personnel changes at TCEQ. Personnel changes at H-GAC.
Figure A4.1a	22	Replace Bill Hoffman with Jessica Casillas as the H-GAC Data Manager.	Personnel changes at H-GAC.
Figure A4.1b	23	Replace Michael Cantu with Dr. Latrice Babin as the HCPCS CRP Project Manager. Replace Michael Cantu with Dr. Latrice Babin as the 'Acting' Manager - Lab Services.	Personnel changes at HCPCS. Personnel changes at HCPCS.
Figure A4.1c	24	Replace Daisy James with Nguyen Ly as the 'Acting' CRP Project Manager. Replace Nguyen Ly with Darryl Tate as the Field Supervisor. Replace Nguyen Ly with Darryl Tate as the CRP Field QAO. Replace Blanca Hinojosa with Jane Marzano as the CRP Data Manager.	Personnel changes at HHD. Personnel changes at HHD. Personnel changes at HHD. Personnel changes at HHD.
Appendix A		The Nitrite parameter added to HHD Laboratory Table-A7.3 had an error with the LOQ. It should have been 0.05 mg/L	The entire workbook for local partner HHD is provided but the spreadsheet TAB is colored and the change is highlighted in each

		and NOT 0.02 mg/L as was originally listed in August 14, 2020 Amendment 2.	workbook.
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Texas Commission on Environmental Quality

Water Quality Planning Division

Electronically Approved 7/28/2021

Rebecca DuPont, CRP Work Lead Date
Clean Rivers Program

Electronically Approved 7/28/2021

Rebecca DuPont, CRP Work Lead Date
Acting Project Quality Assurance Specialist
Clean Rivers Program

Electronically Approved 8/5/2021

Jenna Wadman, Project Manager Date
Clean Rivers Program

Electronically Approved 7/26/2021

Cathy Anderson, Team Leader Date
Data Management and Analysis

Monitoring Division

Electronically Approved 7/27/2021

Dana Squires Date
Lead CRP Quality Assurance Specialist
Laboratory and Quality Assurance Section

Houston-Galveston Area Council (H-GAC)

Electronically Approved 7/26/2021

Todd Running Date
H-GAC Project Manager

Electronically Approved 7/26/2021

Jean Wright Date
H-GAC Quality Assurance Officer

Harris County Pollution Control Services (HCPCS)

Electronically Approved 7/26/2021

Dr. Latrice Babin Date
HCPCS CRP Project Manager

Electronically Approved 7/30/2021

Bryan Kosler Date
HCPCS Field Quality Assurance Officer

Electronically Approved 7/26/2021

Dr. Latrice Babin Date
Acting HCPCS Laboratory Manager

Electronically Approved 7/26/2021

Ericka Jackson Date
HCPCS Quality Assurance Officer

City of Houston, Houston Health Department (HHD)

Electronically Approved 7/26/2021

Nguyen Ly Date
Acting CRP Project Manager

Electronically Approved 8/5/2021

Darryl Tate Date
HHD Field Quality Assurance Officer

Electronically Approved 7/27/2021

Roger Sealy Date
HHD BLS Lab Manager

Electronically Approved 7/27/2021

Kimyattia Smith Date
HHD BLS Lab Quality Assurance Officer

City of Houston, Drinking Water Operations (DWO)

Electronically Approved 7/26/2021

Shubha Thakur Date
CRP Project Manager & DWO Laboratory Director

Electronically Approved 7/26/2021

Harold Longbaugh Date
DWO Laboratory Manager

Electronically Approved 7/26/2021

Narendra Joshi Date
DWO CRP Laboratory Quality Assurance Officer

Electronically Approved 7/26/2021

Destia Takie Date
DWO Field Quality Assurance Officer

San Jacinto River Authority (SJRA)

Electronically Approved

7/26/2021

Shane Simpson
SJRA CRP Project Manager and
Field Quality Assurance Officer

Date

**Environmental Institute of Houston, University of Houston –
Clear Lake (EIH)**

Electronically Approved	7/26/2021
<hr/>	
Dr. George Guillen EIH CRP Project Manager	Date

