

Amendment #3
to the Texas Stream Team Program Surface Water Quality Monitoring
Quality Assurance Project Plan (QAPP)
Revision #1

The Meadows Center for Water and the Environment, Texas State
University
San Marcos, Texas 78666

Funding Source: Nonpoint Source Program CWA §319(h)

Prepared in cooperation with the Texas Commission on Environmental
Quality
and the U.S. Environmental Protection Agency
Federal ID #99614625, 99614626, 99614628
QTRAK #23-057

Effective Date: Upon date of final approval of the amendment

Questions concerning this QAPP should be directed to:

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Justification:

This QAPP amendment introduces the Optical Brightener (OB) monitoring parameter to the Texas Stream Team community science program, expanding capabilities for detecting human-source fecal contamination alongside traditional *E. coli* testing. The addition, backed by the Optical Brightener Technique Study and the pending manuscript *Evaluation of E. coli Bacteria and Fluorometric Optical Brightener Monitoring for Detection of Human Fecal Contamination: A Participatory Science Approach*, includes detailed protocols and resources to guide participants in accurate, standardized OB data collection. This QAPP Amendment is also revising administrative updates.

Summary of Changes:

Section(s)	QAPP Page #	Change	Justification
Cover Page	1	Updated Project Manager email from " aspennavarro@txst.edu " to " aspennavarro@txstate.edu "	To correct Project Manager email.
Cover Page	1	Remove federal ID # 99614625	The contract 21-10084 associated with this Federal ID is not active.
A6	15	Added contract 50135 to Appendix B	This contract SOW is in Appendix B and should be included in A6.
A7, Table A7.1	16	Added OB as a surface water quality parameter.	To reflect OB parameter addition.
B1	23	Added OB as a training type.	To reflect OB parameter addition.
Table B2.1	25	Added OB container and preservation details.	To reflect OB parameter addition.
B3	27	Added OB sample handling details.	To reflect OB parameter addition.
B8	29	Updated hyperlink to the "TST website" and change "TST Project Manager" to "TST QAO"	The hyperlink included was invalid. Volunteers need to contact the TST QAO, instead of the TST Project Manager.
Appendix B	52	Add contract number "22-30176" to Scope of Work	To specify the contract associated with the Scope of Work
Appendix C	62	Added OB monitoring form and field quality control checklist	To reflect OB parameter addition.
Appendix F	70	Added OB manual and field guide.	To reflect OB parameter addition.

Detail of Changes:

A6 PROJECT/TASK DESCRIPTION

TST will conduct statewide volunteer monitoring using approved training certifications and data collection protocols. Volunteers in the CRWN program will follow CRWN protocols provided in Appendix G.

Monitoring site information in the TST Dataviewer is reviewed and updated throughout the year as needed based on current volunteer monitoring activities.

Volunteers and trainers are trained to sample at least monthly as described in the corresponding training manual, field guide, and/or Training Enrollment Form.

Monitoring plans are created either electronically or in paper format when a group/volunteer wants to initiate water quality monitoring within a watershed. For monitoring groups, the following three roles are established and may be performed by one or more group leader:

- The Training Coordinator/Quality Assurance Officer is responsible for serving as the primary point of contact for TST or partner organizations, scheduling trainings and notifying TST of scheduled trainings, recruiting interested participants for trainings, and submitting training materials to TST. The Training Coordinator serves as the QAO and conducts quality control field-audit sessions with volunteer monitors every two-years. Trainers are required to attend the annual TST Trainer meeting or send an alternate if unable to attend. A Training Coordinator/QAO is required of each group. One person may fill two positions, but it is mandatory that the Training Coordinator/QAO and Data Coordinator are filled by different people.
- The Data Coordinator collects monitoring forms from group volunteers and uploads the data to the Waterways Dataviewer after reviewing each monitoring form. Data Coordinators should review and uphold the TST data management protocols described in Section B10. Data Management of this QAPP. However, it is mandatory that the Training Coordinator/QAO and Data Coordinator are filled by different people.
- The Equipment Coordinator is responsible for tracking and maintaining the monitoring equipment, managing kits checked out by monitors, restocking expired reagents and supplies, and conducting regular maintenance on equipment to ensure their longevity.

