Quality Assurance Project Plan Rio Grande Basin Monitoring Program USIBWC Clean Rivers Program

4191 N. Mesa St.
El Paso, Texas 79902

Clean Rivers Program

Water Quality Planning Division

Texas Commission on Environmental Quality

P.O. Box 13087, MC 234

Austin, Texas 78711-3087

Effective Period: FY 2024 to FY 2025

Questions concerning this QAPP should be directed to:
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A1 Approval Page

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Lisa Torres | Date
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Greg Larson Date
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A2 Table of Contents

List of Acronyms

AWRL	Ambient Water Reporting Limit
BBNP	Big Bend National Park
BMP	Best Management Practices
BPUB	Brownsville Public Utilities Board
CAP	Corrective Action Plan
CE	Collecting Entity
COC	Chain of Custody
CRP	Clean Rivers Program
DHL	DHL Analytical Laboratory
DMRG	Surface Water Quality Monitoring Data Management Reference Guide
DM&A	Data Management and Analysis
EPA	United States Environmental Protection Agency
FY	Fiscal Year
GIS	Geographical Information System
GPS	Global Positioning System
HDPE	High Density Polyethylene
LAN	Local Area Network
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LIMS	Laboratory Information Management System
LOD	Limit of Detection
LOQ	Limit of Quantitation
MC	Midland College
MT	Monitoring Type
NELAP	National Environmental Lab Accreditation Program
PM	Program 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
RT	Routine Monitoring
SE	Submitting Entity
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
TNI	The NELAC Institute
TPWD	Texas Parks and Wildlife Department
TSWQS	Texas Surface Water Quality Standards
VOA	Volatile Organic Analytes
USIBWC	U.S. International Boundary and Water Commission
UTRGV	University of Texas Rio Grande Valley

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A4 PROJECT/TASK ORGANIZATION

Description of Responsibilities

TCEQ

Sarah Whitley
Team Leader, Water Quality Standards and Clean Rivers Program
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 QMP. Enforces corrective action, as required, where QA protocols are not met. Ensures CRP personnel are fully trained.

Jason Natho
Acting 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. 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.

Katrina Smith
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 CRP Project Quality Assurance Specialist. Ensures maintenance of QAPPs. Assists CRP Lead QA Specialist in conducting USIBWC CRP audits. Verifies QAPPs are being followed by contractors and that projects are producing data of known quality. Coordinates project planning with the USIBWC CRP 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.

Scott Delgado
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, July 2019 or most current 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).

Grant Bassett
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.

USIBWC CRP

Gilbert Anaya
USIBWC Environmental Management Division Chief
Responsible for oversight of the USIBWC El Paso Headquarters Program and Clean Rivers Program at the USIBWC. Performs evaluations of USIBWC El Paso Headquarters personnel. Cost Center Manager for the USIBWC El Paso Headquarters budget.

William Finn
USIBWC Supervisory Hydrologist Water Accounting Division
Responsible for oversight of the USIBWC field offices that are considered Rio Grande Basin Clean Rivers Program partners.

Lisa Torres
Acting USIBWC CRP 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 USIBWC CRP participants and that projects are producing data of known quality. Ensures that sub participants are qualified to perform contracted work. Ensures CRP project managers and/or project QA Specialists are notified of deficiencies and corrective actions, and that issues are resolved. Responsible for validating that data collected are acceptable for reporting to the TCEQ. Responsible for coordinating with the TCEQ CRP PM to resolve QA-related issues.

Lisa Torres
USIBWC CRP Quality Assurance Officer
Responsible for coordinating the implementation of the QA program. 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. 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. Responsible for coordinating with the TCEQ CRP project manager and/or project QA Specialist to resolve QA-related issues. 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 is properly trained and that training records are maintained.

Lisa Torres
USIBWC 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 USIBWC CRP internet sites.

DHL Analytical

John DuPont
DHL Analytical, Laboratory Manager
Responsible for project coordination at DHL Analytical, providing support to IBWC at each program stage: QAPP development, sampling, sample receipt and login, analyses, and data reporting. Responsible for quality assurance of reported analyses performed by DHL Analytical and performs validation and verification of data before the report is sent to USIBWC. Notifies the USIBWC CRP Project Manager and Quality Assurance Officer of circumstances which may adversely affect the quality of data. Responsible for coordinating with DHL Analytical and USIBWC CRP Project Manager to resolve QA-related issues. Implements or ensures implementation of corrective actions needed to resolve nonconformance's noted during assessments. Responsible for overseeing sub-contract laboratories and making sure they adhere to QAPP standards.

Sherri Herschmann
DHL Analytical, Quality Assurance Manager
Responsible for the overall quality control and quality assurance of analyses performed by DHL Analytical. Monitors implementation of the QM/QAPP within the laboratory to ensure complete compliance with QA data quality objectives, as defined by the contract and 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.

Rio Grande Basin CRP Partners

US International Boundary and Water Commission, Field Offices
Manages data collection activities and generates the work orders for water quality monitoring at five field offices along the Texas portion of the Rio Grande. The area operations managers direct activities on the local level as follows: American Dam Field Office, Amistad Dam Field Office, Falcon Dam Field Office, Mercedes Field Office, and the Presidio Field Office. Samples collected by the Amistad Dam, Falcon Dam, Mercedes, and Presidio field offices are shipped to DHL Analytical for analysis. American Dam submits their samples to the El Paso Water Laboratory for analysis. All USIBWC Field Offices ensure that samples are collected according to methods specified in this QAPP and the latest version of the SWQM Procedures.

Vicente Guerrero III, Laboratory Manager
Brownsville Public Utilities Board (BPUB) Laboratory
Responsible for implementing and monitoring CRP requirements in contracts, QAPPs, and QAPP amendments and appendices. Responsible for water quality monitoring, analysis, and data review of Station 20449 in Brownsville, TX. Samples are collected and analyzed by the BPUB laboratory as part of their regular permit monitoring and provided to the USIBWC CRP.

Gabriel Coronado and Julian Alvarado, Quality Assurance Specialists
Brownsville Public Utilities Board (BPUB) Laboratory
Responsible for the review of laboratory data and laboratory techniques performed at the BPUB laboratory. Responsible for the overall quality control and quality assurance of analyses performed by the BPUB laboratory. Monitors implementation of the QM/QAPP within the laboratory to ensure complete compliance with QA data quality objectives, as defined by this QAPP. Conducts internal annual audits to ensure compliance with written SOPs, identify potential problems and initiate Corrective Action Reports and files. Responsible for supervising and verifying all aspects of QA/QC in the laboratory.

Teresa T. Alcala, Laboratory Manager
El Paso Water International Water Quality Laboratory (EPW IWQL)

Responsible for implementing and monitoring CRP requirements in contracts, QAPPs, and QAPP amendments and appendices. Responsible for water quality laboratory analysis and data review for samples collected by USIBWC American Dam Field Office. Responsible for sending data monthly to the USIBWC CRP.

Alonso A. Avalos , Quality Assurance Chemist
El Paso Water International Water Quality Laboratory (EPW IWQL)
Responsible for the review of laboratory data and laboratory techniques performed at the EPW IWQL laboratory. Responsible for the overall quality control and quality assurance of analyses performed by the EPW IWQL laboratory. Monitors implementation of this QM/QAPP within the laboratory to ensure complete compliance with QA data quality objectives, as defined by this QAPP. Conducts internal annual audits to ensure compliance with written SOPs, identify potential problems and initiate Corrective Action Reports and files. Responsible for supervising and verifying all aspects of QA/QC in the laboratory.

John Porter, Director
City of Laredo Environmental Services Department
Responsible for supervising water quality monitoring staff at the City of Laredo Environmental Services Department.

Juan M. Vazquez and Carlos McMullen, Environmental Specialists
City of Laredo Environmental Services Department
Responsible for water quality monitoring samples collected on Manadas Creek in the Laredo area. Samples collected are submitted to DHL Analytical for analysis. Ensures that samples are collected according to methods specified in this QAPP and the latest version of the SWQM Procedures.

Tricia Cortez, Executive Director and Martin Castro, Watershed Science Director
Rio Grande International Study Center
Responsible for water quality monitoring and data review in the Laredo area of the Rio Grande. Samples collected are submitted to DHL Analytical for analysis. Ensures that samples are collected according to methods specified in this QAPP and the latest version of the SWQM Procedures.

Nicolas Havlik, Natural Resource Coordinator
Texas Parks and Wildlife Department, Natural Resources Program
Responsible for supervising water quality monitoring staff at TPWD Big Bend Ranch State Park.

Kate Hammond
Regional Director
Responsible for administration of all Intermountain Region parks and is the authorized signatory for park level agreements.

Stephen Lantz
Supervisory Physical Scientist
Responsible for water quality monitoring in the Big Bend National Park and Rio Grande Wild and Scenic River. Samples collected are submitted to DHL Analytical for analysis. Ensures that samples are collected according to methods specified in this QAPP and the latest version of the SWQM Procedures.

Dustin Renninger
Physical Science Technician
Responsible for water quality monitoring in the Big Bend National Park and Rio Grande Wild and Scenic River. Samples collected are submitted to DHL Analytical for analysis. Ensures that samples are collected according to methods specified in this QAPP and the latest version of the SWQM Procedures.

Dr. Jungseok Ho, Assistant Professor
University of Texas Rio Grande Valley- Edinburg

Responsible for water quality monitoring samples collected at Arroyo Los Olmos, a tributary to the Rio Grande, and one site on the Rio Grande. Samples collected are submitted to DHL Analytical for analysis. Ensures that samples are collected according to methods specified in this QAPP and the latest version of the SWQM Procedures.

Greg Larson, Professor, Biology Department
Midland College

Responsible for water quality monitoring at two stations in the Pecos sub-basin. Water samples collected are submitted to DHL Analytical for analysis. Ensures that samples are collected according to methods specified in this QAPP and the latest version of the SWQM Procedures.

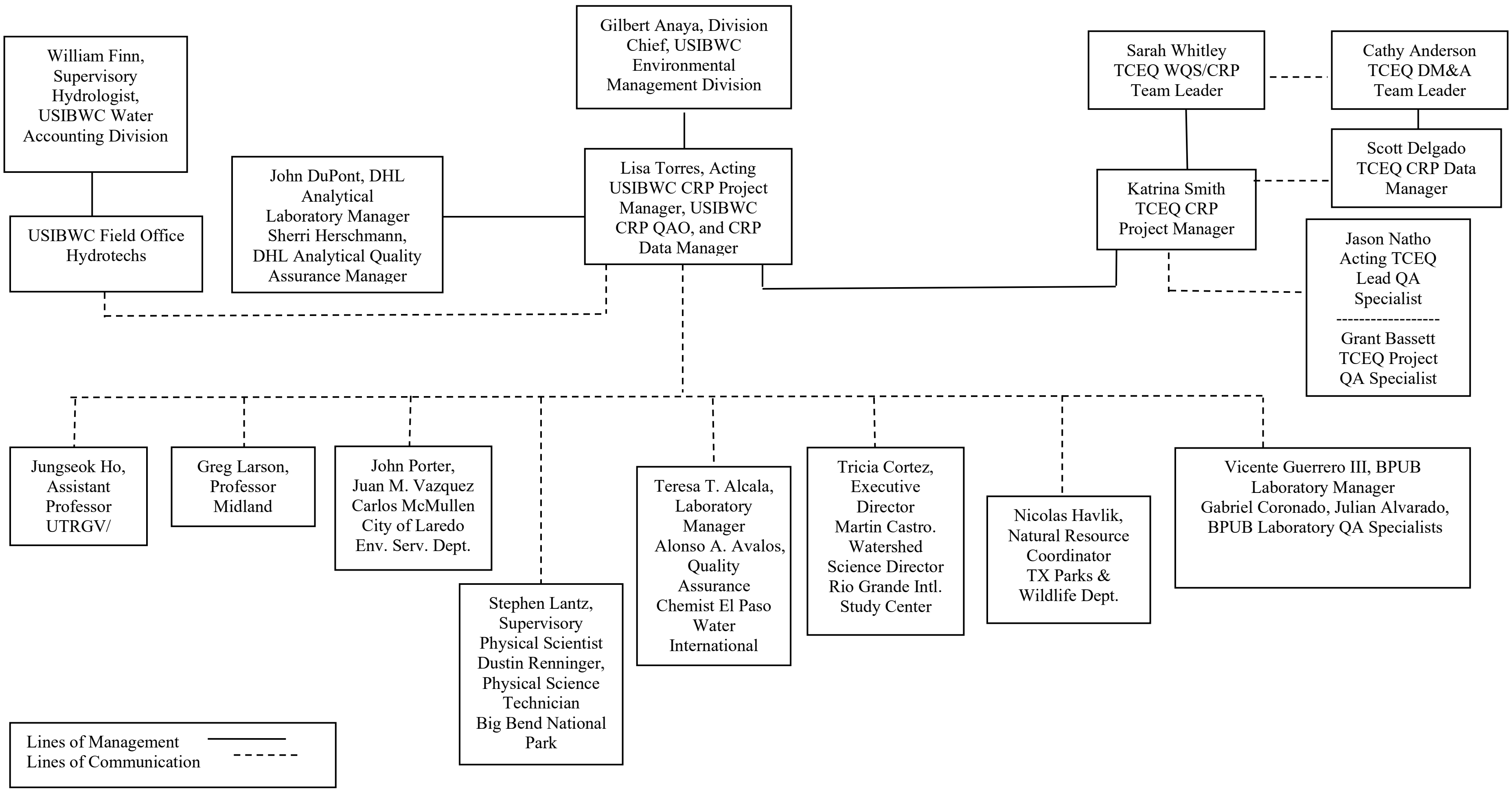
Terms of Agreement

The USIBWC Clean Rivers Program Sampling Partners agree to the long-term collection of water quality samples and environmental data at designated monitoring stations on a prescribed schedule. The types of samples and data collected by each partner may vary in time, commitment, and geography. A Sampling Partner’s signature on the Section A1 Approval Page of the Rio Grande Basin Monitoring Program Quality Assurance Project Plan indicates acknowledgment that the Sampling Partner does not expect to be paid for his/her work, compensation for expenses associated with said in-kind work, and will abide by the Texas Commission on Environmental Quality procedures.

In Addition, USIBWC non-federal entity Sampling Partners release, waive, discharge and covenant not to sue the USIBWC, including its officers and employees, with respect to all liability, claims or causes of action whatsoever related to any damages or injury that they may sustain, whether caused by the negligence of the USIBWC or otherwise, while performing tasks under this QAPP. USIBWC Sampling Partners are aware and fully responsible for guarding against any risks involved with such activity and choose to participate voluntarily and at their own risk. They voluntarily assume full responsibility for any property damage or personal injury that they may sustain while participating in, or related to the above activity

Project Organization Chart

Figure A4.1. Organization Chart - Lines of Communication



BPUB analyzes their own data and the *enterococcus* samples for the Brownville area, and American Dam uses the El Paso Water Quality Laboratory. All other partners use DHL Analytical.