Electronically Approved	7/26/2021
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Jenny Oakley EIH Quality Assurance Officer	Date

Texas Research Institute for Environmental Studies (TRIES)

Electronically Approved 7/26/2021

Dr. Chad Hargrave Date
TRIES CRP Project Manager

Electronically Approved 7/27/2021

Ashley Morgan-Olvera Date
TRIES CRP Quality Assurance Officer

Electronically Approved 7/26/2021

Dr. Rachelle Smith Date
TRIES Laboratory Manager & Quality Assurance Officer

Eastex Environmental Laboratory, Inc. (Coldspring, TX)

Electronically Approved 7/26/2021

Natalia Bondar Date
Eastex Lab Technical Director

Electronically Approved 7/28/2021

Tiffany Guerrero Date
Eastex Lab Quality Assurance Officer

Detail of Changes

A1 Approval Page

Texas Commission on Environmental Quality

Water Quality Planning Division

Rebecca DuPont, Work Leader Date
Clean Rivers Program

Rebecca DuPont, Date
Acting CRP Project Quality Assurance Specialist

Jenna Wadman, Date
CRP Project Manager

Cathy Anderson, Team Leader Date
Data Management and Analysis

Monitoring Division

Dana Squires Date
Lead CRP Quality Assurance Specialist

Harris County Pollution Control Services (HCPCS)

Dr. Latrice Babin _____ Date
HCPCS CRP Project Manager

Bryan Kosler Date
Field Quality Assurance Officer

Dr. Latrice Babin _____ Date
Acting HCPCS Laboratory Manager

Ericka Jackson Date
HCPCS Quality Assurance Officer

City of Houston, Houston Health Department (HHD)

Date
Nguyen Ly
Acting CRP Project Manager

Date
Darryl Tate
HHD Field Quality Assurance Officer

Date
Roger Sealy
HHD BLS Lab Manager

Date
Kimyattia Smith
HHD BLS Lab Quality Assurance Officer

A3 Distribution List

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Houston, Texas 77027

Todd Running, Project Manager
(713) 993-4549

Jean Wright, Quality Assurance Officer
(713) 499-6660

The H-GAC will provide copies of this project plan and any amendments or appendices of this plan to each person on this list and to each sub-tier project participant, e.g., subcontractors, subparticipants, or other units of government. 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. Sub-Tier participants & Laboratories to receive copies of the QAPP include:

- Harris County Pollution Control Services & Laboratory
- City of Houston, Houston Health Department & Laboratory
- City of Houston, Drinking Water Operations & Laboratory
- Environmental Institute of Houston, University of Houston-Clear Lake
- San Jacinto River Authority
- Texas Research Institute for Environmental Studies & Laboratory
- Eastex Environmental Laboratory

A4 Project/Task Organization

Description of Responsibilities

TCEQ

Rebecca DuPont

CRP Work Leader

Responsible for Texas Commission on Environmental Quality (TCEQ) activities supporting the development and implementation of the Texas Clean Rivers Program (CRP). Responsible for verifying that the TCEQ Quality Management Plan (QMP) is followed by 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 Quality Assurance (QA) guidance for the CRP. Reviews and approves all QA audits, corrective actions, reports, work plans, contracts, QAPPs, and TCEQ Quality Management Plan. Enforces corrective action, as required, where QA protocols are not met. Ensures CRP personnel are fully trained.

Dana Squires

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 and project manager in developing and implementing quality system. Serves on planning team for CRP special projects. Coordinates the review and approval of CRP QAPPs. Prepares and distributes annual audit plans. Conducts monitoring systems audits of Planning Agencies. Concurs with and monitors implementation of 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 QAPPs and audit records 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). Assists CRP Lead QA Specialist 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 Project Manager. Reviews and approves data and reports produced by contractors. Notifies QA Specialists of circumstances which 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 (DM&A) 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.