Monitoring plans include the following information:

- Locations of proposed new TST sites. These descriptions may include detailed written accounts of the exact location of the proposed site(s), the water body that will be monitored, nearby landmarks and whether it is located on private or public property. A latitude/longitude coordinate of each site is either provided by the Group/Partner coordinator or volunteer or is determined by TST staff using written site descriptions to locate the site via the Dataviewer and/or Google Earth.
- Contact information for the volunteer monitoring the site(s)
- Contact information of the three required TST roles, Training Coordinator/Quality Assurance Officer, Data Coordinator, and Equipment Coordinator
- Site ID numbers assigned by TST staff
- Volunteers provide further information about their overall goals, including addressing specific water quality concerns within their watershed as well as any additional groups that may receive water quality data other than TST and for what purpose.

The plans are reviewed for adherence with the QAPP and approved by the TST data manager and the project manager. A copy of the monitoring plan is sent to the participating partner and/or group and is stored electronically at the TST office. All monitoring site metadata are tracked, stored, and maintained within the TST Dataviewer. Monitoring plans are revised as needed depending on volunteer interest, funding, partner input or upon request.

Work associated with the project described in this QAPP has been on-going for several years and was covered under an existing QAPP set to expire on its third annual anniversary on December 17, 2022. We anticipate the tasks described below will start when the previous QAPP expires (December 17, 2022) or when this QAPP is approved, whichever comes first, and is estimated to be completed on December 17, 2025. All task, deliverable, and monitoring dates are estimates.

See Appendix A for a project location map.

For project-related tasks see scope of work and schedule of deliverables for contract #50135 and #30176 provided as Appendix B.

Amendments

Amendments to the QAPP must be approved to reflect changes in project organization, tasks, schedules, objectives, and methods; address deficiencies and nonconformances; improve operational efficiency; and accommodate unique or unanticipated circumstances. Requests for amendments are directed from the TST Project Manager to the TCEQ NPS Project Manager in writing using the QAPP Amendment shell. The changes are effective immediately upon approval by the TCEQ QA Manager, TCEQ NPS Project Manager, and Lead NPS Quality Assurance Specialist, or their designees.

Amendments to the QAPP and the reasons for the changes will be documented, and full copies of amendments will be forwarded to all persons on the QAPP distribution list by the TST QAO. Amendments shall be reviewed, approved, and incorporated into a revised QAPP during the annual certification process or within 120 days of the initial approval in cases of significant changes.

Annual QAPP Reviews, Certifications, and Revisions

This QAPP shall be reviewed in its entirety and certified annually by the TST Project Manager and NPS Project Manager. A letter certifying this annual review must be submitted to the TCEQ NPS Project Manager no later than 90 days prior to the QAPP anniversary date to prevent QAPP expiration and interruption in work due to issuance of a stop work order. Amendments approved since QAPP approval must be included as an attachment along with the letter. Only nonsubstantive changes not affecting the project design or quality or quantity of work to be performed can be included in the annual certification letter. This includes organizational changes or schedule changes based on a contract amendment that do not impact data deliverables. If changes beyond these are necessary, a QAPP amendment must be submitted and approved before the changes are implemented and before the annual review may be certified. The TCEQ NPS Project Manager is required to review the QAPP and provide certification of annual reviews to the TCEQ QA Manager and EPA Region 6 Project

Officer no later than 30 days before QAPP anniversary date. If the QAPP expires, work described within this document must be halted.

If the project will extend beyond the third QAPP anniversary date, a full QAPP revision is required.

A7 QUALITY OBJECTIVES AND CRITERIA

This project will collect volunteer surface water quality (i.e., standard core, probe core, advanced, *E. coli* bacteria, and optical brightener) and non-water quality (i.e., monofilament, riparian, and macroinvertebrate bioassessment) data. Volunteers located within the Lower Colorado Watershed follow the LCRA CRWN procedures and protocols for collecting surface water quality parameters provided in Appendix G. Three differences exist between TST and LCRA CRWN measurement protocols: phosphate, dissolved oxygen, and nitrate-nitrogen. The LCRA CRWN program does not include phosphate as a water quality monitoring parameter. For dissolved oxygen, LCRA CRWN volunteers have the option to perform a third titration if the first and second titrations have a difference larger than 0.5 mg/L. TST requires that Volunteers discard the results and begin again if the difference in the two titrations is larger than 0.5 mg/L. For nitrates, LCRA CRWN allows for an alternative option to measure nitrates using the CHEMets® Colorimeter method as outlined in more detail in the LCRA CRWN manual (Appendix G).