A5 Problem Definition/Background

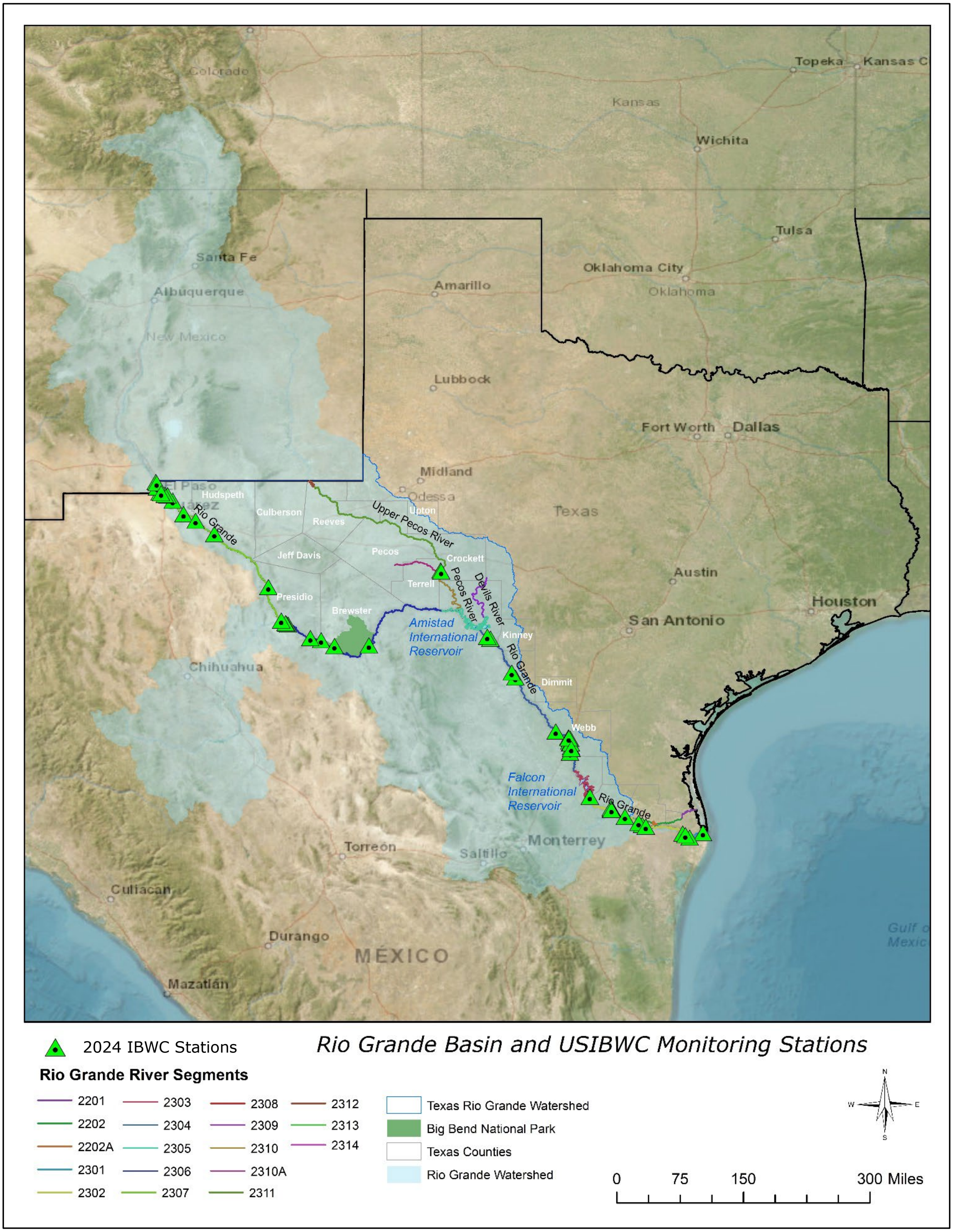
In 1991, the Texas Legislature passed the Texas Clean River Act (Senate Bill 818) in response to growing concerns that water resource issues were not being pursued in an integrated, systematic manner. The act requires that ongoing water quality assessments be conducted for each river basin in Texas, an approach that integrates water quality issues within the watershed. The 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 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 USIBWC CRP 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, January 2023 or most recent version (QMP).

The purpose of this QAPP is to clearly delineate USIBWC CRP 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, deemed acceptable for their intended use. This process will ensure that data collected under this QAPP and submitted to 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) and 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 *Clean Rivers Program Guidance and Reference Guide FY 2024-2025*.

The international reach of the Rio Grande (hereinafter Rio Grande Basin) encompasses an immense area from the arid Chihuahuan Desert region around El Paso, Texas, downstream to the subtropical coastal region near Brownsville, Texas. Therefore, for the purpose of coordination and planning, the Rio Grande has been divided into four sub-basins; the Upper Rio Grande Basin extending from the New Mexico/Texas State line downstream to the International Amistad Dam (including the Devils River); the Pecos River sub-basin that extends from the Red Bluff Reservoir at the New Mexico/Texas State line to the confluence with the Rio Grande; the Middle Rio Grande Basin that extends downstream of International Amistad Dam to International Falcon Dam; and the Lower Rio Grande Basin extending from downstream of International Falcon Dam to the Rio Grande Tidal area. The Rio Grande Basin, its tributaries, and associated bays are further partitioned into 14 stream segments: six segments in the Upper Rio Grande Basin, three segments in the Pecos River sub-basin, three segments in the Middle Rio Grande Basin, and two segments in the Lower Rio Grande Basin.

Figure A5.1 shows a map of the Rio Grande Basin in the context of the Texas Clean Rivers Program. The Upper Basin encompasses 16 west Texas counties; El Paso, Hudspeth, Culberson, Loving, Reeves, Ward, Winkler, Crane, Pecos, Upton, Crockett, Jeff Davis, Presidio, Brewster, Terrel, and Val Verde counties. The Pecos River begins in the Sangre de Cristo Mountains of north-central New Mexico, travels through eastern New Mexico, crosses into Texas at the Red Bluff Reservoir, winds through west Texas, and then empties into the Rio Grande in Val Verde County above the International Amistad Dam. The Middle Rio Grande Basin portion of the basin includes parts of Val Verde, Edwards, Kinney, Maverick, Dimmit, Webb, Zapata, Jim Hogg, and Starr Counties. The study area in the Lower Rio Grande Basin includes parts of Starr, Hidalgo, and Cameron Counties in Texas.

Figure A5.1. Map of the Rio Grande Basin



A6 Project/Task Description

The USIBWC CRP in the Rio Grande basin coordinates monitoring efforts among a large number of partners to routinely collect surface water quality data from more than 50 sites throughout the basin. Partners in the Rio Grande basin include universities, municipalities, non-profit organizations, and other agencies which monitor water quality in the Rio Grande basin for their own purposes and at the request of the Clean Rivers Program. The program was established to collect, store, and make available water quality data, which the participating partners require to carry out their assigned functions. The USIBWC CRP collects this data and uses it for assessments of water quality under the Clean Rivers Program. The data are also widely used by state water quality managers, cities, counties, consultants, students and the general public and is used to monitor water quality for use in assessment for the attainment of uses and numerical criteria. Smaller non-classified water bodies are also monitored in response to perceived risk for pollution and/or to define water quality. The USIBWC's Quality Assurance Project Plan is the mechanism for bringing this data into the statewide water quality database, the Surface Water Quality Monitoring Information System, or SWQMIS. A map showing the locations of all USIBWC CRP monitoring locations is included in Appendix C. (For a complete monitoring schedule of the Rio Grande Basin, see http://cms.lcra.org.)

Basin-wide monitoring efforts include sites sampled by USIBWC CRP staff and partners as listed in A4. The monitoring plan is determined at annual coordinated monitoring meetings held at five locations in the basin. For FY2024-2025, 52 stations will be monitored for field, flow, conventionals, and bacteriological samples. Metals in water and sediment will be collected at sites where they have historically been high and where stakeholders request continued collection. (For a more detailed description of the monitoring plan and how it is designed, please see Appendix B.)

The USIBWC CRP has leveraged a broad network of in-kind partners to collect samples throughout the Rio Grande Basin. The CRP monitoring partners in the Rio Grande basin are: USIBWC Field Offices (American Dam, Amistad Dam, Falcon Dam, Presidio, Mercedes), El Paso Water, Texas Parks and Wildlife Department (TPWD), Big Bend National Park (BBNP), City of Laredo Environmental Services, Midland College, University of Texas Rio Grande Valley (Edinburg campus), Rio Grande International Study Center (RGISC) and the Brownsville Public Utilities Board. All CRP partners in the Rio Grande basin monitoring program are required to be trained by the USIBWC CRP staff, and they must agree to follow this QAPP by signing this document. Various partners collect limited field and/or laboratory parameters due to issues such as remoteness of the site, shipping problems, accreditation, or to a standing Memorandum of Agreement/Understanding between the entity and the USIBWC. Only data meeting the specifications detailed in this QAPP are reported to TCEQ. For any partner reporting five parameters or less, the USIBWC El Paso Headquarters considers this as "limited conventionals analysis".

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 USIBWC CRP Project Manager to the CRP Project Manager electronically. The USIBWC CRP 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 USIBWC CRP Project Manager, the USIBWC CRP QAO, the CRP Project Manager, the CRP Lead QA Specialist, the TCEQ QA Manager or designee, the CRP Project QA Specialist, and 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 USIBWC CRP Project Manager. If adherence letters are required, the USIBWC CRP will secure an adherence letter from each sub-tier project participant (e.g., subcontractors, sub-participant, or other units of government) affected by the amendment stating the organization's awareness of and commitment to requirements contained in each amendment to the QAPP. The USIBWC CRP will maintain this documentation as part of the project's QA records and ensure that the documentation is available for review.

Special Project Appendices

Projects requiring QAPP appendices will be planned in consultation with the USIBWC CRP and the TCEQ Project Manager and TCEQ technical staff. Appendices will be written in an abbreviated format and will reference the Basin QAPP where appropriate. Appendices will be approved by the USIBWC CRP Project Manager, the USIBWC CRP QAO, the Laboratory (as applicable), and the CRP Project Manager, the CRP Project QA Specialist, the CRP Lead QA Specialist, and additional parties affected by the Appendix, as appropriate. Copies of approved QAPP appendices will be distributed by the USIBWC CRP to project participants before data collection activities commence. The USIBWC CRP 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 USIBWC CRP will maintain this documentation as part of the project's QA records and ensure that the documentation is available for review.

A7 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, July 2022 or most recent version (https://www.tceq.texas.gov/downloads/water-quality/assessment/integrated-report-2022/2022-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.

Systematic watershed monitoring is defined as sampling that is planned for a short duration (1 to 2 years), and is designed to screen waters that would not normally be included in the routine monitoring program, investigate areas of potential concern, and investigate possible sources of water quality impairments or concerns. Due to the limitations regarding these data (e.g., not temporally representative, limited number of samples, biological sampling does not meet the specimen vouchering requirements), the data will be used to determine whether any locations have values exceeding the TCEQ's water quality criteria and/or screening levels (or in some cases values elevated above normal). The USIBWC CRP will use this information to determine future monitoring priorities. These water quality data and data collected by other organizations (e.g., USGS, TCEQ, etc.), will be subsequently reconciled for use and assessed by the TCEQ.

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 ("AWRL") 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 laboratory analyzing the sample. Analytical results shall be reported down to the laboratory's LOQ (i.e., the laboratory'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 laboratory's LOQ for each analyte must be set at or below the AWRL.
- Once the LOQ is established in the QAPP, that is the reporting limit for that parameter until such time as the laboratory amends the QAPP and lists an updated LOQ.
- The laboratory 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.
- When reporting data, no results may be reported below the LOQ stated in this QAPP.
- Measurement performance specifications for LOQ check samples are found in Appendix A.

Laboratory Measurement Quality Control Requirements and Acceptability Criteria are provided in Section B5.

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.

Laboratory 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 B10.

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.

A8 Special Training/Certification

Before new field personnel independently conduct field work the USIBWC CRP Project Manager or USIBWC CRP QAO, trains him/her in proper instrument calibration, field sampling techniques, and field analysis procedures. The QA officer (or designee) will document the successful field demonstration. The QA Officer (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.

The requirements for obtaining certified positional data using a Global Positioning System (GPS) are located in Section B10, Data Management.

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

A9 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 A9.1 Project Documents and Records

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	USIBWC CRP, DHL Analytical, Brownsville Public Utilities Board-Analytical Laboratory, El Paso Water Utilities Public Service Board International Water Quality Laboratory, USIBWC Field Offices, BPUB, TPWD, BBNP, UTRGV, Midland College, and RGISC	7 yrs	Paper and electronic
Field SOPs	USIBWC CRP, USIBWC Field Offices, BPUB, TPWD, BBNP, UTRGV, Midland College, and RGISC	7 yrs	Paper and electronic
Laboratory Quality Manuals	USIBWC CRP, DHL Analytical, BPUB, El Paso Water Utilities Public Service Board International Water Quality Laboratory.	7 yrs	Paper
Laboratory SOPs	USIBWC CRP, DHL	7 yrs	Paper

	Analytical, BPUB, El Paso Water Utilities Public Service Board International Water Quality Laboratory.		
QAPP distribution documentation	USIBWC CRP	7 yrs	Paper and electronic
Field staff training records	USIBWC CRP	7 yrs	Paper and electronic
Field equipment calibration/maintenance logs	USIBWC CRP, USIBWC Field Offices, BPUB, TPWD, BBNP, UTRGV, Midland College, and RGISC	7 yrs	Paper
Field instrument printouts	USIBWC CRP, USIBWC Field Offices, BPUB, TPWD, BBNP, UTRGV, Midland College, and RGISC	7 yrs	Paper
Field notebooks or data sheets	USIBWC CRP, USIBWC Field Offices, BPUB, TPWD, BBNP, UTRGV, Midland College, and RGISC	7 yrs	Paper and electronic
Chain of custody records	USIBWC CRP, DHL Analytical, BPUB, El Paso Water Utilities Public Service Board International Water Quality Laboratory.	7 yrs	Paper and electronic
Laboratory calibration records	DHL Analytical, BPUB, El Paso Water Utilities Public Service Board International Water Quality Laboratory.	7 yrs	Paper and electronic
Laboratory instrument printouts	DHL Analytical, BPUB, El Paso Water Utilities Public Service Board International Water Quality Laboratory.	7 yrs	Paper
Laboratory data reports/results	USIBWC CRP, DHL Analytical, BPUB, El Paso Water Utilities Public Service Board International Water Quality Laboratory.	7 yrs	Paper and electronic
Laboratory equipment maintenance logs	DHL Analytical, BPUB, El Paso Water Utilities Public Service Board International Water Quality Laboratory.	7 yrs	Paper and electronic
Corrective Action Documentation	USIBWC CRP, DHL Analytical, BPUB, El Paso Water Utilities Public Service Board International Water Quality Laboratory.	7 yrs	Paper and 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 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.

At the very minimum, test reports (regardless of whether they are hard copy or electronic) should include the following:

Parameter Code
Parameter Name
Sample results
Units of measurement
Sample matrix
Dry weight or wet weight (as applicable)
Station information
Collecting Entity
Date and time of collection
Dilution Factor
Lab Method
Prep Date/Time
Date Analyzed
Sample depth
Holding time for E. coli
LOQ and limit of detection (LOD) (formerly referred to as the reporting limit and the method detection limit, respectively), and qualification of results outside the working range (if applicable)
Certification of NELAP compliance

Electronic Data

Data will be submitted electronically to the TCEQ in the Event/Result file format described in the most current version of the DMRG, which can be found at https://www.tceq.texas.gov/waterquality/data-management/dmrg_index.html. A completed Data Review Checklist and Data Summary (see Appendix F) will be included with each data submittal.

USIBWC CRP partners submit their field data by scanning field sheets and emailing the document to USIBWC CRP Project Manager and the USIBWC CRP Quality Assurance Officer.

Laboratories that analyze USIBWC CRP samples submit their results by emailing the document to USIBWC CRP Project Manager and the USIBWC CRP Quality Assurance Officer.

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 for Water, Sediment, and Tissue*, 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 USIBWC CRP’s procedures, QAPP, SOPs, etc., within 60 days of any final published update. Additional aspects outlined in Section B below reflect specific requirements for sampling under CRP and/or provide additional clarification.

Table B2.1 Sample Storage, Preservation and Handling Requirements, DHL Analytical

Routine Conventionals-in-Water Samples (8 containers: 4 unpreserved, 1 preserved with HNO_3, 1 preserved with H_2So_4, 1 preserved with $Na_2S_2O_3$, and 1 (Set of 3) preserved with H_3PO_4)				
Parameters	***Containers***	***Minimum Sample Volume (ml)***	***Preservation***	***Maximum Holding Time***
CONTAINER 1 and 2				
TSS (00530)	1000 mL HDPE	1000	Cool to ≤ 6°C, but not frozen	7 days
Chloride (Cl) (00940)	250 mL HDPE	50	Cool to ≤ 6°C, but not frozen	28 days
Sulfate (SO_4) (00945)	250 mL HDPE	50	Cool to ≤ 6°C, but not frozen	28 days
Fluoride (00951)	250 mL HDPE	50	Cool to ≤ 6°C, but not frozen	28 days
TDS (70300)	250 mL HDPE	100	Cool to ≤ 6°C, but not frozen	7 days
Alkalinity (00410)	250 mL HDPE	50	Cool to ≤ 6°C, but not frozen	14 days
CONTAINER 3				
Calcium (00916)	250 mL HDPE	50	1:1 HNO_3 to pH <2	180 days
Magnesium (00927)	250 mL HDPE	50	1:1 HNO3 to pH <2	180 days
Sodium (00929)	250 mL HDPE	50	1:1 HNO3 to pH <2	180 days
Potassium (00937)	250 mL HDPE	50	1:1 HNO3 to pH <2	180 days
Hardness (00900)	250 mL HDPE	50	Cool to < 6°C but not frozen Add 1–2 mL of HNO3 to pH < 2; preserve in the field	180 days
CONTAINER 4				
Ammonia (NH_3) (00610)	250 mL HDPE	100	Conc. H_2SO_4 to pH <2, Cool ≤ 6°C, but not frozen	28 days
Total Phosphorus (PO_4)	250 mL HDPE	50	Conc. H_2SO_4 to pH <2,	28 days