Sarah Kirkland

CRP Data Manager, DM&A Team

Responsible for coordination and tracking of CRP data sets from initial submittal through CRP Project Manager review and approval. Ensures that data are reported following instructions in the Data Management Reference Guide, most recent version (DMRG). Runs automated data validation checks in the Surface Water Quality Management Information System (SWQMIS) and coordinates data verification and error correction with CRP Project Managers. Generates SWQMIS summary reports to assist CRP Project Managers' 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 code(s), collecting entity code(s), and monitoring type 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).

Rebecca DuPont

Acting 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 and reviews QAPPs in coordination with other CRP staff. Coordinates documentation and implementation of corrective action for the CRP.

Houston-Galveston Area Council (H-GAC)

Todd Running

H-GAC Project Manager

Responsible for implementing and monitoring CRP requirements in contracts, QAPPs, and QAPP amendments and appendices. Coordinates basin planning activities and work of basin partners. Ensures monitoring systems audits are conducted to ensure QAPPs are followed by the H-GAC and basin partners and that projects are producing data of known quality. Ensures that basin partners are qualified to perform contracted work. Ensures CRP project managers and/or QA Specialists are notified of deficiencies and corrective actions, and that issues are resolved. Responsible for confirming that data collected are validated and are acceptable for reporting to the TCEQ.

Jean Wright

H-GAC Quality Assurance Officer

Responsible for coordinating the implementation of the HGAC CRP QA program. Responsible for writing and maintaining the Multi-Basin QAPP and monitoring its implementation. Responsible for maintaining records of QAPP distribution, including appendices and amendments. Responsible for maintaining written records of basin partner commitment to requirements specified in this QAPP as needed. Responsible for identifying, receiving, and maintaining project QA records. Responsible for coordinating with the TCEQ QAS to resolve QA-related issues. Notifies the H-GAC Project Manager of particular circumstances which may adversely affect the quality of data. Coordinates and monitors deficiencies and corrective action. Coordinates and maintains records of data verification and validation. 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 basin partners to determine compliance with project and program specifications, issues written reports, and follows through on findings. Ensures that field staff is properly trained and that training records are maintained.

Jessica Casillas

H-GAC Data Manager

Responsible for ensuring that field and laboratory data collected by or submitted to H-GAC CRP are properly reviewed, verified, and validated. Responsible for the transfer of basin quality-assured water quality data to the TCEQ in the format described in the DMRG, most recent version. Maintains quality-assured data on H-GAC internet sites.

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

Natalia Bondar

Laboratory Technical Director - Eastex Environmental Lab (Contract Lab)

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.

Tiffany Guerrero

Eastex Lab QAO

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.

Harris County Pollution Control Services (HCPCS)

Dr. Latrice Babin

CRP Project Manager / Acting Manager-Laboratory Services

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 director will review and verify all laboratory data for integrity and continuity, reasonableness and conformance to project requirements, and will confirm data is validated against the data quality objectives listed in Appendix A of this QAPP.

Ericka Jackson

Lab Quality Assurance Officer (QAO) / CRP QAO / CRP Data Manager

Responsible for monitoring the activities of HCPCS laboratory personnel, ensuring 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 is reviewed and validated as required. Responsible for submitting all data to H-GAC in the correct format. Responsible for the overall quality control and quality assurance of analyses performed by HCPCS Laboratory. Monitors the implementation of the QM/QAPP 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. Responsible for coordinating with the H-GAC QAO to resolve QA-related issues. Notifies the H-GAC QAO of particular circumstances which may adversely affect the quality of data. Coordinates and monitors deficiencies and corrective action. Responsible for ensuring that field and laboratory data collected by or 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.

Bryan Kosler

Field Supervisor & Field QAO

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

Acting CRP Project Manager

Responsible for conducting routine monitoring in support of the QAPP. 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 Quality Assurance Officer is notified of deficiencies and corrective actions, and that issues are resolved

Darryl Tate

CRP QAO

Responsible for coordinating the implementation of the QA program and for coordinating with the H-GAC QA staff to resolve QA-related issues. Notifies the CRP Project Manager and/or H-GAC QA 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

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 copies of field data sheets and COC forms to H-GAC CRP Data Manager.