The measurement performance criteria to support the project objectives for the water and non-water quality data types are specified in Tables A7.1 and A7.2.

Table A7.1 Measurement Water Quality Objectives

PARAMETER	UNITS	MATRIX	METHOD	PARAMETER CODE	AWRL	LIMIT OF QUANTIFICATION (LOQ)	RECOVERY AT LOQs (%)	PRECISION (RPD of LCS/LCS)	BIAS (% Rec. of LCS)	COMPLETENESS (%)
Conductivity	µS/cm	water	TST SOP or CRWN SOP	00094	NA*	NA	NA	NA	NA	90
Air Temperature	°C	air	TST SOP or CRWN SOP	00020	NA*	NA	NA	NA	NA	90
Water Temperature	°C	water	TST SOP or CRWN SOP	00010	NA*	NA	NA	NA	NA	90
Dissolved Oxygen	mg/L	water	TST SOP or CRWN SOP	00300	NA*	NA	NA	0.5	NA	90
pH	Standard Units (s.u.)	water	TST SOP or CRWN SOP	00400	NA*	NA	NA	NA	NA	90
Secchi Depth	Meters (m)	water	TST SOP or CRWN	00078	NA*	NA	NA	NA	NA	90
Transparency Tube	m	water	TST SOP or CRWN SOP	00078	NA	NA	NA	NA	NA	90
Total depth	m	water	TST SOP or CRWN	82903	NA*	NA	NA	NA	NA	90

Flow severity	1-no flow, 2-low, 3-normal, 4-flood, 5-high, 6-dry	water	TST SOP or CRWN SOP	01351	NA*	NA	NA	NA	NA	90
Streamflow	cubic feet per second (cfs)	water	TCEQ SWQM Procedures Manual Vol. 1, TST SOP or CRWN SOP	00061	NA*	NA	NA	NA	NA	90
Flow measurement method	1- gage 2- electric 3- mechanical 4- weir/flume 5-doppler	water	TST SOP or CRWN SOP	89835	NA*	NA	NA	NA	NA	90
Flow estimate	cfs	water	TST SOP or CRWN	74069	NA*	NA	NA	NA	NA	90
Salinity	PPT, tidally influenced sites only	water	TST SOP or CRWN SOP	0048 0	NA*	NA	NA	NA	NA	90
Algae	1-absent 2-rare 3-common 4-abundant 5-dominant	water	TST SOP or CRWN SOP	NA	NA*	NA	NA	NA	NA	90
Water Color	1-no color 2-light green 3-dark green 4-tan 5-red 6-green/brn 7-black	water	TST SOP or CRWN SOP	NA	NA*	NA	NA	NA	NA	90
Water Clarity	1-clear 2-cloudy 3-turbid	water	TST SOP or CRWN SOP	NA	NA*	NA	NA	NA	NA	90
Water Surface	1-clear 2-scum 3-foam 4-debris 5-sheen	water	TST SOP or CRWN SOP	NA	NA*	NA	NA	NA	NA	90
Water Conditions	1-calm 2-ripples 3-waves 4-white caps	water	TST SOP or CRWN SOP	89968	NA*	NA	NA	NA	NA	90
Water Odor	1-none 2-oil 3-acrid 4-sewage 5-rotten eggs 6-fishy	water	TST SOP or CRWN SOP	NA	NA*	NA	NA	NA	NA	90
Present Weather	1-clear 2-cloudy 3-overcast 4-rain	air	TST SOP or CRWN SOP	89966	NA*	NA	NA	NA	NA	90
Days since last significant	Days	NA	TST SOP or CRWN SOP	72053	NA*	NA	NA	NA	NA	90
Rainfall Accumulation (last 3 days)	Inches	NA	TST SOP or CRWN SOP	NA	NA*	NA	NA	NA	NA	90

Tide Stage	1-low 2-falling 3-slack 4-rising 5-high	water	TST SOP or CRWN SOP	89972	NA*	NA	NA	NA	NA	90
<i>E. coli</i>	Colony forming units (cfu) per 100 mL	water	TST SOP or CRWN SOP	NA	1 cfu per 100 mL	1 cfu per 100 mL	NA	NA	0	90
Nitrate-Nitrogen	mg/L	water	TST SOP or CRWN SOP	NA	0.1 mg/L	NA	NA	NA	NA	90
Phosphate	mg/L	water	TST SOP **	NA	0.02 - 50 mg/L	NA	NA	NA	NA	90
Turbidity	Nephelometric Turbidity Units (NTU)	water	TST SOP **	NA	0.5 NTU	NA	NA	NA	NA	90
Optical Brightener	Presence Absence	Water	TST SOP**	NA	NA	NA	NA	NA	NA	90