(00665)			Cool ≤ 6°C, but not frozen	
Nitrate + Nitrite (00630) ($NO_3 + NO_2$)	250 mL HDPE	50	Conc. H_2SO_4 to pH <2, and cool ≤ 6°C, but not frozen	28 days (48 hours if unpreserved)
CONTAINER 5				
Chlorophyll *a* (32211)	1000 mL Amber HDPE	500	Cool to ≤ 6°C but not frozen, dark	Filter within 48 hours. Filters may be stored frozen up to 24 days
CONTAINER 6				
E. coli bacteria (31699)	Sterilized Plastic container	120	Cool ≤ 6°C but not frozen, Sodium thiosulfate	*8 hours
CONTAINER 7				
Biological Oxygen Demand (BOD) (00310)	1000 mL HDPE	1000	Cool ≤ 6°C but not frozen, dark	48 hours
CONTAINER 8 (Set of 3 VOA Vials)				
Total Organic Carbon (TOC) (00680)	3 x 40 mL VOA vials	120	1:1 H_3PO_4 to pH <2, Cool ≤ 6°C but not frozen	28 days
Metals in Water				
Parameters	***Containers***	***Minimum Sample Volume (ml)***	***Preservation***	***Maximum Holding Time***
CONTAINER 1 and 2				
Total Metals Suite	500 mL HDPE	500	1:1 HNO_3 to pH<2	180 days
CONTAINER 3				
Total Mercury (245.7)	500 mL clear glass	500	1:1 HCl to pH < 2	28 days
Routine Conventionals in Sediment Samples				
Parameters	***Containers***	***Minimum Sample Volume (g)***	***Preservation***	***Maximum Holding Time***
CONTAINER 1				
Percent Solids (81373)	4-oz glass jar	50 grams	Cool ≤ 6°C but not frozen	NA
CONTAINER 2				
Grain Size Analysis	1-L HDPE bottle	1000 grams	Cool ≤ 6°C but not frozen	NA
Metals in Sediment				
Parameters	***Containers***	***Minimum Sample Volume (g)***	***Preservation***	***Maximum Holding Time***
CONTAINER 1				
Metals	4-oz glass jar	5 grams	Cool ≤ 6°C but not frozen	180 days
Total Mercury	4-oz glass jar	5 grams	Dark and Cool < 6°C, but not frozen	28 days

**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.

Table B2.2 Sample Storage, Preservation and Handling Requirements, El Paso Water International Water Quality Laboratory

Routine Conventionals-in-Water Samples				
Parameters	***Containers***	***Sample Volume (ml)***	***Preservation***	***Maximum Holding Time***
CONTAINER 1				
Turbidity (82079)	HDPE	100	Cool <6°C but not frozen	48 hours
CONTAINER 2				
BOD (00310)	HDPE	1000	Cool <6°C but not frozen	48 hours
CONTAINER 3				
E. coli bacteria (31699)	Sterilized plastic container	2X250	Cool <6°C but not frozen Sodium thiosulfate	8 hours
CONTAINER 4				
Chlorophyll *a* (32211)	Sterilized plastic amber container	1X500	Cool to <6°C but not frozen, dark	Filter within 48 hours. Filters may be stored frozen up to 24 days
CONTAINER 5				
Magnesium (00927)	HDPE	1000	Cool <6°C but not frozen	180 days
Sodium (00929)	HDPE	1000	Cool <6°C but not frozen	180 days
Potassium (00937)	HDPE	1000	Cool <6°C but not frozen	180 days
CONTAINER 6				
TSS (00530)	HDPE	2000	Cool <6°C but not frozen	7 days

Collecting entity that uses this lab: USIBWC American Dam Field Office

Table B2.3 Sample Storage, Preservation and Handling Requirements, Brownsville PUB Laboratory

Routine Conventionals-in-Water Samples				
Parameters	***Containers***	***Sample Volume (ml)***	***Preservation***	***Maximum Holding Time***
CONTAINER 1				
TSS (00530)	HDPE	2000	Cool <6°C but not frozen	7 days
TDS (70300)	HDPE	250	Cool <6°C but not frozen	7 days
CONTAINER 2				
Ammonia (NH_3) (00610)	HDPE	500	1-2 ml conc.H_2SO_4 to pH <2 and Cool <6°C but not frozen	28 days
CONTAINER 3				
BOD (00310)	HDPE	2000	Cool <6°C but not frozen, dark	48 hours
CONTAINER 4				
E. coli bacteria (31699)	Sterilized plastic container	290	Cool <6°C but not frozen Sodium thiosulfate	8 hours

CONTAINER 5				
Enterococcus (31701)	Sterilized plastic container	290	Cool <6°C but not frozen Sodium thiosulfate	8 hours
CONTAINER 6				
Turbidity (82079)	HDPE	100	Cool <6°C but not frozen	48 hours

Collecting entity that uses this lab: BPUB

Sample Containers

Certificates from sample container manufacturers are maintained in a notebook by the USIBWC CRP or by the laboratory.

The analyzing laboratory adds the appropriate preservative to the proper sample containers and provides them to the partners. DHL Analytical provides sample containers for all CRP partners, except for, EPW IWQL, and the BPUB, which supply their own containers for samples analyzed by their laboratory.

DHL laboratory uses 1L, and 250 mL HDPE containers, 1L glass amber bottles, 40 mL VOA vials, and 120 mL sterilized plastic containers. For metals-in water, DHL uses one 500 mL pre-acidified plastic bottles and one 500 mL pre-acidified clear glass bottle. For metals in sediment, a 4-oz glass jar with a Teflon-lined lid is used.

The EPW IWQL laboratory uses 1L and 100 mL HDPE containers, sterilized, 250mL plastic containers, and a 500 mL sterilized plastic amber container.

The BPUB laboratory uses 2L HDPE containers for TSS and BOD, 250 mL HDPE containers for TDS, 500 mL HDPE for Ammonia, and 290 mL IDEXX bottles with 1% sodium thiosulfate bottles for bacteria analysis.

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 B5) are collected to verify that contamination has not occurred.

Documentation of Field Sampling Activities

Field sampling activities are documented on field data sheets 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
- Location
- Sampling Depth
- Sampling Time
- Sample Collector's name
- Values for all field parameters collected

Additional notes containing detailed observational data not captured by field parameters may include:

- Water appearance
- Weather
- Biological activity
- Recreational activity
- Unusual odors

- Pertinent observations related to water quality or stream uses
- Watershed or instream activities
- Specific sample information
- Missing parameters

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 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 Ms. Lisa Torres 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 CRP Project Manager 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.

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*
Site identification
Sample matrix
Number of containers
Preservative used
Was the sample filtered
Analyses required
Name of collector
Custody transfer signatures and dates and time of transfer
Bill of lading, if applicable

**BPUB records time of collection on their data sheets.*

Sample Labeling

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

Site identification
Date and time of collection
Preservative added, if applicable
Indication of field-filtration for metals, as applicable
Sample type (i.e., analyses) to be performed

Sample Handling

Handling procedures for water, sediment and biological samples are discussed in detail in the TCEQ SWQM Procedures. Proper sample handling is a joint effort of the sampling crew, the sample transporter, and laboratory staff. Sample integrity must be protected by preventing sample contamination after the sample is placed in a container. USIBWC CRP, USIBWC Field Offices (Amistad Dam, Falcon Dam, Presidio, Mercedes), Midland College, University of Texas Rio Grande Valley at Edinburg, City of Laredo Environmental, Texas Parks and Wildlife Department, Big Bend National Park, and RGISC samples will be shipped to DHL Analytical. USIBWC American Dam Field Office relinquishes their samples to the El Paso Water Laboratory. BPUB collects and analyzes their own samples. Please refer to the Chain of Custody section below for more details.

Chain of Custody forms are submitted with all water and/or sediment chemistry samples, as well as with all bacteria samples. If both water and sediment samples are collected, separate COC for the water samples and sediment samples will be submitted. Routine water chemistry and metals in water analyses are requested on the same form.

The receiving laboratory sample custodian will examine all arriving samples for proper documentation and preservation. Internal sample handling, custody, and storage procedures for laboratories are described in the laboratory quality assurance manual. It is assumed that samples in tape-sealed ice chests are secure whether being transported by staff vehicle, by common carrier, or by commercial package delivery.

Samples will be put in the ice chest with enough ice to fill to the top, and enough ice in the chest to keep the samples cold until they reach the laboratory. This is especially important in the warm months of the year. COC will be placed in an envelope and taped to the top of the ice chest, or they may be sealed in a plastic bag and taped to the inside of the ice chest, or they may be sealed in a plastic bag and taped to the inside of the ice chest lid. Ice chests will then be sealed with tape before shipping.

Sample Tracking Procedure Deficiencies and Corrective Action

All deficiencies associated with COC procedures, as described in this QAPP, are immediately reported to the USIBWC CRP Project Manager. 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. Ms. Lisa Torres 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 Project Manager in the project progress report. CAPs will be prepared by the Lead Organization QAO and submitted to TCEQ CRP Project Manager along with project progress report.

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

B4 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 30 Tex. Admin. Code Ch. 307, in that data generally are generated for comparison to those standards and/or criteria. The Texas Surface Water Quality Standards 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 Surface Water Quality Monitoring Procedures as amended, 40 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 NELAP-accredited in accordance with 30 TAC Chapter 25. Copies of laboratory 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 logbook. 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 Laboratory Supervisor, who will make the determination and notify the USIBWC CRP 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 USIBWC CRP Project Manager. The USIBWC CRP Project Manager will include this information in the CAP and submit with the Progress Report which is sent to the TCEQ CRP Project Manager.

The definition of and process for handling deficiencies and corrective action are defined 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 is lost, its absence will be described in the data summary report submitted with the corresponding data set, and a corrective action plan (as described in section C1) may be necessary.

B5 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. Specific requirements are outlined below. Field QC sample results are submitted with the laboratory data report (see Section A9.).

Field blank

Field blanks are required for total metals-in-water samples when collected without sample equipment (i.e., as grab samples). For other types of samples, they are optional. A field blank is prepared in the field by filling a clean container with pure deionized water and appropriate preservative, if any, for the specific sampling activity being undertaken. Field blanks are used to assess contamination from field sources, such as airborne materials, containers, or preservatives. The minimum frequency requirement for field blanks for total metals-in-water samples is specified in the SWQM Procedures.

The analysis of field blanks should yield values lower than the LOQ. When target analyte concentrations are high, blank values should be lower than 5% of the lowest value of the batch, or corrective action will be implemented.

Field blanks are associated with batches of field samples. In the event of a field blank failure for one or more target analytes, all applicable data associated with the field batch may need to be qualified as not meeting project QC requirements, and these qualified data will not be reported to the TCEQ. These data include all samples collected on that day during that sample run and should not be confused with the laboratory analytical batch.

Field equipment blank

Field equipment blanks are required for metals-in-water samples when collected using sampling equipment. The field equipment blank is a sample of analyte-free media which has been used to rinse common sampling equipment to check the effectiveness of decontamination procedures. It is collected in the same type of container as the environmental sample, preserved in the same manner, and analyzed for the same parameter. The minimum frequency requirement for field equipment blanks is specified in the SWQM Procedures.

The analysis of field equipment blanks should yield values lower than the LOQ, or, when target analyte concentrations are very high, blank values must be less than 5% of the lowest value of the batch, or corrective action will be implemented.

Field equipment blanks are associated with batches of field samples. In the event of a field equipment blank failure for one or more target analytes, all applicable data associated with the field batch may need to be qualified as not meeting project QC requirements, and these qualified data will not be reported to the TCEQ. These data include all samples collected on that day during that sample run and should not be confused with the laboratory analytical batch.

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 quality manuals (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 Sediment and Tissue Samples

When considering LOQs for solid samples and how they apply to results, two aspects of the analysis are considered: (1) the LOQ of the sample, based on the real world in which moisture content and interferences affect the result, and (2) the LOQ in the QAPP, which is a value less than or equal to the AWRL based on an idealized sample with zero % moisture.

The LOQ for a solid sample is based on the lowest non-zero calibration standard (as are those for water samples), the moisture content of the solid sample, and any sample concentration or dilution factors resulting from sample preparation or clean-up.

To establish solid-phase LOQs to be listed in Appendix A of the QAPP, the laboratory will adjust the concentration of the lowest non-zero calibration standard for the amount of sample extracted, the final extract volume, and moisture content (assumed to be zero % moisture). Each calculated LOQ will be less than or equal to the AWRL on the dry-weight basis to satisfy the AWRL requirement for sediment and tissue analyses. When data are reviewed for consistency with the QAPP, they are evaluated based on this requirement. Results may not appear to meet the AWRL requirement due to high moisture content, high concentrations of non-target analytes necessitating sample dilution, etc. These sample results will be submitted to the TCEQ with an explanation on the data summary as to why results do not appear to meet the AWRL requirement.

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.

Laboratory equipment blank

Laboratory equipment blanks are prepared at the laboratory where collection materials for metals sampling equipment are cleaned between uses. These blanks document that the materials provided by the laboratory are free of contamination. The QC check is performed before the metals sampling equipment is sent to the field. The analysis of laboratory equipment blanks should yield values less than the LOQ. If the result is not less than the LOQ, the equipment should not be used.

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 USIBWC CRP may consider excluding all of the results in the batch related to the analyte that failed recovery.

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 Ms. Lisa Torres. 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 Ms. Torres will be relied upon in evaluating results.

Field blanks for trace elements and trace organics are scrutinized very closely. Field blanks are associated with batches of field samples. In the event of a field blank failure, any target analytes in the ambient sample associated with the field blank should be qualified as not meeting project QC requirements. Notations of blank contamination are noted in the data summaries that accompany data deliverables. Equipment blanks for metals analysis are also scrutinized very closely.

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 USIBWC CRP Project Manager. If applicable, the USIBWC CRP Project Manager will include this information in a CAP and submit with the Progress Report which is sent to the TCEQ CRP Project Manager.

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 that the sub-contracting laboratory utilize the same reporting limits as the signatory laboratory and performs all required quality control analysis outlined in this QAPP. The signatory laboratory is also responsible for quality assurance of the data prior to delivering it to the USIBWC CRP, 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 (USIBWC CRP) when requested.

B6 Instrument/Equipment 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 USIBWC CRP staff. 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).

B7 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).

B8 Inspection/Acceptance of Supplies and Consumables

No special requirements for acceptance are specified for field sampling supplies and consumables. Reference to the laboratory QM may be appropriate for laboratory-related supplies and consumables.

B9 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 or parameter code 74069 Flow Estimate depending on the proximity of the monitoring station to the USGS gage station.

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.

B10 Data Management

Data Management Process

Data will be managed in accordance with the SWQM DMRG, most recent version, and applicable USIBWC information resource management policies.

Quantitative measurements are taken in the field by personnel using multi-parameter instruments. Qualitative measurements, which include observational data (i.e., weather conditions), are also taken in the field. Samples for laboratory analysis are also collected. The field investigator has the initial responsibility to assure that all pertinent information is recorded correctly and in the proper units. USIBWC CRP partners will check all COC forms prior to shipping the sample to the laboratory to verify that all the pertinent required information has been included. All laboratories will ensure that the COC forms are properly filled out, and that all samples received are acceptable. All hand-entered data must be recorded legibly and with special care to maintain the decimal in its proper location.

Field measurements and sample collection are performed according to procedures recorded or referenced in Sections B2 and B3. Field data will be reported on the required data forms and submitted to the USIBWC CRP by the partners, and laboratory results and chain of custody forms will be reported to the USIBWC CRP by the laboratories. The data is entered into the database by the USIBWC CRP Project Manager and QAO using Access software. The Access software database, which was designed specifically for the USIBWC CRP, is then used to query the data for outliers and incorrect data format. The database will only contain data described in Table A7, which is collected or acquired by USIBWC and partners participating under this QAPP. Data is verified using the TCEQ SWQMIS data loading validator report. Water quality monitoring data files are then submitted to the TCEQ CRP Project Manager. Both the TCEQ Project Manager and TCEQ Data Manager perform quality control checks on the data. The TCEQ Project Manager then approves the data and the TCEQ Data Manager loads the data into the SWQMIS database.

Water quality monitoring data added to the USIBWC CRP database undergoes the following quality control checks:

1. Each set of data forms received by USIBWC CRP are reviewed for the following:

   a. valid and complete station number, date, time, and other applicable metadata.
   b. comparison of station number to station description to ensure they both represent the same sampling point; and
   c. that each value is represented by a valid parameter code.

2. The Data Review Checklist will be utilized to ensure that potential areas for error are addressed and reviewed prior to submission of data.

Even when accepted protocols are followed in collecting and analyzing environmental samples, data loss may occur. Data delivery and discussion between USIBWC and partners follows the lines of communication established in the organizational chart in Figure A4.1.

Data Dictionary

Terminology and field descriptions are included in the 2019 DMRG, or most recent version. Table B10.1 describes entities that will submit data under this QAPP.