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

Roger Sealy

HHD-BLS Lab 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. Communicates QA issues to HHD CRP QAO, HHD CRP Data Manager, and HGAC staff. 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 party 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 is 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 HGAC.

Kimyattia Smith

HHS-BLS Lab Quality Assurance Officer

Responsible for 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. 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. Validates data against the quality objectives listed in Appendix A of this QAPP.

Project Organization Chart

Figure A4.1. Organization Chart - Lines of Communication

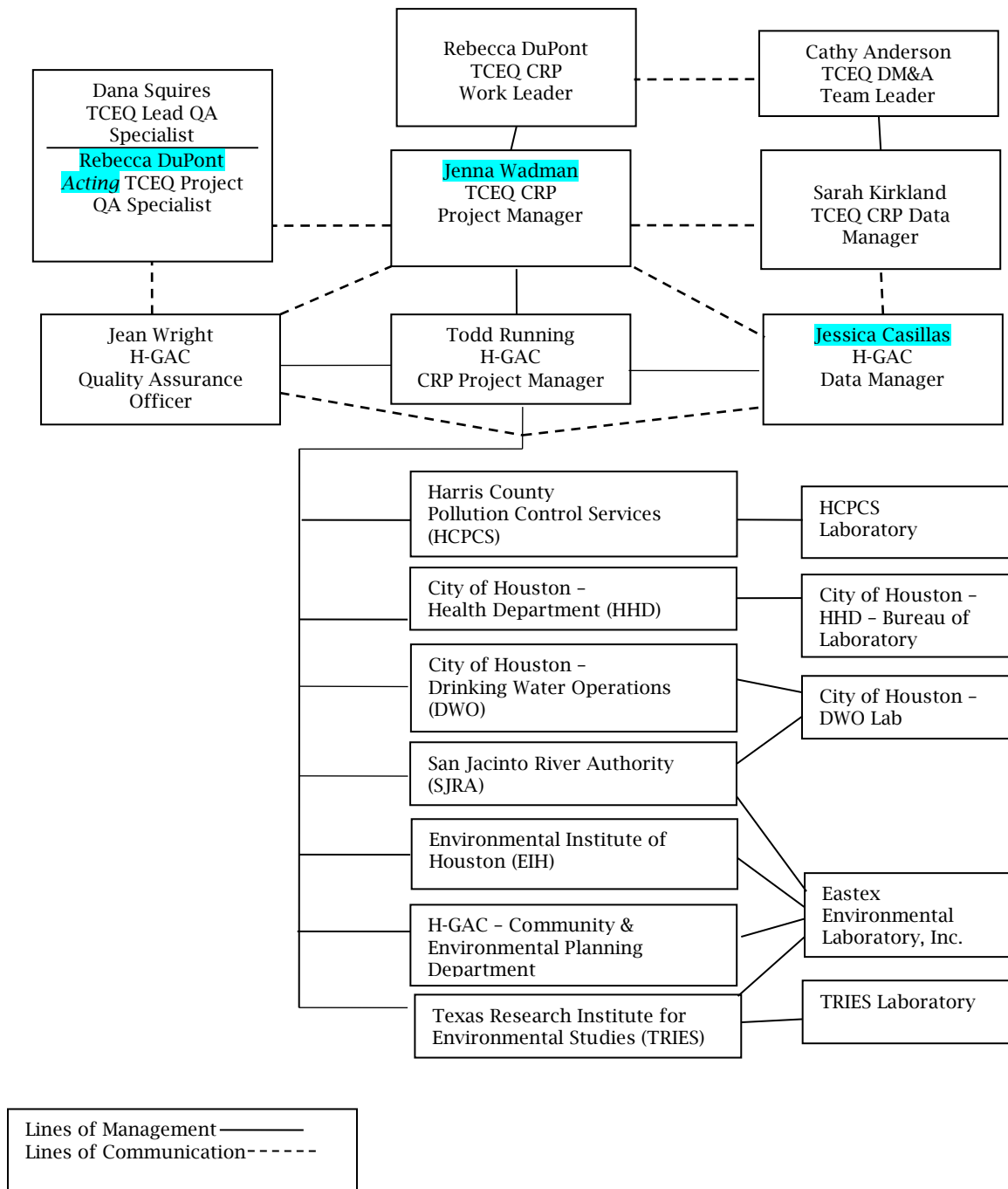


Figure A4.1a. The Houston-Galveston Area Council (H-GAC) CRP Organizational Chart.