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

**CRWN Volunteer Water Quality Monitoring (VWQM) do not test for this parameter.

Table A7.1 References

- TST SOP: TST Core Water Quality Citizen Scientist Manual, May 2023; TST Advanced Water Quality Citizen Scientist Manual, April 2019; **TST Optical Brightener Water Quality Community Scientist Manual, November 2024**; TST Field Guide(s).
- CRWN SOP: Lower Colorado River Authority, Colorado River Watch Network, Standard Operating Procedures, 9th edition, 2012
- TCEQ SWQM Procedures Manual Vol. 1: Physical and Chemical Monitoring Methods, August 2012.

B1 SAMPLING PROCESS DESIGN (EXPERIMENTAL DESIGN)

The sample design follows the intent of the EPA, TCEQ NPS Program, and TST to use the data collected using criteria described in the QAPP for education, local decision-making, research, baseline data, screening, BMP effectiveness, and problem identification. TST actively promotes water quality and NPS pollution education and awareness through volunteer activities. Volunteers are instructed to monitor at least monthly, or as defined in their Monitoring Plan and/or Training Enrollment Form. TST staff work with partners to prepare the monitoring plans. The plans are reviewed and approved by the data manager and the project manager. A copy of the monitoring plan is sent to the participating partner and stored at the TST offices.

Additionally, data collected under this QAPP will provide participants the opportunity to access interdisciplinary science-based data collection methods, which combine language arts, earth sciences, geography, mathematics, and chemistry. Efforts are made to identify and/or establish water quality monitoring projects in areas where NPS pollution or other water quality issues are known or suspected. TST, its volunteers, and partners collect environmental data to inform and make Texans aware of water quality, land use, and associated nonpoint source impacts and the role people play in

contributing to those impacts. Information collected can also be used to identify water quality trends and to characterize water quality conditions.

This QAPP encompasses all training types conducted by the TST including standard core, probe core, advanced, *E. coli* bacteria, **optical brightener**, riparian evaluation and macroinvertebrate bioassessment. Each training and monitoring type collect different data types from different media. See Tables A7.1 and A7.2 for a list of parameters associated with each type of monitoring and the method(s) used to measure them.

B2 SAMPLING METHODS

The field sampling procedures are documented in TST manuals and field guides provided in Appendix F. LCRA CRWN procedures and protocols are provided in Appendix G.

Table B2.1 Sample Storage, Preservation and Handling Requirements

Parameter	Matrix	Container	Sample Volume	Preservation	Holding Time
Dissolved oxygen	water	Glass Mixing Bottle	25 mL	Fixed with manganous sulfate, alkaline potassium iodide azide, and sulfuric acid	4 hours
<i>E. coli</i>	water	Sterile Whirlpack Bag	100	Refrigerate @ 4°C *	6 Hours
Nitrate Nitrogen	water	Plastic Test Tube	10 mL	Refrigerate @ 4°C*	48 Hours
Phosphate Phosphorous	water	Plastic Test Tube	10 mL	Refrigerate @ 4°C*	48 Hours
Turbidity	water	60 or 120 cm Plastic Turbidity Tube	Approx. 1L	NA	NA
Optical Brightener	Water	Sterile black photosensitive Whirl-Pak bag® or plastic bottle	100 mL or enough to cover sample material	UV protection*	NA

*Preservation performed immediately upon collection (within 15 minutes)

B3 SAMPLE HANDLING AND CUSTODY

Sample Labeling

Samples from the field are labeled directly on the container with an indelible marker. Label information includes:

1. Site identification or Station ID
2. Date and time of sample collection
3. Type of preservative added, if applicable
4. Indication of field-filtration as applicable
5. Sample type (e.g., analysis(es) to be performed, matrix, fresh or salt water)

Sample Handling

The field sampling procedures are documented in TST manuals and field guides (Appendix F). Standard core and probe parameters are collected as field measurements on site. Advanced and bacteria water samples collected for analysis of *E. coli*, nitrate-nitrogen, phosphate, and turbidity may be transported on ice in extreme situations, but this is not recommended. **Optical brightener samples must be transported in a protective compartment to prevent UV contamination.** Once samples have been

transported to the destination, they should be processed immediately. All samples will be handled in accordance with the TST manual and field guide. LCRA CRWN procedures and protocols are provided in Appendix G.