Table B10.1 Submitting and Collecting Entity Codes

Name of Monitoring Entity	Tag Prefix	Submitting Entity	Collecting Entity
USIBWC American Dam Field Office	BD	IB	IB
USIBWC Amistad Dam Field Office	BA	IB	IB
USIBWC Falcon Dam Field Office	BF	IB	IB
USIBWC Presidio Office	BP	IB	IB
USIBWC Mercedes Field Office	BM	IB	IB
USIBWC El Paso Headquarters	BH	IB	IB
Univ. of TX RGV – Edinburg	B	IB	PT
RGISC	B	IB	RN
City of Laredo Env. Services	B	IB	LE
Brownsville PUB	B	IB	BO
TX Parks and Wildlife Dept.	B	IB	PW
Big Bend National Park	B	IB	BB
Midland College	B	IB	MC

Data Errors and Loss

When the USIBWC CRP receives laboratory data, the data is checked by the USIBWC CRP Project Manager to ensure all contract requirements were met by the laboratory for the analysis. Upon receipt of field and laboratory data, the USIBWC CRP QAO ensures that no errors are present. If any potential errors are observed, the USIBWC CRP QAO verifies the error with the source and makes corrections if needed. The data is then entered into the Access database. Prior to exporting the data from Access for submittal to TCEQ, the database is queried for any errors by comparing the data with another database containing known Monitoring Station ID codes, approved Parameter codes, the LOQ's established in Table A7 of this QAPP, and normal minimum and maximum values for each analysis. Any data errors confirmed, or data deemed incorrect or of questionable quality, is not submitted to TCEQ. Any errors discovered by the database are corrected and the data is exported from Access into pipe delimited file formats as described in the Surface Water Quality Monitoring Data Management Reference Guide, 2019 or most recent version.

Record Keeping and Data Storage

All field data sheets, and laboratory data received by the USIBWC CRP are recorded as received in a logbook by the USIBWC CRP QAO. Complete data sets are assigned a tag ID and logged into a spreadsheet by the USIBWC CRP QAO. Complete original data sets are archived in hard copy form and retained on-site by USIBWC CRP for a minimum of seven years. USIBWC CRP staff back up all electronic logs and datasets on external hard drives on at least a monthly basis. Additionally, IT personnel backup all network drives weekly at a separate location from the CRP. Data is submitted as required by the CRP guidance and all data that meets project performance specifications are stored in the SWQMIS database. All laboratories have separate data security measures as addressed by their procedures.

Data Handling, Hardware, and Software Requirements

The USIBWC CRP computer system is attached to a Local Area Network (LAN) consisting of multiple servers and backup servers on a 1GB Network. The LAN is comprised of workstation nodes plus networked and individual printers. All components communicate with each other through switches (1 GB) and routers. The switches give the user their Internet access through USIBWC's connection with a federally contracted communications provider via a T3 line. Details of hardware and software directly used to meet the requirements of this document are listed in the tables below:

Table B10.2 Personal Computer and Software Configuration

Configuration	Current		Anticipated	
Type	Hardware/Software	Date	Hardware/ Software	Date
PC Software	MS Windows 7 Professional; Microsoft Outlook; MS Office 2016. ArcGIS 10.8.2	As of 1/2019	Software upgrades	As Determined by the USIBWC IT Dept.
Portable PC Hardware	Portable PC: Dell Precision M2400; Intel Core i7-3540M CPU @ 3 GHz, 8 GB RAM; 256 GB Hard Drive, CD and DVD-RW drive; Lithium-Ion battery with battery gauge and AC pack; and EZ Pad Plus Pointing device	As of 5/2015	Hardware upgrades	As Determined by the USIBWC IT Dept.
Portable PC Software	Adobe Creative Suite 4 Master, Windows 7 Ultimate, MS Office 365	As of 5/2019	Software upgrades	As Determined by the USIBWC IT Dept.
Data Backup System	Each workstation contains a 16x rewritable drive.	As of 5/2015		As Determined by the USIBWC IT Dept.

Information Resource Management Requirements

Data will be managed in accordance with the TCEQ DMRG (most recent revision), and applicable USIBWC CRP information resource management policies.

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.

In lieu of entering certified GPS coordinates, 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, etc.	Continuous	USIBWC CRP	Monitoring of the project status and records to ensure requirements are being fulfilled	Report to TCEQ in Quarterly Report
Monitoring Systems Audit of USIBWC CRP	Dates to be determined by TCEQ	TCEQ	Field sampling, handling and measurement; facility review; and data management as they relate to CRP	30 days to respond in writing to the TCEQ to provide corrective actions
Monitoring Systems Audit of Program Sub participants	Once per biennium or QAPP effective period.	USIBWC CRP	Field sampling, handling and measurement; facility review; and data management as they relate to CRP	30 days to respond in writing to the USIBWC El Paso Headquarters. PM will report problems 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 respond in writing to the TCEQ to provide corrective actions
Desk Audit/Data Traceability Review	Once per biennium or QAPP effective period.	USIBWC CRP	Review of all calibration documentation, field sheet and chain of custody records. Data will be checked by selecting a date range and checking the data against USIBWC El Paso Headquarters records.	30 days to respond in writing to the USIBWC. PM will report problems to TCEQ in Progress Report.

Corrective Action Process for Deficiencies

Deficiencies are any deviation from the QAPP, SWQM Procedures, or other applicable guidance. Deficiencies may invalidate resulting data and require corrective action. Repeated deficiencies should initiate a CAP. 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 USIBWC CRP Project Manager (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 Ms. Lisa Torres, 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 CRP Project Manager both verbally and in writing in quarterly progress reports and by completion of a CAP.

Corrective Action

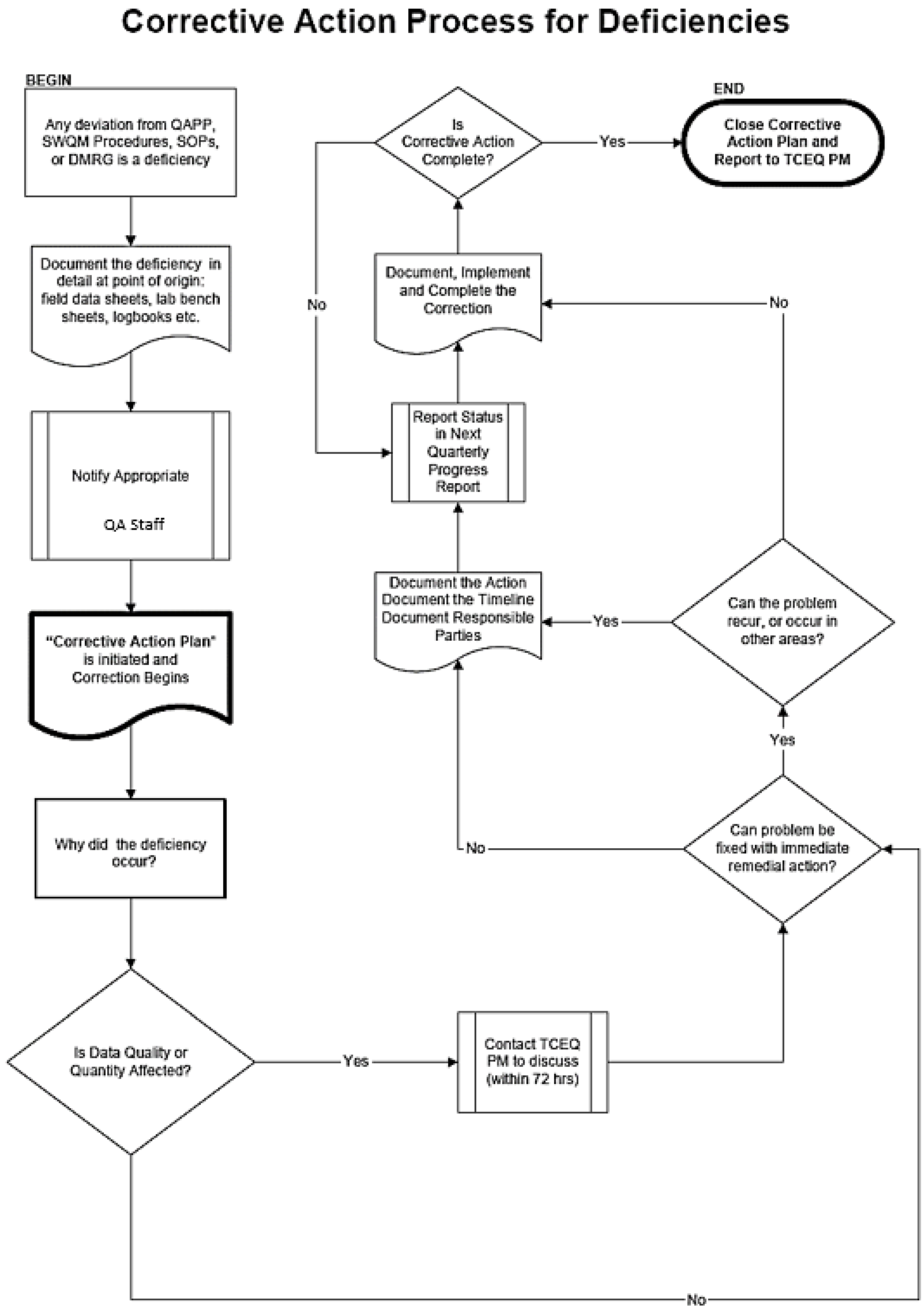
CAPs should:

- 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

A flow chart has been developed to facilitate the process (see figure C1.1: Corrective Action Process for Deficiencies).

Figure C1.1 Corrective Action Process for Deficiencies



The status of CAPs will be included with quarterly progress reports. In addition, significant conditions which, if uncorrected, could have a serious effect on safety or on the validity or integrity of data will be reported to the TCEQ immediately.

Ms. Lisa Torres 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 Ms. Torres. 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.

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
Non-Conformance Report	As Needed	As Needed	Field Staff Laboratory Staff	USIBWC CRP PM or QAO
CRP Progress Reports	Quarterly	December 15, 2023 March 15, 2024 June 15, 2024 September 15, 2024 December 15, 2024 March 15, 2025 June 15, 2025 August 15, 2025	USIBWC CRP Project Manager or QAO	TCEQ CRP Project Management
Corrective Action Plan	Quarterly until completed	30 days from the day USIBWC became aware of the deviation	USIBWC CRP QAO	USIBWC CRP Project Manager, TCEQ Project Manager
Non-compliance Reports	As needed	With lab results to document lab issues or late cooler arrivals	Lab QAO	USIBWC CRP Project Manager
Data Summary	As needed	With Data Submittals	USIBWC CRP Data Manager	TCEQ CRP Project Management
Monitoring Systems Audit Report and Response	As Needed	As Needed	USIBWC QAO	TCEQ CRP Project Management
Desk Audit/Data Traceability Review	As Needed	As Needed	USIBWC QAO	TCEQ CRP Project Management

Reports to USIBWC CRP Project Management

Results of oversight activities, deficiencies, corrective action reports, and significant QA issues are reported to the USIBWC PM on an ongoing basis. They may or may not be written reports.

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 USIBWC CRP'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 USIBWC CRP, a report of findings, recommendations and response is sent to the TCEQ in the quarterly progress report.

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 USIBWC CRP 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 and continuity, reasonableness, and conformance to project requirements, and then validated against the project objectives and measurement performance specifications which are listed in Section A7 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.

D2 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 D2.1, respectively. 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 D2.1 is performed by Ms. Lisa Torres. 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 Quality Assurance Specialist. 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 USIBWC CRP Project Manager 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 USIBWC CRP Data Manager 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.

Table D2.1: Data Review Tasks

Data to be Verified	Field Task	Laboratory Task	QA Task	Lead Organization Data Manager Task
Sample documentation complete; samples labeled; sites identified	Field Personnel	Lab QAO		
Field QC samples collected for all analytes as prescribed in the TCEQ SWQM Procedures	Field Personnel			
Standards and reagents traceable	Field Personnel	Lab QAO		
Chain of custody complete/acceptable	Field Personnel	Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
NELAP Accreditation is current		Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
Sample preservation and handling acceptable	Field Personnel	Lab QAO		
Holding times not exceeded		Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
Collection, preparation, and analysis consistent with SOPs and QAPP	Field Personnel	Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
Field documentation (e.g., biological, stream habitat) complete	Field Personnel			
Instrument calibration data complete	Field Personnel	Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
QC samples analyzed at required frequency	Field Personnel	Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
QC results meet performance and program specifications		Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
Analytical sensitivity (LOQ/AWRL) consistent with QAPP		Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
Results, calculations, transcriptions checked	Field Personnel	Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
Laboratory bench-level review performed		Lab QAO		
All laboratory samples analyzed for all scheduled parameters		Lab Manger	USIBWC Data Manager(s)	USIBWC Data Manager(s)
Corollary data agree	Field Personnel		USIBWC Data Manager(s)	USIBWC Data Manager(s)
Nonconforming activities documented	Field Personnel	Lab QAO	USIBWC Data Manager(s)	USIBWC Data Manager(s)
Outliers confirmed and documented; reasonableness check performed			USIBWC Data Manager(s)	USIBWC Data Manager(s)
Dates formatted correctly			USIBWC	USIBWC Data

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

D3 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 A5.

Appendix A: Measurement Performance Specifications (Table A7.1-10)

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 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 A7 are stored in SWQMIS. Any parameters listed in Tables A7 that do not have a valid TCEQ parameter code assigned will not be stored in SWQMIS.

TABLE A7.1 Measurement Performance Specifications for USIBWC CRP

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
TEMPERATURE, AIR (DEGREES CENTIGRADE)	DEG C	air	TCEQ SOP V1	00020	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
TURBIDITY, FIELD NEPHELOMETRIC TURBIDITY UNITS, N	NTU	water	SM 2130-B	82078	Field
DAYS SINCE PRECIPITATION EVENT (DAYS)	days	other	TCEQ SOP V1	72053	Field
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE (METERS)*	meters	water	TCEQ SOP V2	82903	Field
AVERAGE STREAM WIDTH (METERS)	meters	water	TCEQ SOP V1	89861	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
WIND DIRECTION **(1=North, 2=South, 3=East, 4=West, 5=NE, 6=SE, 7=NW, 8=SW)**	NU	other	NA	89010	Field
PRESENT WEATHER **(1=CLEAR,2=PTCLDY,3=C**	NU	other	NA	89966	Field

LDY,4=RAIN,5=OTHER)					

USIBWC CRP partners that use this table include: USIBWC CRP, USIBWC Field Offices, TPWD, Midland College, City of Laredo Env. Services Dept., UTRGV, BBNP, and RGISC
* 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) 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, 24th Edition, 2022.
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 A7.2 Measurement Performance Specifications for USIBWC CRP

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

USIBWC CRP partners that use this table include: USIBWC CRP, USIBWC Field Offices, TPWD, Midland College, City of Laredo Env. Services Dept., UTRGV, BBNP, and RGISC

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, 24th Edition, 2022.
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 A7.3 Measurement Performance Specifications for DHL Analytical, Inc.

Conventional Parameters in Water										
Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (RPD)	Bias %Rec. of LCS	Lab
BIOCHEMICAL OXYGEN DEMAND (MG/L, 5 DAY - 20DEG C	mg/L	water	SM 5210B	00310	2	2	NA	NA	NA	AQUA-TECH
ALKALINITY, TOTAL (MG/L AS CACO3)	mg/L	water	SM 2320B EPA 310.1	00410	20	20	NA	20	NA	DHL
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540D EPA 160.2	00530	5	2.5	NA	NA	NA	DHL
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500-NH3-D	00610	0.1	0.1	70-130	20	80-120	DHL
NITRITE PLUS NITRATE, TOTAL ONE LAB DETERMINED VALUE (MG/L AS N)	mg/L	water	EPA 300 EPA 9056	00630	0.05	0.05	70-130	20	80-120	DHL
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	SM 4500-P E EPA 365.2	00665	0.06	0.06	70-130	20	80-120	DHL
CARBON, TOTAL ORGANIC, NPOC (TOC), MG/L	mg/L	water	SM 5310C EPA 415.1 EPA 9060	00680	2	1	NA	NA	NA	DHL
HARDNESS, TOTAL (MG/L AS CACO3)*	mg/L	water	SM 2340B	00900	5	2	NA	20	80-120	DHL
CALCIUM, TOTAL (MG/L AS CA)	mg/L	water	EPA 6020 EPA 200.8	00916	0.5	0.3	70-130	20	80-120	DHL
MAGNESIUM, TOTAL (MG/L AS MG)	mg/L	water	EPA 6020 EPA 200.8	00927	0.5	0.3	70-130	20	80-120	DHL
SODIUM, TOTAL (MG/L AS NA)	mg/L	water	EPA 6020 EPA 200.8	00929	NA	0.3	70-130	20	80-120	DHL
POTASSIUM, TOTAL (MG/L AS K)	mg/L	water	EPA 6020 EPA 200.8	00937	NA	0.3	70-130	20	80-120	DHL
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300 EPA 9056	00940	5	1	70-130	20	80-120	DHL
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300 EPA 9056	00945	5	3	70-130	20	80-120	DHL
FLUORIDE, TOTAL (MG/L AS F)	mg/L	water	EPA 300 EPA 9056	00951	0.5	0.4	70-130	20	80-120	DHL

CHLOROPHYLL-A UG/L SPECTROPHOTOMETRIC ACID. METH	ug/L	water	EPA 446.0	32211	3	3	NA	20	80-120	DHL
RESIDUE, TOTAL FILTRABLE (DRIED AT 180C) (MG/L)	mg/L	water	SM 2540C EPA 160.1	70300	10	10	NA	20	80-120	DHL

USIBWC CRP partners that use this table include: USIBWC CRP, Amistad Dam FO, Falcon Dam FO, Presidio FO, Mercedes FO, TPWD, BBNP, City of Laredo Env. Services, RGISC, UTRGV-Edinburg, and Midland College

BOD analysis is subcontracted by DHL Analytical to AQUA-TECH, whose adherence letter is on file.