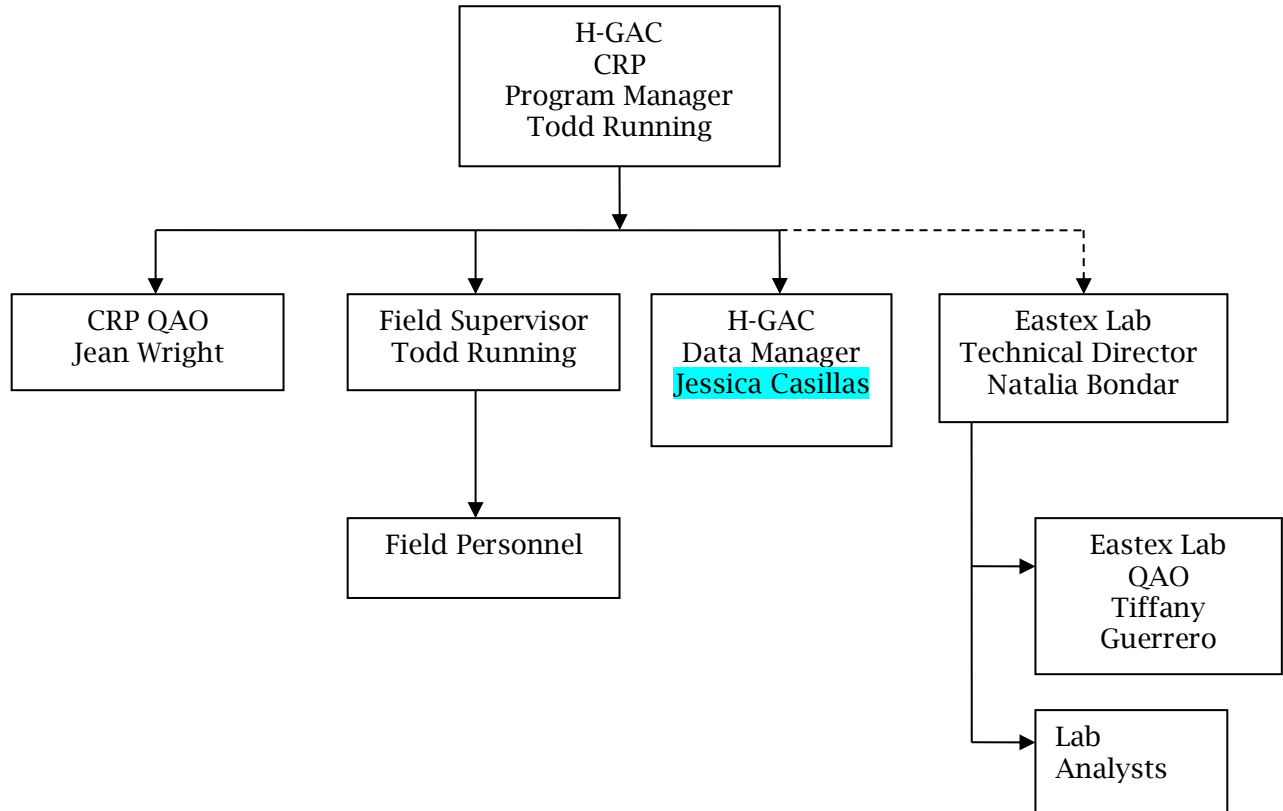


Figure A4.1b. The Harris County Pollution Control Services (HCPCS) CRP Organizational Chart.