B8 INSPECTION/ACCEPTANCE OF SUPPLIES AND CONSUMABLES

See B4 for standards requirements. Sampling reagents are used until they surpass the expiration dates prescribed by the manufacturer. At each sampling event, volunteer scientists will note on the field data sheet all expired reagents. All expired reagents are replaced with fresh reagents when a volunteer requests a replacement due to reagent expiration, damage/contamination, or loss. Expired reagents can interfere with the validity of the resulting data, therefore, should not be used for TST calibrations, sampling, or analysis.

Replacement equipment and supplies along with specifications are provided on the [TST website](#) for all monitoring types. Volunteers and partners can purchase equipment and supplies from other vendors, but specifications must be compatible. If an entity wishes to purchase supplies and/or equipment from a vendor other than those listed on the TST website, the volunteer will provide the name and specifications of the equipment and supplies to TST [Project Manager QAO](#) for documentation.

APPENDIX B. CONTRACT SCOPE OF WORK AND SCHEDULE OF DELIVERABLES

Scope of Work (24-50135)

This project will support the Performing Party's statewide water quality monitoring program by providing supplies and training for volunteer community monitors. Watershed services and nonpoint source pollution education focused on impaired waters will also be provided in watersheds where watershed protection plans (WPPs) are being developed or implemented.

All deliverable dates are calendar days unless otherwise specified.

Task 1: Project Administration

Objective: To effectively administer, coordinate, and monitor all work performed under this project including technical and financial supervision and preparation of status reports.

Subtask 1.1: Project Oversight — The Performing Party will provide technical and fiscal oversight of the staff and/or subgrantee(s)/subcontractor(s) to ensure Tasks and Deliverables are acceptable and completed as scheduled and within budget. Project oversight status will be provided to the TCEQ Project Manager with the quarterly

Progress Reports.

Subtask 1.2: Progress Reports (PRs) — The Performing Party will submit PRs to the TCEQ Project Manager by the 15th of the month following the end of each quarter. PRs will include reporting on the status of Deliverables and proposed revisions to due dates, narrative description of progress by Task, and status of nonconformances & corrective actions. The TCEQ Project Manager will provide a PR template to the Performing Party.

Subtask 1.3: Reimbursement Forms (Financial Status Reports) — The Performing Party will submit reimbursement forms in accordance with the Special Terms and Conditions in the Contract.

Subtask 1.4: Contract Communication — The Performing Party will maintain regular telephone and/or email communication with the TCEQ Project Manager regarding the status and progress of the project and any matters that require attention between PRs. The Performing Party will participate in quarterly conference calls with the TCEQ Project Manager to discuss items such as project Tasks, financial status, Quality Assurance Project Plans (QAPPs), corrective actions, and any other matters that require attention. The TCEQ Project Manager may request additional information from the Performing Party prior to the call or meeting. The Performing Party will provide meeting notes and identify action items from the conference calls.

The first conference call held each fiscal year of the project will cover, as applicable, any staff changes, the previous year's performance, budget estimates, invoicing issues, quality assurance issues, corrective actions, and overall project progress.

Matters that must be communicated to the TCEQ Project Manager include, but are not limited to:

- Notification a minimum of 14 days before the Performing Party has scheduled public meetings or events, or other major Task activities.
- Notification within 48 hours following events or circumstances that may require changes to the Budget, Scope of Work, or Deliverable Due Dates.
- Requests for prior approval of activities or expenditures for which the Contract requires advance approval or that are not specifically included in the Scope of Work.

Subtask 1.5: Contractor Evaluation — The Performing Party will participate in an annual Contractor Evaluation at the end of each state fiscal year.

Subtask 1.6: Contractor Workshop and Post Award Meeting — The Performing Party will attend a contractor workshop hosted by TCEQ at the beginning of the project. The Performing Party will attend a post award meeting with the TCEQ Project Manager to discuss details of the project and due dates for deliverables. The Performing Party will provide meeting notes and identify action items from the post award meeting.

Subtask 1.7: Coordination Call with EPA — Upon request by TCEQ and EPA, the Performing Party will participate in a call with EPA to share progress on goals,

measures of success, challenges, and draft documents.