*Hardness is not used for regulatory purposes but is used to assess metals in water at inland sites (estuarine sites do not require hardness analysis).

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, 24th Edition, 2022.
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 A7.4 Measurement Performance Specifications for DHL Analytical, Inc.

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	AQUA-TECH
***E. COLI*, COLILERT, IDEXX, HOLDING TIME**	hours	water	NA	31704	NA	NA	NA	NA	NA	AQUA-TECH

USIBWC CRP partners that use this table include: USIBWC CRP, Amistad Dam FO, Falcon Dam FO, Presidio FO, Mercedes FO, TPWD, BBNP, Midland College, RGISC, City of Laredo Env. Services, and UTRGV-Edinburg

E. coli analysis is subcontracted by DHL Analytical to AQUA-TECH, whose adherence letter is on file.

* 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.

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, 24th Edition, 2022.
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 A7.5 Measurement Performance Specifications for DHL Analytical, Inc.

Metals in Water										
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Precision (RPD)**	**Bias %Rec. of LCS**	**Lab**
MANGANESE, TOTAL (UG/L AS MN)	µg/L	water	EPA 200.8 EPA 6020	01055	50	2	70-130	20	80-120	DHL
IRON, TOTAL (UG/L AS FE)	µg/L	water	EPA 200.8 EPA 6020	01045	300	150	70-130	20	80-120	DHL
SELENIUM, TOTAL (UG/L AS SE)	µg/L	water	EPA 200.8 EPA 6020	01147	2	2	70-130	20	80-120	DHL
MERCURY, TOTAL, (UG/L AS HG)	µg/L	water	EPA 245.7	71900	0.006	0.004	70-130	20	80-120	SPL-ANALAB

USIBWC CRP partners that use this table include: Presidio FO, Mercedes FO, TPWD, BBNP, City of Laredo Env. Services

Mercury analysis is subcontracted by DHL Analytical to SPL-ANALAB, whose adherence letter is on file.

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, 24th Edition, 2022.
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 A7.6 Measurement Performance Specifications for DHL Analytical, Inc.

Metals in Sediment										
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Precision (RPD)**	**Bias %Rec. of LCS**	**Lab**
ARSENIC, BOTTOM DEPOSITS (MG/KG AS AS DRY WT)	mg/kg	sediment	EPA 6020 EPA 200.8	01003	16.5	1	60-140	30	60-140	DHL
BARIUM, BOTTOM DEPOSITS (MG/KG AS BA DRY WT)	mg/kg	sediment	EPA 6020 EPA 200.8	01008	NA	2	60-140	30	60-140	DHL
CADMIUM,TOTAL, BOTTOM DEPOSITS (MG/KG,DRY WT)	mg/kg	sediment	EPA 6020 EPA 200.8	01028	2.49	0.3	60-140	30	60-140	DHL
CHROMIUM,TOTAL, BOTTOM DEPOSITS (MG/KG,DRY WT	mg/kg	sediment	EPA 6020 EPA 200.8	01029	55.5	2	60-140	30	60-140	DHL
COPPER, BOTTOM DEPOSITS (MG/KG AS CU DRY WT)	mg/kg	sediment	EPA 6020 EPA 200.8	01043	74.5	2	60-140	30	60-140	DHL
LEAD, BOTTOM DEPOSITS (MG/KG AS PB DRY WT)	mg/kg	sediment	EPA 6020 EPA 200.8	01052	64	0.3	60-140	30	60-140	DHL
MANGANESE, BOTTOM DEPOSITS (MG/KG AS MN DRY WG	mg/kg	sediment	EPA 6020 EPA 200.8	01053	550	2	60-140	30	60-140	DHL

NICKEL, TOTAL, BOTTOM DEPOSITS (MG/KG,DRY WT)	mg/kg	sediment	EPA 6020 EPA 200.8	01068	24.3	2	60-140	30	60-140	DHL
SILVER, BOTTOM DEPOSITS (MG/KG AS AG DRY WT)	mg/kg	sediment	EPA 6020 EPA 200.8	01078	1.1	0.2	60-140	30	60-140	DHL
ZINC, BOTTOM DEPOSITS (MG/KG AS ZN DRY WT)	mg/kg	sediment	EPA 6020 EPA 200.8	01093	205	2.5	60-140	30	60-140	DHL
ANTIMONY, BOTTOM DEPOSITS (MG/KG AS SB DRY WT	mg/kg	sediment	EPA 6020 EPA 200.8	01098	12.5	1	60-140	30	60-140	DHL
ALUMINUM, BOTTOM DEPOSITS (MG/KG AS AL DRY WT	mg/kg	sediment	EPA 6020 EPA 200.8	01108	NA	37.5	60-140	30	60-140	DHL
SELENIUM, BOTTOM DEPOSITS (MG/KG AS SE DRY WT)	mg/kg	sediment	EPA 6020 EPA 200.8	01148	NA	0.5	60-140	30	60-140	DHL
MERCURY,TOT. IN BOT. DEPOS. (MG/KG) AS HG DRY WG	mg/kg	sediment	EPA 7471 EPA 7470	71921	0.355	0.04	60-140	30	60-140	DHL
SEDIMENT PRTCL.SIZE CLASS >2.0MM GRAVEL %DRY WT*	% DRY WT	sediment	Gravel Retention #10 Sieve	80256	NA	NA	NA	% gravel-20	NA	SPL-ANALAB
SOLIDS IN SEDIMENT, PERCENT BY WEIGHT (DRY)	% BY WT	sediment	ASTM D2216	81373	NA	NA	NA	20	NA	DHL
PARTICLE SIZE, 0.05-0.002mm SILT, DRYWT,SEDIMENT*	%	sediment	ASTM D422	49906	NA	NA	NA	%silt - 20	NA	SPL-ANALAB
SEDIMENT PRTL.SIZE CLASS.0039-.0625 SILT %DRY W*	% DRY WT	sediment	ASTM D422	82008	NA	NA	NA	%silt - 20	NA	SPL-ANALAB
PARTICLE SIZE,CLAY0.002-0.0002mm DRYWT,SEDIMENT%*	%	sediment	ASTM D422	49900	NA	NA	NA	%clay – 20		SPL-ANALAB

SEDIMENT PRCTL.SIZE CLASS <.0039 CLAY %DRY WT*	%	sediment	ASTM D422	82009	NA	NA	NA	%clay – 20	NA	SPL-ANALAB
SEDIMENT PRCTL.SIZE CLASS,SAND .0625-2MM %DRYWT*	%	sediment	ASTM D422	89991	NA	NA	NA	%sand - 20	NA	SPL-ANALAB

USIBWC CRP partners that use this table include: USIBWC Amistad Dam Field Office and City of Laredo Env. Services Dept.

Particle size analysis is subcontracted by DHL Analytical to SPL-ANALAB, whose adherence letter is on file

*Sediment conventionals are not used for regulatory purposes but are extremely important in determining the availability of sediment toxics. Sediment grain size and TOC are recommended when analyzing metals and/or organics in sediment.

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, 24th Edition, 2022.
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 A7.7 Measurement Performance Specifications for El Paso Water International Water Quality Laboratory

Conventional Parameters in Water										
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Precision (RPD of LCS/LCSD)**	**Bias %Rec. of LCS**	**Lab**
BIOCHEMICAL OXYGEN DEMAND (MG/L, 5 DAY - 20DEG C	mg/L	water	SM 5210B	00310	2	2	NA	NA	NA	*IWQL
MAGNESIUM, TOTAL (MG/L AS MG)	mg/L	water	EPA 200.7	00927	0.5	0.5	70-130	20	80-120	†IWQL
SODIUM, TOTAL (MG/L AS NA)	mg/L	water	EPA 200.7	00929	NA	10	70-130	20	80-120	†IWQL

POTASSIUM, TOTAL (MG/L AS K)	mg/L	water	EPA 200.7	00937	NA	2	70-130	20	80-120	†IWQL
CHLOROPHYLL-A UG/L SPECTROPHOTOMETRIC ACID. METH	µg/L	water	SM 10200 H	32211	3	3	NA	20	80-120	*IWQL
TURBIDITY, LAB NEPHELOMETRIC TURBIDITY UNITS, NTU	NTU	water	SM 2130B	82079	0.5	0.1	85-115	10	85-115	*IWQL
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540D	00530	5	4	85-115	5	85-115	†IWQL

* Depending on lab personnel availability samples may be sent for analysis to Pace Analytical Services – Salina KS. Chlorophyll samples may be sent to Silver State Analytical Laboratories – Reno, NV.

†Monitored by IBWC American Dam FO. Partial conventional analysis due to lab accreditation. Additional non- accredited data for metals, organics and other conventionals available thru IBWC.

Adherence letter is on file for IWQL sub-contracted analysis to Pace Analytical Services and Silver State Analytical Laboratories.

The IWQL lab analyzes samples collected by the USIBWC American Dam field office.
References:

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

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022.

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 A7.8 Measurement Performance Specifications for El Paso Water International Water Quality Laboratory

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	IWQL
***E. COLI*, COLILERT, IDEXX, HOLDING TIME**	hours	water	NA	31704	NA	NA	NA	NA	NA	IWQL

The IWQL lab analyzes samples collected by the USIBWC American Dam field office.

* 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.

References:

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

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022.

TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, 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 A7.9 Measurement Performance Specifications for BPUB

Conventional Parameters in Water										
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Verification Sample %Rec (Method defined)**	**Precision (RPD of LCS/LCSD)**	**Bias %Rec. of LCS**	**Lab**
BIOCHEMICAL OXYGEN DEMAND (MG/L, 5 DAY - 20DEG C	mg/L	water	SM 5210B	00310	2	1	NA	NA	NA	BPUB
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	EPA 160.2, SM 2540D	00530	5	2	NA	NA	NA	BPUB
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	EPA 350.3, SM 4500 NH3 D	00610	0.1	0.1	70-130	20	80-120	BPUB
RESIDUE, TOTAL FILTRABLE (DRIED AT 180C) (MG/L)	mg/L	water	SM 2540C	70300	10	2	NA	20	80-120	BPUB
TURBIDITY, LAB NEPHELOMETRIC TURBIDITY UNITS, NTU	NTU	water	EPA 180.1	82079	0.5	0.1	NA	NA	NA	BPUB

USIBWC CRP partners that use this table include: BPUB

The BPUB analyzes their own data and does not collect field parameters.

References:

Quality Control Lab documents from Brownsville PUB and NELAP certification.
United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022.

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. 10 Measurement Performance Specifications for BPUB

Bacteriological Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	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	0.50*	NA	BPUB
***E. COLI*, COLILERT, IDEXX, HOLDING TIME**	hours	water	NA	31704	NA	NA	NA	NA	BPUB
***ENTEROCOCCI*, ENTEROLERT, IDEXX, (MPN/100 ML)**	MPN/100 mL	water	IDEXX Enterolert	31701	1**	1	0.50*	NA	BPUB

USIBWC CRP partners that use this table include: BPUB and UTRGV-Edinburg.

The BPUB analyzes their own data, as well as the *Enterococcus* samples submitted to them by UTRGV-Edinburg.

* 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:

United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020
American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2022.
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, 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)

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

TASK 3: WATER QUALITY MONITORING

Objectives: Water quality monitoring will focus on collecting information to characterize water quality in a variety of locations and conditions. These efforts will include a combination of:

- planning and coordinating basin-wide monitoring.
- routine, regularly scheduled monitoring to collect long-term information and support statewide assessment of water quality; and
- systematic, regularly scheduled short-term monitoring to screen water bodies for issues.

Task Description: The Performing Party's water quality monitoring area encompasses the Rio Grande River in Texas, including the Pecos River watershed. For planning purposes, the basin has been divided into 4 sub-basins as follows: the Upper Rio Grande Sub-Basin from El Paso to Amistad Dam; the Pecos River Sub-Basin from Red Bluff Reservoir to the confluence with the Rio Grande; the Middle Rio Grande Sub-Basin extending from below Amistad Dam downstream to Falcon Dam; and the Lower Rio Grande Sub-Basin from below Falcon Dam to the Gulf of Mexico.

The Performing Party will complete the following subtasks described below:

Monitoring Description – In FY 2024, the Performing Party, Performing Party field offices, and participating partner agencies will collect water quality data at a minimum of fifty-two stations throughout the basin. Minimum monitoring frequencies and parameter groups and frequencies planned for FY2024 include but are not limited to:

- Fifty-two (52) stations monitored quarterly for field, conventionals, bacteria and flow (when possible).
- One station will be sampled for metals in sediment.
- One station will be monitored for metals in water: and
- Ten (10) stations will be monitored monthly for field and bacteria only.

For FY 2025, the Performing Party will monitor at a similar level of effort as FY 2024.

The actual number of sites, location, frequency, and parameters collected for each fiscal year will be based on priorities identified at the Basin Advisory Committee (BAC) meetings and Coordinated Monitoring Meetings and included in the Appendix B schedule of the QAPP.

All monitoring procedures and methods will follow the guidelines prescribed in the Performing Party QAPP, the TCEQ Surface Water Quality Monitoring (SWQM) Procedures, Volume 1: *Physical and Chemical Monitoring Methods* (RG-415) and the TCEQ SWQM Procedures, Volume 2: *Methods for Collecting and Analyzing Biological Assemblage and Habitat Data* (RG-416).

Coordinated Monitoring Meeting (CMM) **-** The Performing Party will hold annual coordinated monitoring meetings as described in the CRP Guidance. The Performing Party will hold CMMs for the Upper (split into two different meetings), Middle and Lower Rio Grande Sub-Basins (two meetings), and the Pecos River Sub-Basin for a total of 5 CMM meetings. Additional CMMs may be added to facilitate attendance of partners covering a large geographical area. 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. The changes to the monitoring schedule will be entered into the statewide database on the Internet (http://cms.lcra.org) and communicated to meeting attendees. Changes to monitoring schedules that occur during the year will be entered into the statewide database on the Internet and communicated to meeting attendees.

Progress Report - Each Progress Report will include all types of monitoring and indicate the number of sampling events and the types of monitoring conducted in the quarter.

Deliverables and Dues Dates:

September 1, 2023, through August 31, 2024

A. Conduct water quality monitoring, summarize activities in the Monitoring Activities Report, and submit with QPR – September 15 and December 15, 2023; March 15 and June 15, 2024
B. Coordinated Monitoring Meeting - between March 15 and April 30, 2024
C. Coordinated Monitoring Meeting Summary of Changes - within 2 weeks of the meetings
D. Email notification that Coordinated Monitoring Schedule updates are complete - May 31, 2024

September 1, 2024, through August 31, 2025

A. Conduct water quality monitoring, summarize activities in the Monitoring Activities Report, and submit with QPR - September 15 and December 15, 2024; March 15 and June 15 and August 15, 2025
B. Coordinated Monitoring Meeting - between March 15 and April 30, 2025
C. Coordinated Monitoring Meeting Summary of Changes – within 2 weeks of the meeting
D. Email notification that Coordinated Monitoring Schedule updates are complete - May 31, 2025

Sample Design Rationale FY 2024

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 Water Quality Integrated Report, 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 USIBWC CRP coordinates closely with the TCEQ and other participants to ensure a comprehensive water monitoring strategy within the watershed. A discussion of past or ongoing water quality issues should be provided here to justify the monitoring schedule.

The following changes or additions have been made to the monitoring schedule. These changes have come about because of concerns or requests of steering committee members or monitoring entities.

- Upper: No changes.
- Middle: No changes.
- Lower: No changes.
- Pecos: No changes.

Appendix B.1, shown below, contains groups of analytes and which analytes are typically analyzed by each lab. The groups are arranged similarly to Table A7 found in Appendix A. An "X" in the column indicates that the analyte is analyzed by the entity shown.

Analyte Groups Analyzed by Laboratory

Analyte Group and Analyte	**DHL**	**EPW IWQL**	**BPUB**
Conventional			
TSS	X	X	X
Ammonia N	X		X
Nitrite plus Nitrate N	X		
Total Phosphorus P	X		
Chloride	X		
Sulfate	X		
TDS	X		X
Chlorophyll a	X	X	
Total Alkalinity	X		
Turbidity		X	X
Biological Oxygen Demand	X	X	X
Total Organic Carbon	X		
Hardness	X		
Calcium	X		
Magnesium	X	X	
Sodium	X	X	
Potassium	X	X	
Fluoride	X		
Bacteria			
E. Coli	X	X	X

E. Coli holding time	X		
Enterococcus			X
Metals in Water	X		
Metals in Sediment	X		

Appendix B.2, shown below, specifies which lab each CRP partners sends their samples to for analysis. The groups are arranged similarly to Table A7 found in Appendix A.