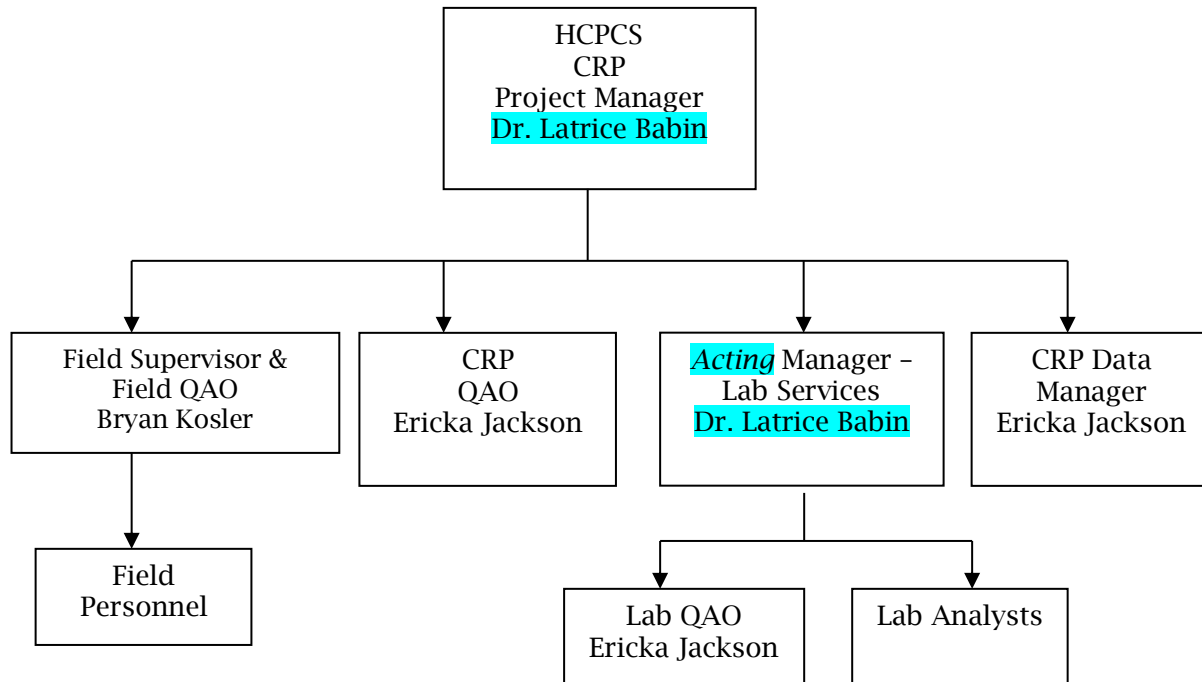


Figure A4.1c. The City of Houston, Health Department (HHD) CRP Organizational Chart.