Subtask 1.8: Project Article — Upon request by TCEQ, the Performing Party will provide a project article. The article will state the project's purpose, describe the activities of the past fiscal year, and include photographs of the project. The Performing Party will address TCEQ comments on the article and provide a final article.

Subtask 1.9: Contract Budget Updates — The Performing Party will discuss fiscal year budgets with the TCEQ Project Manager on a quarterly basis, at a minimum. These updates, recoded in PRs, will be revised when fiscal year spending projections change, or upon request by the TCEQ Project Manager. In the second year of the project, the Performing Party will provide an Annual Budget Update that details fiscal year spending projections associated with planned project activities. The update in the final year of the project will include a budget for all remaining project activities. The TCEQ Project Manager will provide a template for the Annual Budget Update.

Deliverables:

- 1.2 PRs (quarterly)
- 1.3 Reimbursement forms (see Special Terms and Conditions in the Contract)
- 1.4 Quarterly conference call meeting notes and action items (within five business days of the call)
- 1.5 Documentation of the Performing Party's participation in the Contractor Evaluation (annually, within five business days following request)
- 1.6 List of Performing Party attendees and date of contractor workshop (in PR)
- 1.6 Post award meeting notes and action items (within five business days of the meeting)
- 1.7 Coordination call with EPA (upon request)
- 1.8 Project Article and photographs (upon request)
- 1.9 Annual Budget Update (within two weeks following request)

Task 2: Quality Assurance

Objective: To refine, document, and implement data quality objectives (DQOs) and quality assurance/quality control (QA/QC) activities that ensure data of known and acceptable quality are generated by this project.

Subtask 2.1: QAPP Planning Meetings — The Performing Party will schedule a QAPP planning meeting with the TCEQ Project Manager within 30 days of Contract execution, to implement a systematic planning process based on the elements in the applicable QAPP Shell, which will be provided by the TCEQ Project Manager. The information developed during this meeting will be incorporated into a QAPP by the Performing Party.

Subtask 2.2: QAPP — The Performing Party will develop and submit to TCEQ a QAPP with project-specific DQOs and other components consistent with the following documents:

[TCEQ NPS QAPP Shell\(s\)](#)
[EPA Requirements for QAPPs \(QA/R5\)](#)
[EPA Guidance for Geospatial Data QAPPs \(QA/G-5G\)](#)
[EPA QAPP Requirements for Secondary Data Research Projects TCEQ Surface Water Quality Monitoring \(SWQM\) Procedures](#)

The Performing Party will develop the QAPP in consultation with the TCEQ Project Manager, QA staff, and contractors. The Performing Party will address comments and submit a final QAPP for review. The QAPP must be signed/fully approved by TCEQ before any environmental data operations begin.

Subtask 2.3: QAPP Annual Reviews, Revisions, and Updates — The Performing Party will submit documentation certifying its annual review or supporting the revision or reissuance of the QAPP at least 90 days prior to the QAPP anniversary date. Amendments approved since the initial QAPP approval, or a subsequent certified annual review (if applicable) or revision must be submitted along with the certification. For multi-year QAPPs, if extensive changes to a QAPP are necessary, a full revision/update is required. No work described in a QAPP will be conducted outside the effective period of the QAPP.

Subtask 2.4: Amendments — The Performing Party will submit Draft QAPP Amendments for TCEQ review when changes to QAPPs are necessary. Draft QAPP Amendments should be submitted at least 90 days prior to the scheduled initiation of changes and must be accompanied by a justification, summary of changes, and detail of changes. The Performing Party will submit Final QAPP Amendments within 30 days of receipt of any comments provided by TCEQ. Final QAPP Amendments will be submitted to TCEQ with the Performing Party's signatures and responses to comments and circulated for appropriate TCEQ signatures. QAPP Amendments must be approved by TCEQ before any changes conveyed within Amendments are implemented.

Subtask 2.5: Corrective Action Plans (CAPs) — The Performing Party will provide CAPs, as needed, to document deviations from the approved QAPP, including, but not limited to sampling method requirements or sample design, failures associated with chain-of-custody procedures, or failures associated with field and laboratory measurement systems. Draft CAPs will be submitted to TCEQ for review by TCEQ's designated due date. The Performing Party will address TCEQ's comments. The Performing Party will submit final CAPs to TCEQ by the designated due date.