CRP Partners and their Affiliated Lab

Partner	DHL	EPWU IWQL	BPUB
USIBWC American Dam Field Office		Bacteria Conventionals	
USIBWC Amistad Dam Field Office	Conventionals Bacteria		
USIBWC Falcon Dam Field Office	Conventionals Bacteria		
USIBWC Presidio Field Office	Conventionals Bacteria Metals in Water		
USIBWC Mercedes Field Office	Conventionals Bacteria		
BPUB			Bacteria Conventionals
Rio Grande International Study Center	Conventionals Bacteria		
City of Laredo Environmental Services	Conventionals Bacteria Metals in Water Metals in Sediment		
TX Parks and Wildlife Department	Conventionals Bacteria Metals in Water		
Big Bend National Park	Conventionals Bacteria Metals in Water		
University of Texas RGV – Edinburg	Conventionals Bacteria		
Midland College	Conventionals Bacteria		
USIBWC CRP	Conventionals Bacteria		

Appendix B.3, shown below, contains the CRP partners and what field sheets each partner uses. An "X" in the column indicates that the partner uses that field sheet(s). Numbers listed below field sheet type may be found on their corresponding field sheet in Appendix D.

CRP Partners and their Field Sheets

Partner	Field Form ①	Sediment Sample Field Form ②
USIBWC American Dam Field Office	X	
USIBWC Amistad Dam Field Office	X	
USIBWC Falcon Dam Field Office	X	
USIBWC Presidio Field Office	X	
USIBWC Mercedes Field Office	X	
Brownsville Public Utilities Board		
RGISC	X	
City of Laredo Environmental Services	X	X
TX Parks and Wildlife Department	X	
Big Bend National Park	X	
University of Texas RGV – Edinburg	X	
Midland College	X	
USIBWC CRP	X	

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. 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.

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 2024

Table B1.1 Sample Design and Schedule, FY 2024

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
Segment 2301 Rio Grande Tidal																				
RIO GRANDE RIVER TIDAL AT THE END OF QUICKSILVER AVE 375 METERS SOUTH FROM THE INTERSECTION OF BOCA CHICA BLVD AND QUICKSILVER AVE | Map	13176	2301	15	IB	PT	RT									4	4			4	Station will begin to obtain *Entero* sample. The samples will be analyzed by BPUB
Segment 2302 Rio Grande Below Falcon Reservoir																				
RIO GRANDE RIVER AT EL JARDIN PUMP STATION LOCATED 350 METERS WEST OF INTERSECTION OF MONSEES ROAD AND CALLE MILPA VERDE | Map	13177	2302	15	IB	IB	RT									8	8	8		8	
RIO GRANDE RIVER AT RIVER BEND GOLF COURSE BOAT RAMP WEST OF BROWNSVILLE | Map	13179	2302	15	IB	PT	RT									4	4			4	
RIO GRANDE RIVER AT HWY 281/INTERNATIONAL BLVD IN HIDALGO | Map	13181	2302	15	IB	IB	RT									8	8	8		8	
RIO GRANDE RIVER AT FM 886 NEAR LOS EBANOS | Map	13184	2302	15	IB	IB	RT									7	7	7		7	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
RIO GRANDE RIVER AT FORT RINGGOLD 1.6 KILOMETERS DOWNSTREAM OF RIO GRANDE CITY | Map	13185	2302	15	IB	IB	RT									12	12	12		12	
RIO GRANDE RIVER 0.8 KILOMETERS DOWNSTREAM OF ANZALDUAS DAM AND 16.4 KILOMETERS UPSTREAM FROM HIDALGO TEXAS | Map	13664	2302	15	IB	IB	RT									8	8	8		8	
RIO GRANDE RIVER 300M UPSTREAM OF THE PHARR INTERNATIONAL BRIDGE/US 281 EAST OF HIDALGO TEXAS | Map	15808	2302	15	IB	IB	RT									8	8	8		8	
RIO GRANDE RIVER AT BROWNSVILLE PUB WATER TREATMENT PLANT NUMBER 1 INTAKE BETWEEN WTP RESERVOIR AND RIO GRANDE LEVEE 910 METERS WEST AND 335 METERS SOUTH TO THE INTERSECTION OF WEST ELIZABETH STREET AND SOUTH MILITARY ROAD | Map	20449	2302	15	IB	BO	RT									12	12				*E. coli* and limited conventionals
RIO GRANDE APPROX 380 METERS DOWNSTREAM OF CONFLUENCE WITH LOS OLMOS CREEK | Map	21749	2302	15	IB	IB	RT									4	4	4		4	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
LOS OLMOS CREEK AT US 83/EAST 2ND STREET SOUTH OF RIO GRANDE CITY | Map	13103	2302A	15	IB	IB	RT									4	4	4		4	
ARROYO LOS OLMOS AT SH 755 NW OF RIO GRANDE CITY | Map	13104	2302A	15	IB	IB	RT									4	4	4		4	
ARROYO LOS OLMOS 400M UPSTREAM OF THE CONFLUENCE WITH RIO GRANDE NEAR RIO GRANDE CITY TEXAS | Map	21591	2302A	15	IB	IB	RT									4	4	4		4	
Segment 2303 International Falcon Reservoir																				
FALCON LAKE AT INTERNATIONAL BOUNDARY MONUMENT I | Map	13189	2303	16	IB	IB	RT									4	4			4	
Segment 2304 Rio Grande Below Amistad Reservoir																				
RIO GRANDE AT PIPELINE CROSSING 8.7 MI DOWNSTREAM LAREDO | Map	13196	2304	16	IB	RN	RT									4	4			4	
RIO GRANDE 50 YD UPSTREAM OF CONFLUENCE OF ZACATA CREEK AND RIO GRANDE | Map	13200	2304	16	IB	RN	RT									4	4	4		4	
RIO GRANDE LAREDO WATER TREATMENT PLANT PUMP INTAKE | Map	13202	2304	16	IB	RN	RT									4	4	4		4	
RIO GRANDE 12.8 MI DOWNSTREAM AMISTAD DAM NEAR GAGE 340 M UPSTREAM OF US 277 BRIDGE IN DEL RIO | Map	13208	2304	16	IB	IB	RT									2	2	2		2	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
RIO GRANDE 4.5 MI DOWNSTREAM OF DEL RIO AT MOODY RANCH | Map	13560	2304	16	IB	IB	RT									4	4	4		4	
RIO GRANDE AT JUAREZ-LINCOLN INTERNATIONAL BRIDGE / BRIDGE #2 IN LAREDO | Map	15814	2304	16	IB	RN	RT									4	4	4		4	
RIO GRANDE AT MASTERSON RD IN LAREDO 9.9KM DWNSTR INTL BRIDGE #1/WEST BRIDGE DWNSTR SOUTHSIDE WWTP AND UPSTREAM NUEVO LAREDO WWTP | Map	15815	2304	16	IB	RN	RT									4	4	4		4	
RIO GRANDE AT RIO BRAVO 0.5KM DWNSTR OF THE COMMUNITY OF EL CENIZO | Map	15816	2304	16	IB	RN	RT									8	8	8		8	
RIO GRANDE AT THE COLOMBIA BRIDGE 2.7KM UPSTREAM OF THE DOLORES PUMP STATION 45.1KM UPSTREAM OF THE LAREDO WTP INTAKE | Map	15839	2304	16	IB	RN	RT									4	4	4		4	
RIO GRANDE AT WORLD TRADE BRIDGE ON FM 3484 | Map	17410	2304	16	IB	RN	RT									4	4	4		4	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
RIO GRANDE 115 METERS SOUTH AND 304 METERS WEST FROM THE INTERSECTION OF RANCHO VIEJO DRIVE/ZEBU COURT AND RIENDA DRIVE IN FATHER MCNABOE CITY PARK IN LAREDO | Map	20650	2304	16	IB	RN	RT									4	4	4		4	
RIO GRANDE AT MAIN STREET BOAT RAMP APPROX 400 METERS UPSTREAM OF US 57/INTERNATIONAL BRIDGE IN EAGLE PASS | Map	20997	2304	16	IB	IB	RT									4	4	4		4	
RIO GRANDE AT KICKAPOO CASINO BOAT RAMP SOUTH OF EAGLE PASS | Map	20999	2304	16	IB	IB	RT									8	8	8		8	replaces 18795 and 18792
RIO GRANDE AT EL CENIZO PARK 220 METERS WEST OF INTERSECTION OF CADENA AND JIMENEZ | Map	21542	2304	16	IB	RN	RT									8	8			8	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
MANADAS CREEK AT FM 1472 NORTH OF LAREDO | Map	13116	2304B	16	IB	LE	RT					4		4		4	4			4	Total Metals in Water and Dissolved Metals in Water are both being analyzed. The Total Metals are submitted to TCEQ, and the Dissolved Metals are not, due to when the sample is filtered. Dissolved Metals in water data can be found on IBWC website.
Segment 2306 Rio Grande Above Amistad Reservoir																				
RIO GRANDE AT THE MOUTH OF SANTA ELENA CANYON | Map	13228	2306	6	IB	BB	RT					2				8	8	8		8	
RIO GRANDE 449 METERS WEST AND 121 METERS SOUTH FROM THE INTERSECTION OF RANCH ROAD 170 AND RANCH ROAD 169 IN PRESIDIO COUNTY CAMS 758 | Map	13229	2306	6	IB	IB	RT					2				8	8	8		8	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
RIO GRANDE AT BOAT RAMP AT RIO GRANDE VILLAGE IN BIG BEND NATIONAL PARK | Map	16730	2306	6	IB	BB	RT					2				8	8	8		8	
RIO GRANDE RIVER AT COLORADO CANYON APPROX 30KM SE OF REDFORD ON RR170 IN PRESIDIO COUNTY | Map	16862	2306	6	IB	PW	RT					2				4	4			4	
RIO GRANDE AT PRESIDIO RAILROAD BRIDGE 3.25KM DOWNSTREAM OF US67 SOUTH OF PRESIDIO | Map	17000	2306	6	IB	IB	RT										8	8		8	
RIO GRANDE AT PRESIDIO/OJINAGA TOLL BRIDGE/INTERNATIONAL 0.75KM DOWNSTREAM OF US67 IN PRESIDIO | Map	17001	2306	6	IB	IB	RT										8	8		8	
RIO GRANDE AT LAJITAS RESORT/FM 170 BOAT RAMP 240 M UPSTREAM OF BLACK HILLS CREEK CONFLUENCE NEAR LAJITAS | Map	18441	2306	6	IB	PW	RT					2				4	4			4	
Segment 2307 Rio Grande Below Riverside Diversion Dam																				

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
RIO GRANDE 3.38 KILOMETERS UPSTREAM FROM THE CONFLUENCE WITH THE RIO CONCHOS 6.72 KILOMETERS WEST AND 2.445 KILOMETERS NORTH FROM THE INTERSECTION OF RANCH ROAD 170 AND RODRIQUEZ ROAD IN PRESIDIO COUNTY CAMS 757 | **Map**	13230	2307	6	IB	IB	RT					2				8	8	8		8	
RIO GRANDE AT RIVERSIDE CANAL 1.8 KM DOWNSTREAM OF ZARAGOSA INTERNATIONAL BRIDGE | **Map**	14465	2307	16	IB	IB	RT									12	12	12		12	Monitored by IBW C American Dam FO. Partial convention al analysis due to lab accreditati on. Additional non-accredited data for metals, organics and other convention als available thru IBWC.
RIO GRANDE AT GUADALUPE POINT OF ENTRY BRIDGE AT FM 1109 WEST OF TORNILLO | **Map**	15704	2307	6	IB	IB	RT									4	4	4		4	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
RIO GRANDE AT ALAMO CONTROL STRUCTURE 9.7KM UPSTREAM OF FT HANCOCK PORT OF ENTRY | Map	15795	2307	6	IB	IB	RT									4	4			4	
RIO GRANDE UPSTREAM OF CANDELARIA 0.5 KM UPSTREAM OF CAPOTE CREEK CONFLUENCE | Map	17407	2307	6	IB	IB	RT									4	4	4		4	
RIO GRANDE 632 METERS USPTREAM OF IBWC GAUGE 08-3705.00 RIO GRANDE AT FORT QUITMAN | Map	22193	2307	6	IB	IB	RT									4	4	4		4	

Segment 2308 Rio Grande Below International Dam

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
RIO GRANDE 1.3 KM DOWNSTREAM FROM HASKELL ST WWTP OUTFALL | Map	15528	2308	6	IB	IB	RT									12	12	12		12	Monitored by IBW C American Dam FO. Partial convention al analysis due to lab accreditati on. Additional non-accredited data for metals, organics and other convention als available thru IBWC.
RIO GRANDE 2.4 KM UPSTREAM FROM HASKELL ST WWTP OUTFALL SOUTH OF BOWIE HIGH SCHOOL FOOTBALL STADIUM IN EL PASO | Map	15529	2308	6	IB	IB	RT									12	12	12		12	Monitored by IBW C American Dam FO. Partial convention al analysis due to lab accreditati on. Additional non-accredited data for metals, organics and other convention als available thru IBWC.

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
Segment 2310 Lower Pecos River																				
PECOS RIVER APPROX 355 METERS DOWNSTREAM FROM THE CONFLUENCE WITH INDEPENDENCE CREEK | Map	14163	2310	7	IB	MC	RT									3	3	6		6	Collecting conv, bacteria, flow, field 3x/yr; field and flow only 3 additional times/yr
Segment 2311 Upper Pecos River																				
PECOS RIVER APPROX 2.98 KM UPSTREAM OF THE CONFLUENCE WITH INDEPENDENCE CREEK | Map	14164	2311	7	IB	MC	RT									3		6		6	Collecting conv, flow, field 3x/yr; field and flow only 3 additional times/yr
Segment 2314 Rio Grande Above International Dam																				
RIO GRANDE AT COURCHESNE BRIDGE 1.7 MI UPSTREAM FROM AMERICAN DAM CAMS 718 | Map	13272	2314	6	IB	IB	RT									12	12	12		12	Monitored by IBW C American Dam FO. Partial conventional analysis due to lab accreditation. Additional non-accredited data for metals, organics and other conventionals available thru IBWC.

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
RIO GRANDE AT BORDERLAND RD NW OF EL PASO | Map	13274	2314	6	IB	IB	RT									4	4	4		4	
RIO GRANDE 40M SOUTH OF VINTON BRIDGE APPROXIMATELY 4 KM S OF ANTHONY | Map	13275	2314	6	IB	IB	RT									4	4	4		4	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	Metal Water	Organic Water	Metal Sed	Organic Sed	Conv	Bacteria	Flow	Fish Tissue	Field	Comments
RIO GRANDE IMMED UPSTREAM OF THE CONFL WITH ANTHONY DRAIN WEST OF LA TUNA PRISON NEAR THE STATE LINE | Map	13276	2314	6	IB	IB	RT									4	4	8		8	
RIO GRANDE RIVER AT AMERICAN EAGLE BRICK FACTORY BRIDGE ABANDONED RR 0.1 MI DOWNSTREAM FROM SOUTHERN PACIFIC RR AT SMELTERTOWN | Map	15089	2314	6	IB	IB	RT									3	5			5	
RIO GRANDE AT ANAPRA BRIDGE ON SUNLAND PARK DRIVE 4.2 KM UPSTREAM OF AMERICAN DAM IN NEW MEXICO | Map	17040	2314	6	IB	IB	RT									4	4	4		4	.

Appendix C: Station Location Maps

Station Location Maps

Maps of stations monitored by the USIBWC CRP are provided below. The maps were generated by the USIBC CRP. 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 Ms. Lisa Torres, at 915-832-4779.