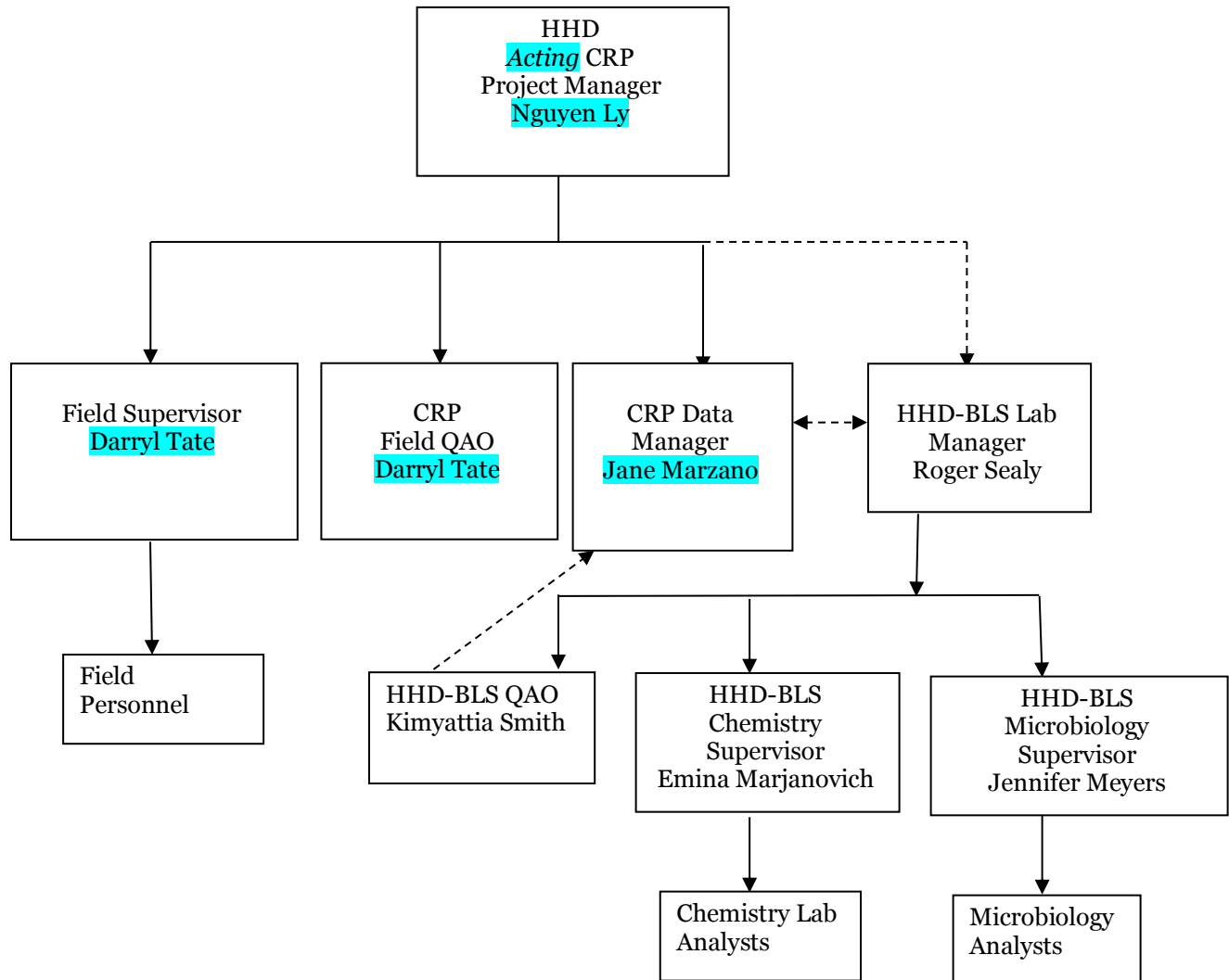


TABLE A7.3a Measurement Performance Specifications for City of Houston, Health Department (HHD)

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)*	meter s	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*	meter s	water	TCEQ SOP V2	82903	Field
MAXIMUM POOL WIDTH AT TIME OF STUDY (METERS)**	meter s	other	TCEQ SOP V2	89864	Field
MAXIMUM POOL DEPTH AT TIME OF STUDY(METERS)**	meter s	other	TCEQ SOP V2	89865	Field
POOL LENGTH, METERS**	meter s	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=WHI TECAP)	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) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020
 U.S. Code of Federal Regulations (CFR). Title 40: Protection of Environment, Part 136
 American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 23rd Edition, 2017.
 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 A7.3b 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: United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020 U.S. Code of Federal Regulations (CFR). Title 40: Protection of Environment, Part 136 American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 23rd Edition, 2017. 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 A7.3c 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
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

References:

United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020

U.S. Code of Federal Regulations (CFR). Title 40: Protection of Environment, Part 136
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TABLE A7.3d 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	IDEXX Colilert 18	31699	1	1	NA	0.50*	NA	HHD-BLS
ENTEROCOCCI, ENTEROLERT, IDEXX, (MPN/100 ML)	MPN/100 mL	water	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 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:

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