Deliverables:

- 2.1 QAPP Planning Meeting and notes (meeting within 30 days of Contract execution, notes within five business days following meeting)
- 2.2 Draft QAPP (120 days prior to the scheduled initiation of environmental data operations)
- 2.2 Final QAPP (30 days prior to the scheduled initiation of environmental data operations)
- 2.3 QAPP Annual Reviews and Revisions (at least 90 days prior to the QAPP approval anniversary)

- 2.4 Draft QAPP Amendments (at least 90 days prior to the scheduled initiation of changes or additions to activities listed in the current QAPP)
- 2.4 Final QAPP Amendments (at least 30 days prior to the scheduled initiation of changes or additions to activities listed in the current QAPP)
- 2.5 Draft CAPs (as needed, within 14 business days after receiving request)
- 2.5 Final CAPs (within 14 business days of receiving comments)

Task 3: Water Quality Data Reporting and Dataviewer Management

Objective: To maintain and update the Database and Dataviewer, and to generate reports. All submitted data collected under the QAPP are entered into the Dataviewer.

Subtask 3.1: Data Submittals — The Performing Party will enter all data collected under the QAPP into their Database within 90 days of data submission by community scientists. Data from the Dataviewer will be transferred to an online publicly accessible Datamap within 60 days of data submission by community scientists. The Performing Party will submit quarterly Data Activity Reports to the TCEQ Project Manager that will communicate the number of community scientists trained, number of community scientists monitoring, and number of monitoring events. The Performing Party will also submit data to EPA Water Quality Exchange (WQX) semi- annually. The Performing Party will email the TCEQ Project Manager a confirmation of each data submittal to WQX.

Subtask 3.2: Data Summary Reports — The Performing Party will compile and distribute selected community science Data Summary Reports on a quarterly basis. The reports will contain the data collected under the QAPP for sites/segments/basins agreed upon by the Performing Party, TCEQ, community scientist stakeholders, partners, and Clean Rivers Planning agencies. The Data Summary Reports will also contain maps that illustrate the community scientist water quality data collected for each respective watershed. The Performing Party will submit Draft Data Summary Reports and presentations to the TCEQ Project Manager for review and approval at least two weeks prior to the scheduled public release.

Subtask 3.3: Water Quality Monitoring Optical Brightener Technique Study — The Performing Party will conduct a study to evaluate water quality testing methods and tools targeting optical brighteners from human sources of sewage wastewater for cost effectiveness and efficiency. The Performing Party will submit a report summarizing the results of the water quality monitoring optical brightener study.

Deliverables:

- 3.1 Data Activity Reports (quarterly, with PRs)
- 3.1 Data Submittals to EPA (twice per year, documented in PRs and proof of submission emailed to TCEQ Project Manager)
- 3.2 Draft Data Summary Reports with watershed maps (quarterly, at least two weeks prior to the scheduled public release)
- 3.2 Final Data Summary Reports and watershed maps with response to comments (quarterly, with PRs)
- 3.3 Draft Water Quality Monitoring Optical Brightener Technique Study Report

(quarter 5, with PR)

3.3 Final Water Quality Monitoring Optical Brightener Technique Study Report
(quarter 7, month 1)

Task 4: Community Science Activities

Objective: To engage, manage, expand, and strengthen a minimum of 400 statewide water quality community scientists and associated partner networks in activities related to water quality. The Performing Party will provide water quality monitoring training to support existing and new groups performing volunteer monitoring.

Subtask 4.1: Support Existing and New Community Scientists — The Performing Party will engage a minimum of 400 community scientists annually in activities related to water quality. The Performing Party will maintain a limited supply of kits and replacement reagents to equip community scientists who do not currently have partner support or where partner funding is unavailable.

Subtask 4.2: Establish New Partnerships and Groups — The Performing Party will create at least three new partnerships and three new community science groups per year to recruit community scientists in areas developing and implementing WPPs, along with other areas in the state.

Subtask 4.3: Annual Trainer Meeting — The Performing Party will hold one Statewide Trainer Meeting per year with the primary objective of gathering input and feedback toward the Performing Party's advancement of program objectives, QAPP/protocol updates, and improvement of volunteer and support efforts. The Performing Party will submit the agenda to the TCEQ Project Manager for review and approval at least two weeks prior to the meeting.