Figure 1: Map of the Upper Rio Grande Basin, Northern Half

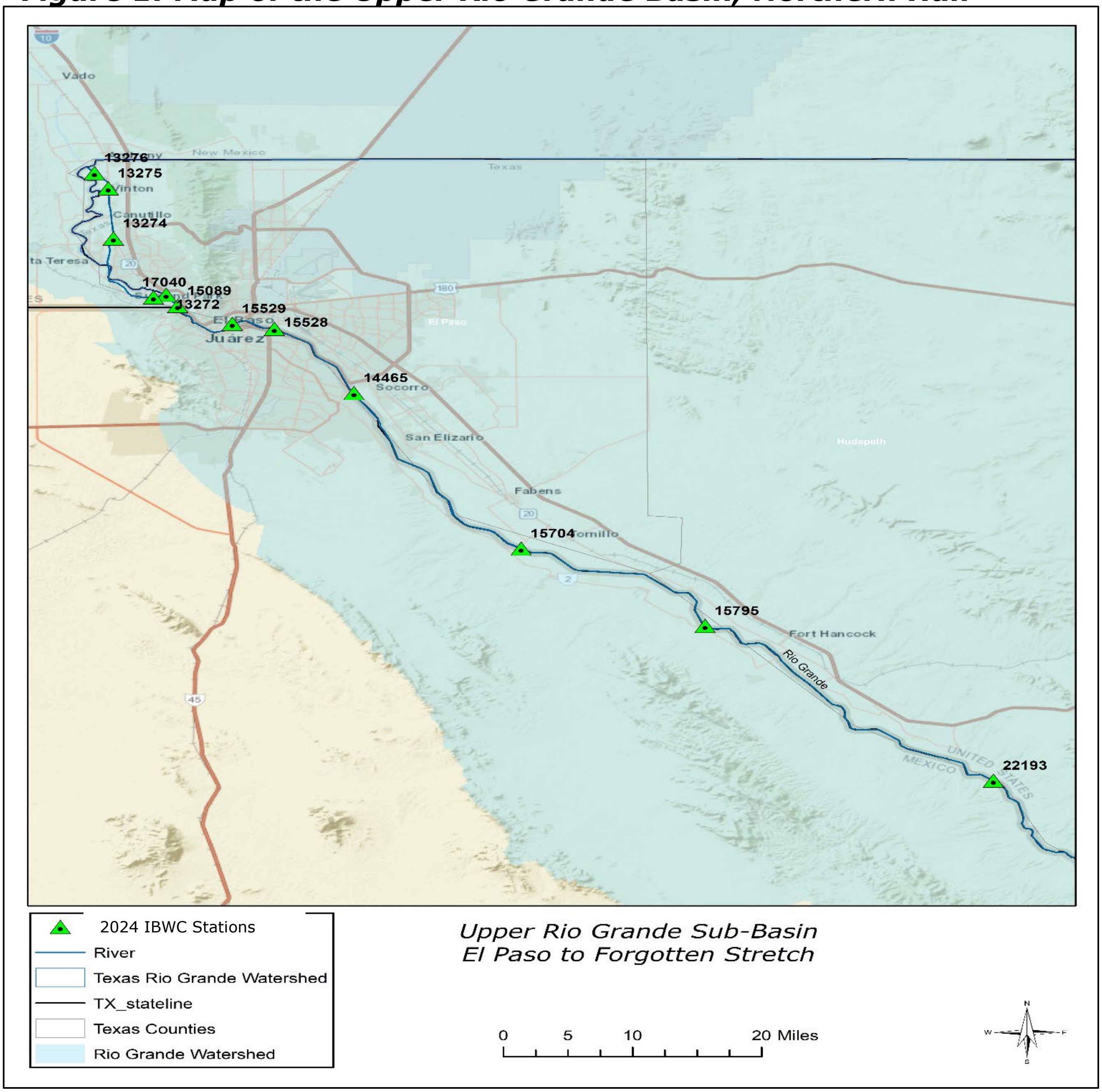


Figure 2: Map of the Upper Rio Grande Basin, Southern Half

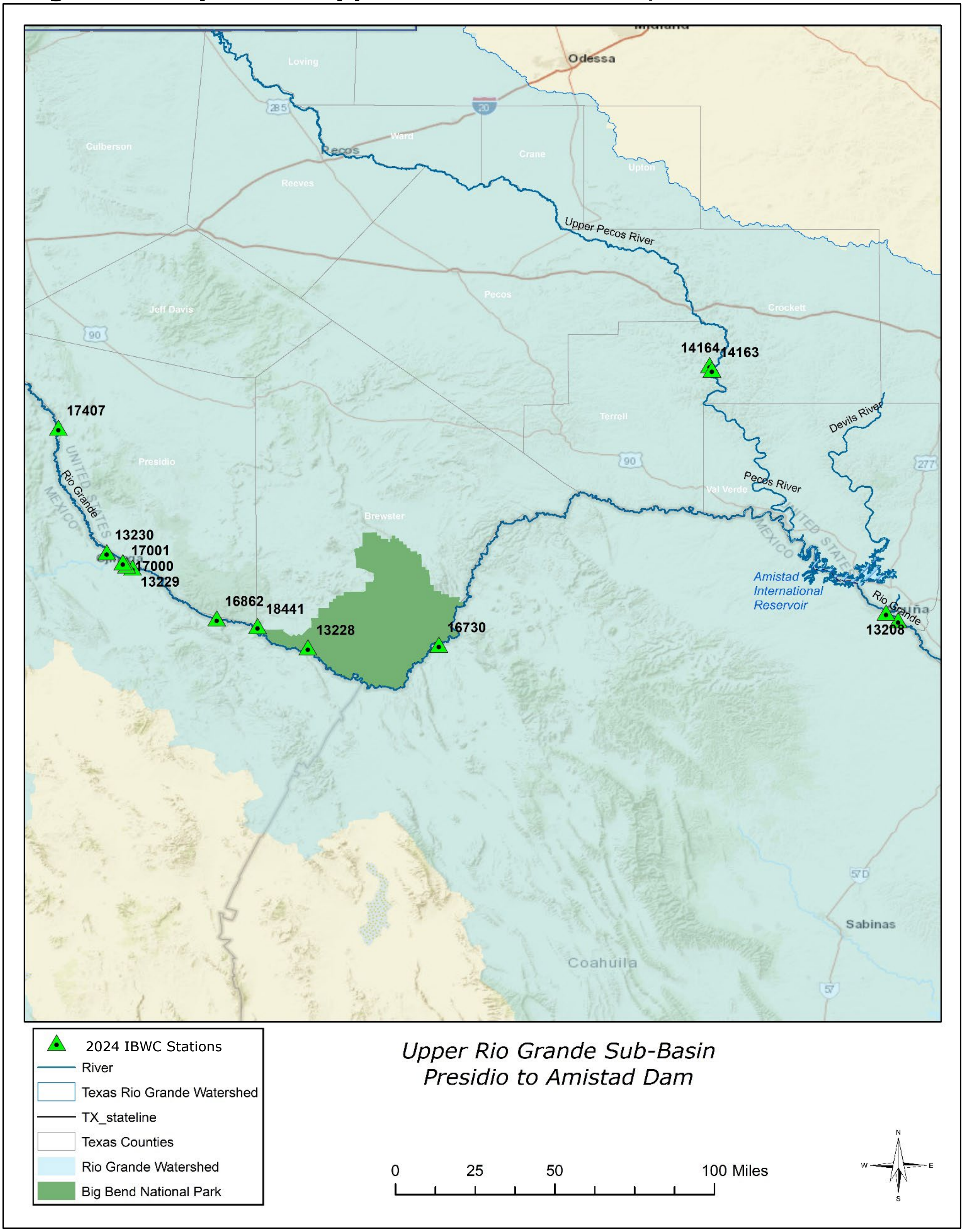
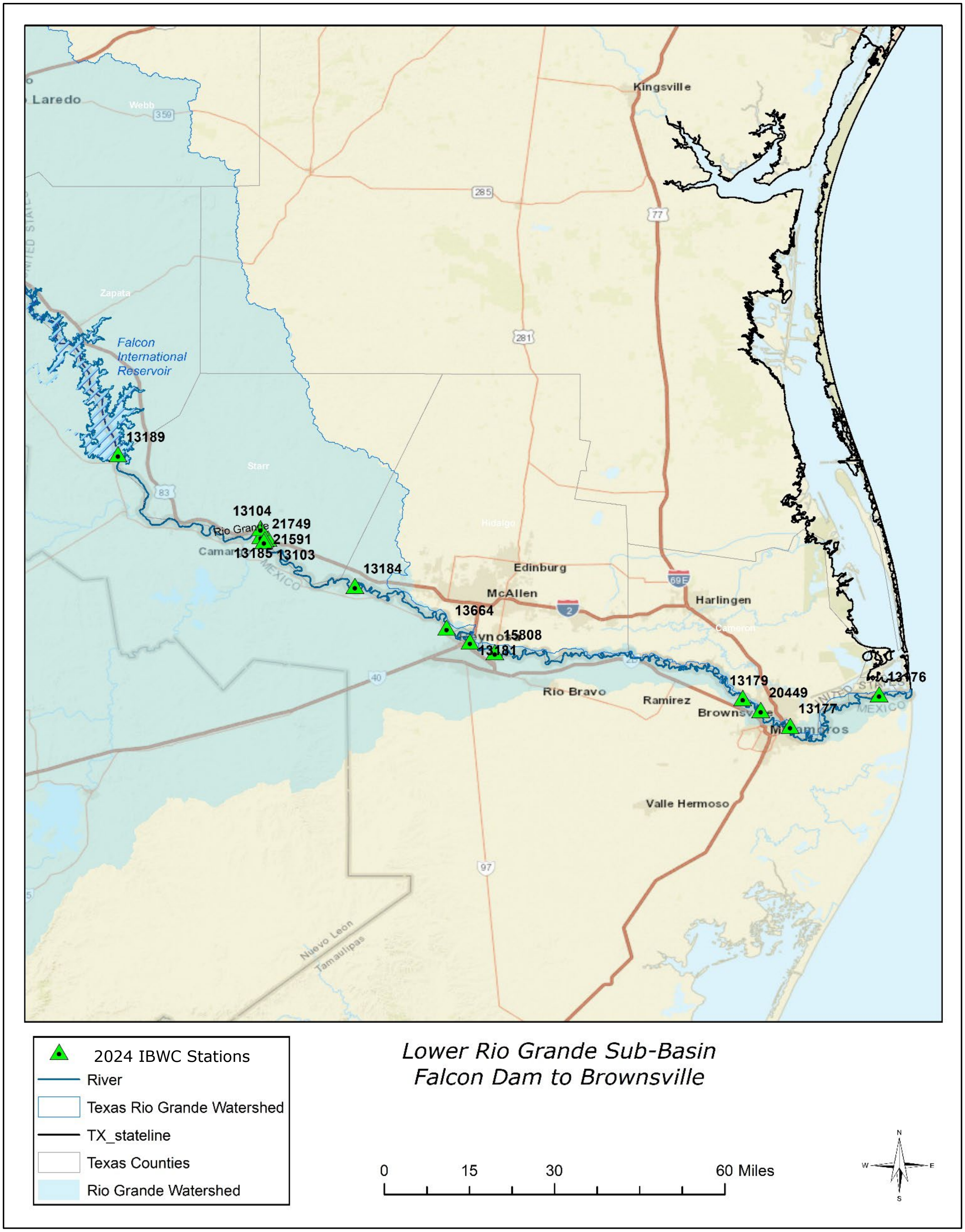


Figure 3. Map of the Middle Rio Grande Basin

Figure 4. Map of the Lower Rio Grande Basin



①

Appendix D: Field Data Sheets

UNITED STATES INTERNATIONAL BOUNDARY AND WATER COMMISSION
TEXAS CLEAN RIVERS PROGRAM
RIO GRANDE BASIN

FIELD DATA REPORTING FORM

B						

TAG#

SET #

COLLECTOR (printed)

TCEQ STATION ID | SEGMENT | SEQUENCE | SE | CE | MT

Station Description: ______________________________

GRAB SAMPLE

M M D D Y Y Y Y — DATE

H H M M — TIME

SAMPLE DEPTH — M (M = meters)

00010		WATER TEMP (deg C only)
00020		AIR TEMP (deg C only)
00400		pH (SU)
00300		D.O. (mg/L)
00094		SPECIFIC CONDUCTANCE (uS/cm)
00078		SECCHI DISK (meters)
72053		DAYS SINCE LAST SIGNIFICANT PRECIPITATION
01351		FLOW SEVERITY 1-no flow 2-low 3-normal 4-flood 5-high 6-dry
00061		INSTANTANEOUS FLOW (cfs)
89864		MAXIMUM POOL WIDTH AT TIME OF SAMPLING (meters) ***Drought Only***
89865		MAXIMUM POOL DEPTH AT TIME OF SAMPLING ***Drought Only***

89835		FLOW MEASUREMENT METHOD 1-Gage 2-Electric 3-Mechanical 4-Weir/flume 5-Doppler
74069		ESTIMATED FLOW (cfs)
89861		STREAM WIDTH (meters)
82903		WATER DEPTH (meters)
31616		FECAL COLIFORM (CFU/100 ml)
31699		*E. coli* (MPN/100 ml)
89966		WEATHER 1-clear 2-cloudy 3-overcast 4-rain
82078		Turbidity (NTU)
89965		WIND INTENSITY 1-calm 2-slight 3-moderate 4-strong
89010		WIND DIRECTION 1-north 2-south 3-east 4-west 5-NE 6-SE 7-NW 8-SW
89869		POOL LENGTH (meters) ***Drought Only***
89870		% POOL COVERAGE IN 500 METER REACH ***Drought Only***

*Drought conditions occur when flowing water is absent and only pools remain – See guidance document for more information

Measurement Comments and Field Observations: ______________________________

Signature of Collector: ______________________________

Rev. 02/14/2019

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UNITED STATES INTERNATIONAL BOUNDARY AND WATER COMMISSION
TEXAS CLEAN RIVERS PROGRAM
RIO GRANDE BASIN

FIELD DATA REPORTING FORM FOR SEDIMENT SAMPLES

TAG# (FOR CRP)	SET # (FOR CRP)	COLLECTOR (printed)

			I B		R T
TCEQ STATION ID	SEGMENT	SEQUENCE optional	SE	CE	MT

Station Description ____

COMPOSITE SAMPLE

S COMPOSITE CATEGORY: T = Time S = Space (ie Depth) B = Both F = Flow Wight

START DATE	START TIME	START DEPTH (SURFACE)	
M M D D Y Y Y Y	H H M M	___ . ___	M (M = meters)

END DATE	END TIME	END DEPTH (DEEPEST)	
M M D D Y Y Y Y	H H M M	___ . ___	M (M = meters)

Number of Grabs

COMPOSITE TYPE: ## = Number of Grabs in Composite

Measurement Comments and Field Observations:

____

____

____

____

Signature of Collector: ________________________________
Rev. 02/15/2019

Note: This form should be completed in addition to the water parameters field sheet when both water and sediment samples are collected.

③

Appendix E: Chain of Custody Forms

UNITED STATES INTERNATIONAL BOUNDARY AND WATER COMMISSION
TEXAS CLEAN RIVERS PROGRAM
RIO GRANDE BASIN PARTNER
WATER QUALITY CHAIN OF CUSTODY/REQUEST FOR ANALYSIS FORM

	DHL Analytical	
TAG#	LABORATORY	COC/LAB #

CHAIN OF CUSTODY

(To be filled out by CRP partner)

Relinquished by (printed): ______________________

Signature: ______________________

Date/Time: ______________________

No. Of Containers: ______________________

Type of Containers: ______________________

Preservative used: ______________________

Turnaround Time: Standard

(To be filled out by Laboratory)

Received by (printed): ______________________

Signature: ______________________

Date/Time: ______________________

Cooler Temperature: ______________________

Matrix Type: H2O

CLIENT INFORMATION

(To be filled out by CRP partner)

Requested by: USIBWC Clean Rivers Program

Sample TCEQ Station No.: ______________________

Sample Location Description: ______________________

Segment/Sequence: ______________________

Collecting Entity Code: ______________________

Collected by: ______________________

Signature: ______________________

Collection Date: ______________________

Collection Time: ______________________

Conventionals			
Storet Code	Analyze if checked	Contract line no.	Parameter
70300	√		TDS, dried at 180 deg C (mg/L)
00530	√		TSS (mg/L)
00940	√		Chloride (mg/L)
00945	√		Sulfate (mg/L)
00680	√		TOC (mg/L as C)
00610	√		Ammonia (mg/L as N)
00665	√		Total Phosphorus (mg/L as P)
00956	√		Silica (mg/L)
32211	√		Chlorophyll-a (ug/L)

Conventionals			
Storet Code	Analyze if checked	Contract line no.	Parameter
00929	√		Sodium (mg/L)
00916	√		Calcium (mg/L)
00927	√		Magnesium (mg/L)
00937	√		Potassium (mg/L)
00951	√		Fluoride (mg/L)
00630	√		Nitrate + Nitrite (mg/L)
00900	√		Total Hardness (mg CaCO3/L)
00310	√		BOD (mg/L)
00410	√		Total Alkalinity (mg/L)
			*All sample containers are provided with appropriate preservative.

Send samples to:	**Submit report to:**
DHL Analytical 2300 Double Creek Drive Round Rock, TX 78664 (P) 512-388-8222, (F) 512-388-8229	Texas Clean Rivers Program USIBWC 4191 N. Mesa El Paso, TX 79902

Rev. 2/14/2019

UNITED STATES INTERNATIONAL BOUNDARY AND WATER COMMISSION TEXAS CLEAN RIVERS PROGRAM
RIO GRANDE BASIN PARTNER
WATER QUALITY CHAIN OF CUSTODY/REQUEST FOR ANALYSIS FORM

								DHL Analytical						

TAG# LABORATORY COC/LAB/WORK ORDER #

CHAIN OF CUSTODY
(To be filled out by CRP partner)

Relinquished by (printed): ____________

Signature: ____________

Date/Time: ____________

No. Of Containers: ____________

Type of containers: ____________

Preservative used: ____________

Turnaround Time: Standard

(To be filled out by Laboratory)

Received by (printed): ____________

Signature: ____________

Date/Time: ____________

Cooler Temperature ____________

Matrix Type: Sediment

CLIENT INFORMATION
(To be filled out by CRP partner)

Requested by: USIBWC Clean Rivers Program

Sample TCEQ Station No.: ____________

Sample Location Description: ____________

Segment/Sequence: ____________

Collecting Entity Code: ____________

Collected by: ____________

Signature: ____________

Collection Date: ____________

Collection Time: ____________

Metals in sediment (EPA 6020)			
Storet Code	Analyze if checked	Contract line no.	Parameter
01108	√		Aluminum (mg/kg)
01098	√		Antimony (mg/kg)
01003	√		Arsenic (mg/kg)
01008	√		Barium (mg/kg)
01028	√		Cadmium (mg/kg)
01029	√		Chromium (mg/kg)
01043	√		Copper (mg/kg)
01052	√		Lead (mg/kg)
01068	√		Nickel (mg/kg)
01148	√		Selenium (mg/kg)
01093	√		Zinc (mg/kg)
71921	√		Mercury (mg/kg) (EPA 7471)
01053	√		Manganese (mg/kg)
01078	√		Silver (mg/kg)

Metals in sediment (EPA 6020)			
Storet Code	Analyze if checked	Contract line no.	Parameter
81373	√		Solids in Sediment, Percent by weight (Dry)
80256	√		Sediment Particle Size Class >2.0mm Gravel (% Dry Wt)
89991	√		Sediment Particle Size Class 0.0625-2mm Sand (% Dry Wt)
49906	√		Sediment Particle Size Class 0.05-0.002mm Silt (% Dry Wt)
82008	√		Sediment Particle Size Class 0.0039-0.0625 Silt (% Dry Wt)
49900	√		Sediment Particle Size Class 0.002-0.0002mm Clay (% Dry Wt)
82009	√		Sediment Particle Size Class <0.0039 Clay (% Dry Wt)

Send samples to:	**Submit report to:**
DHL Analytical 2300 Double Creek Drive Round Rock, TX 78664 (P) 512-388-8222, (F) 512-388-8229	Texas Clean Rivers Program USIBWC 4191 N. Mesa El Paso, TX 79902

Non-compliance items should be addressed on an attached NCR by the lab.

Rev. 9/24/2018

UNITED STATES INTERNATIONAL BOUNDARY AND WATER COMMISSION
TEXAS CLEAN RIVERS PROGRAM
RIO GRANDE BASIN PARTNER
WATER QUALITY CHAIN OF CUSTODY/REQUEST FOR ANALYSIS FORM

TAG#	LABORATORY	COC/LAB/WORK ORDER #
	DHL Analytics	

CHAIN OF CUSTODY
(To be filled out by CRP partner)

Relinquished by (printed): ________________
Signature: ____________________________
Date/Time: ____________________________
No. Of Containers: ______________________
Type of containers: ______________________
Preservative used: _______________________
Turnaround Time: _Standard_______________

(To be filled out by Laboratory)

Received by (printed): ___________________
Signature: ____________________________
Date/Time: ____________________________
Cooler Temperature ______________________
Matrix Type: ________H2O________________

CLIENT INFORMATION
(To be filled out by CRP partner)

Requested by: USIBWC Clean Rivers Program
Sample TCEQ Station No.: __________________
Sample Location Description: ________________
Segment/Sequence: ______________
Collecting Entity Code: ____________

Collected By: ______________________________
Signature: ________________________________
Collection Date: ____________________________
Collection Time: ____________________________

Conventionals			
Storet Code	Analyze if checked	Contract line no.	Parameter
71900	√		Total Mercury

Send samples to:	Submit report to:
DHL Analytical 2300 Double Creek Drive Round Rock, TX 78664 (P) 512-388-8222, (F) 512-388-8229	Texas Clean Rivers Program USIBWC 4191 N. Mesa El Paso, TX 79902

Non-compliance items should be addressed on an attached NCR by the lab.

Rev. 05/04/18

UNITED STATES INTERNATIONAL BOUNDARY AND WATER COMMISSION
TEXAS CLEAN RIVERS PROGRAM - RIO GRANDE BASIN
WATER QUALITY CHAIN OF CUSTODY/REQUEST FOR ANALYSIS FORM

								El Paso Water Utilities							

TAG# LABORATORY COC/LAB #

CHAIN OF CUSTODY

Released by (printed): ________________________

Signature: ________________________________

Date/Time: ________________________________

Received by (printed): ______________________

Signature: ________________________________

Date/Time: _______________________________

No. Of Containers: __________________________

Type of containers: __________________________

Preservative used: __________________________

Matrix Type: ______________________________

CLIENT INFORMATION

Requested by: _____________________________________

Sample TCEQ Station No.____________________________

Sample Location Description: _________________________

Segment/Sequence: _________________________________

Collecting Entity: ___________________________________

Collected by: ______________________________________

Signature: ____

Collection Date: ____________________________________

Collection Time: ____________________________________

Chemistry Conventionals		
00610	√	Ammonia-Nitrogen (mg/L)
00310	√	BOD (mg/L) **
00900	√	Total Hardness (mg/L)
70300	√	TDS (mg/L)
82079	√	Turbidity (NTU) **
00665	√	Total Phosphorus as P (mg/l)
32211	√	Chlorophyll-a (ug/l)**
32218	√	Pheophytin (ug/l)
00956	√	Silica (mg/l)
71870	√	Bromide (mg/l)
00940	√	Chloride
00671	√	Ortho-phosphate as P (mg/l)
00625	√	TKN (mg/L)
00620	√	Nitrate-Nitrogen (mg/l)
00615	√	Nitrite-Nitrogen (mg/l)
00951	√	Fluoride (mg/l)
00916	√	Calcium (mg/l)
00927	√	Magnesium (mg/l)
00935	√	Potassium (mg/l)
00929	√	Sodium (mg/l)
00945	√	Sulfate (mg/l)
00410	√	Total Alkalinity (mg/L)

Microbiology		
31616	√	Fecal Coliform, Membrane Filter, (CFU/100)
31699	√	*E. Coli,* IDEXX, (MPN/100)**

Metals		
	√	Dissolved Metals (lab filtered, preserved) -Al, Ag, As, B, Ba, Be, Cd, Cr, Cu, Fe, Li, Mn, Ni, Pb, Se, Tl, Zn

Organics		
46491	√	MTBE
	√	SVOCs (MDNR Pesticides)
*All sample containers are provided with appropriate preservative.		
-Dissolved metals required by IBWC, not Reported to TCEQ.		
**Parameters reported to TCEQ		

Please return to: Texas Clean Rivers Program USIBWC 4191 N. Mesa
Rev. 12/08/08 El Paso, TX 79902

Analysis Request and Chain of Custody Record

BROWNSVILLE PUBLIC UTILITIES BOARD

Name: Brownsville Public Utilities Board
Address: 1385 PUB Dr. or PO Box 3270
City: Brownsville Texas 78521
Contact: Jose Ramon Saenz

Project #: # 20449 | Client / Project: TEXAS CLEAN RIVERS PROGRAM

Laboratory Sample Identification				Field Identification	Date	Time	Grab	Composite	Sample Container and Volume	Sample Matrix	Preservative	Immediate Analyses	Analysis Requested					Laboratory Remarks
Collection Date		Sample Site	ID # :									See Attached Field Data Reporting Form	Ammonia, N	BOD	TDS	TSS / VSS	E. COLI	
YYYY	MMDD																	
		S#20449	001	Station # 20449	8/6/2019		X		1 HDPE / 500ml	Water	H_2SO_4 & 4° C		X					* See below
		S#20449	002	Station # 20449 Dup.	8/6/2019		X		1 HDPE / 500ml	Water	H_2SO_4 & 4° C		X					
		S#20449	003	Station # 20449	8/6/2019		X		1 HDPE /2000ml	Water	4° C			X				
		S#20449	004	Station # 20449 Dup.	8/6/2019		X		1 HDPE /2000ml	Water	4° C			X				
		S#20449	005	Station # 20449	8/6/2019		X		1 HDPE / 250ml	Water	4° C				X			
		S#20449	006	Station # 20449 Dup.	8/6/2019		X		1 HDPE / 250ml	Water	4° C				X			
		S#20449	007	Station # 20449	8/6/2019		X		1 HDPE /2000ml	Water	4° C					X		
		S#20449	008	Station # 20449 Dup.	8/6/2019		X		1 HDPE /2000ml	Water	4° C					X		

Sampler Name and Signature:	Relinquished by:	Date:08-06-2019	Received by:	Date:08-06-2019
J. Sierra	Signature:	Time:	Signature:	Time:
R. Rodriguez	Relinquished by:	Date:	Received by:	Date:
	Signature:	Time:	Signature:	Time:
	Relinquished by:	Date:	Received by:	Date:
	Signature:	Time:	Signature:	Time:
	Technician Comments:			

Remarks: Submit report to: Texas Clean Rivers Program
USIBWC
4171 N. Mesa, Suite C-100
El Paso, TX 79902

Thermometer# ______
Serial # ______
Factor °C ______
Temp. Observed (°C) ______ Temp. Corrected(°C) ______

Laboratory Location: Analytical Laboratory
1385 PUB Drive
P.O. Box 3270
Brownsville, Texas 78521

Laboratory # :
EPA - TX01425
TCEQ # :
T104704357-19-14

BPUBAL	MICROBIAL MONITORING FORM	Brownsville Public Utilites Board Analytical Laboratory 1385 PUB Dr. P.O. Box 3270 Brownsville, Texas 78521 Phone: 956-983-6355	BROWNSVILLE PUBLIC UTILITIES BOARD EPA Lab ID: TX01425	NELAC Certificate #: T104704357-19-14 E. coli Quanti-Tray 2000 MPN

Public/Private Wastewater System Identification & Sample Collection Information (Please type or use block print)

Segment / TCEQ Station ID#	2 3 0 1 / 2 0 4 4 9
River (Texas Clean Water Program) Name:	Rio Grande at PUB Station ID #20449
County:	Cameron

Send Results To:

Name:	Leslie Grijalva, Texas Clean River Program, IBWC
Address:	4171 N Mesa, C-100
City:	El Paso
State:	Texas — Zip: 7 9 9 0 2 -
Phone #:	915-832-4701 — Fax # : 915-832-4166
Sampler Name:	Joshua Sierra / Roscoe Rodriguez
Sampler Contact # :	956-983-6355 ☐ Owner ☐ Operator ☐ Other: Laboratory Tech

System Type : (√) ☑ Public ☐ Private ☐

Water Source : (√) ☑ Surface Water ☐ Non Potable Water ☐ Groundwater with Surface Water Influence ☐ Groundwater

Sample Identification/Location	Collected: Date (Month / Day / Year)	Time (Please circle AM or PM)	Chlorine Residual (Units mg/L)	Sample Type: Composite	Sample Type: Grab
Use Specific Sample ID Location					
Rio Grande River at PUBStation ID# 20449	8 / 6 / 19	am pm	N/A	☐	☐
Rio Grande River at PUBStation ID# 20449 DUP.	8 / 6 / 19	am pm	N/A	☐	☐

LABORATORY USE ONLY - DO NOT MARK TO THE RIGHT OF THE BOLD CENTER LINE

Sample Iced? Yes ☐ No ☐	Received By:	Date / Time Received:	
If no, temperature at receipt?	Analyzed By:	Date / Time Tested:	
_______ °C Thermometer SN: _______	Reported By:	Date / Time Reported:	
Report Approval Signature:		Date	
Idexx Colilert Media	Lot No: / Exp. Date:	Lab Equipment:	Idexx Sealer #11 - SN: QTP13184604475 Incubator # 11 - S/N#: 5076100456309 E. coli

Lab Results
Note: All test results relate only to the samples as received.
NELAP Method Code: 20211205
SM 9223-E. coli

Unsuitable Sample - Please Resubmit*: Rejection Criteria #	Positive Wells: Large	Positive Wells: Small	IDEXX MPN Generator Value	Units	Laboratory Sample ID Number:
				MPN/100mL	
				MPN/100mL	

BPUBAL WW-Micro 003 Revised 4/2011	*Unsuitable Sample Analysis-	1) Sample Too old. Sample not receipt at laboratory within 6 hours of collection	3) Excessive Chlorine Residual (>10mg/L)	4) Form Incomplete / Date Discrepancy (Errors Circled)
	Rejection Criteria # Definitions	2) Quantity Insufficient for analysis (100mL required)	5)Samples NOT in Ice / Ice Packs or received within 2 hours of sample collection.	6)Other:

Sampler Comments:

Laboratory Comments:

These analytical results relate to the sample analyzed. This report may NOT be reproduced EXCEPT in FULL without written approval of Brownsville PUB Analytical Laboratory. Unless specified, these results meet the requirements of National Environmental Laboratory Accreditation Program (NELAP).

Appendix F: Data Review Checklist and Summary Shells

Data Review Checklist

This checklist is to be used by the Planning Agency and other entities handling the monitoring data in order to review data before submitting to the TCEQ. This table may not contain all of the data review tasks being conducted.

Data Format and Structure	Y, N, or N/A
Are there any duplicate Tag Id numbers in the Events file?	
Do the Tag prefixes correctly represent the entity providing the data?	
Have any Tag Id numbers been used in previous data submissions?	
Are Tag IDs associated with a valid SLOC?	
Are sampling Dates in the correct format, MM/DD/YYYY with leading zeros?	
Are sampling Times based on the 24 hr. clock (e.g., 09:04) with leading zeros?	
Is the Comments field filled in where appropriate (e.g., unusual occurrence, sampling problems, unrepresentative of ambient water quality)?	
Are Submitting Entity, Collecting Entity, and Monitoring Type codes used correctly?	
Do sampling dates in the Results file match those in the Events file for each Tag Id?	
Are values represented by a valid parameter code with the correct units?	
Are there any duplicate parameter codes for the same Tag Id?	
Are there any invalid symbols in the Greater Than/Less Than (GT/LT) field?	
Are there any Tag Ids in the Results file that are not in the Events file or vice versa?	
Data Quality Review	Y, N, or N/A
Are "less-than" values reported at the LOQ? If no, explain in Data Summary.	
Have the outliers been verified and a "1" placed in the Verify flg field?	
Have checks on correctness of analysis or data reasonableness been performed? e.g., Is ortho-phosphorus less than total phosphorus? Are dissolved metal concentrations less than or equal to total metals? Is the minimum 24 hour DO less than the maximum 24 hour DO? Do the values appear to be consistent with what is expected for site?	
Have at least 10% of the data in the data set been reviewed against the field and laboratory data sheets?	
Are all parameter codes in the data set listed in the QAPP?	
Are all stations in the data set listed in the QAPP?	
Documentation Review	Y, N, or N/A
Are blank results acceptable as specified in the QAPP?	
Were control charts used to determine the acceptability of lab duplicates (if applicable)?	
Was documentation of any unusual occurrences that may affect water quality included in the Event file's Comments field?	
Were there any failures in sampling methods and/or deviations from sample design requirements that resulted in unreportable data? If yes, explain in Data Summary.	
Were there any failures in field and/or laboratory measurement systems that were not resolvable and resulted in unreportable data? If yes, explain in Data Summary.	
Was the laboratory's NELAP Accreditation current for analysis conducted?	
Did participants follow the requirements of this QAPP in the collection, analysis, and reporting of data?	

Data Summary

Data Set Information

Data Source: ____

Date Submitted: ____

Tag_id Range: ____

Date Range: ____

□ I certify that all data in this data set meets the requirements specified in Texas Water Code Chapter 5, Subchapter R (TWC §5.801 et seq) and Title 30 Texas Administrative Code Chapter 25, Subchapters A & B.
□ This data set has been reviewed using the criteria in the Data Review Checklist.

Planning Agency Data Manager: ______________________ Date: __________

Please explain in the table below any data discrepancies discovered during data review including:

- Inconsistencies with LOQs
- Failures in sampling methods and/or laboratory procedures that resulted in data that could not be reported to the TCEQ (indicate items for which the Corrective Action Process has been initiated and send *Corrective Action Status Report* with the applicable Progress Report).

Dataset ___ contains data from FY__ QAPP Submitting Entity code __ and collecting entity __. This is field and lab data that was collected by the (collecting entity). Analyses were performed by the (lab name). The following tables explain discrepancies or missing data as well as calculated data loss.

Discrepancies or missing data for the listed tag ID:

Tag ID	Station ID	Date	Parameters	Type of Problem	Comment/PreCAPs/CAPs

Data Loss

Parameter	Missing Data points out of Total	Percent Data Loss for this Dataset	Parameter	Missing Data points out of Total	Percent Data Loss for this Dataset

ATTACHMENT 1 Example Letter to Document Adherence to the QAPP

TO: (name)
(organization)

FROM: (name)
(organization)

RE: USIBWC CRP Fiscal Year 2024-25 CRP QAPP

Please sign and return this form by (date) to:

(address)

I acknowledge receipt of the "QAPP Title, Revision Date". I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria. My signature on this document signifies that I have read and approved the document contents pertaining to my program. Furthermore, I will ensure that all staff members participating in CRP activities will be required to familiarize themselves with the document contents and adhere to them as well.

____

Name Date

Copies of the signed forms should be sent by the USIBWC CRP to the TCEQ CRP Project Manager within 60 days of TCEQ approval of the QAPP.