Subtask 4.4: Core Community Scientist Water Quality Monitoring Trainings — The Performing Party will support water quality monitoring trainings which cover core parameters (dissolved oxygen, pH, conductivity, salinity, Secchi disk, transparency tube, field observations/comments) and methods addressed in the latest TCEQ-approved QAPP. Training will emphasize watershed awareness through discussion and demonstration of the relationship between monitoring tests and field observations to corresponding nonpoint source pollution issues. The Performing Party's staff or certified trainers will conduct at least eight Core Trainings per year.

Subtask 4.5: Advanced and *E. coli* Bacteria Community Scientist Water Quality Monitoring Trainings — The Performing Party will support water quality monitoring trainings which cover the nonpoint source pollution suite (*E. coli* bacteria, nitrates, orthophosphates, flow, turbidity) parameters and methods addressed in the latest TCEQ-approved QAPP. Training will emphasize watershed awareness through discussion and demonstration of the relationship between monitoring tests and field observations to corresponding nonpoint source pollution issues. The Performing Party's staff or certified trainers will conduct at least four Advanced or *E. coli* Bacteria Trainings per year.

Subtask 4.6: Certify Community Scientists as a Trainer — The Performing Party will train and certify community scientists to provide Texas Stream Team Trainings, including watershed and nonpoint source pollution education. The Performing Party's staff or certified trainers will train at least three certified community scientists per year to become Texas Stream Team trainers.

Subtask 4.7: Bioassessment and Riparian Evaluation Program — The Performing Party will develop and support new community scientists and groups/partners in the adoption of Bioassessment and Riparian Evaluation activities. The Performing Party staff or certified trainers will conduct at least one Bioassessment or Riparian Evaluation trainings per year.

Subtask 4.8: Community Science Tasks Report — The Performing Party will produce a Draft and Final Community Scientist Tasks Report that describes project activities completed under this Task. The report will identify and discuss the extent to which goals and purposes have been achieved. The report will emphasize successes, failures, and lessons learned. The Draft Community Scientist Tasks Report will be submitted to the TCEQ Project Manager for review. The Final Community Scientist Tasks Report will address TCEQ comments. If the TCEQ Project Manager determines that the Draft Task Report requires no edits by the Performing Party, the Draft Task Report will also serve as the Final Task Report.

Deliverables:

- 4.1 Documentation of progress toward the goal of engaging 400 community scientists per year (quarterly, with PRs)
- 4.2 Documentation of new community scientist groups and new partnerships established, minimum of three new groups and three new partnerships per year (quarterly, with PRs)
- 4.3 Draft Annual Statewide Trainer Meeting agenda (annually, at least two weeks prior to Annual Trainer Meeting)
- 4.3 Documentation of Annual Statewide Trainer Meeting, minimum of two (quarters 3 and 7, with PRs)
- 4.4 Documentation of core community scientist water quality monitoring trainings, minimum of eight per year (quarterly, with PRs)
- 4.5 Documentation of Advanced or *E. coli* bacteria community scientist water quality monitoring trainings, minimum of four per year (quarterly, with PRs)
- 4.6 Documentation of trainer certifications, minimum of three per year (quarters 3 and 7, with PRs)
- 4.7 Documentation of trainings for Bioassessment/Riparian program, minimum of one per year (quarters 3 and 7, with PRs)
- 4.8 Draft Community Science Tasks Report (quarter 8, month 1)
 - 4.8 Final Community Science Tasks Report (within 15 business days of receiving comments)

Task 5: Watershed Services

Objective: To offer and provide services that contribute to the successful implementation of accepted WPPs across Texas. The Performing Party will achieve this

by working with Watershed Coordinators to engage stakeholders in watersheds approved by the TCEQ Project Manager and assess the alignment of watershed/WPP needs with capabilities of the Performing Party.

Subtask 5.1: Outreach to Watershed Coordinators — The Performing Party will correspond with a minimum of eight Watershed Coordinators or project leads per year and offer services to support implementation of WPPs. Services may include:

- Providing information regarding matching/in-kind funds.
- Assisting with water quality and data collection.
- Assisting with analyses of monitoring data.
- Providing community science programming and curricula.

Subtask 5.2: Watershed Services Task Report — The Performing Party will provide a Draft and Final Watershed Services Task Report summarizing all activities covered by this Task. The Draft Watershed Services Task Report will be submitted to the TCEQ Project Manager for review. The Final Watershed Services Task Report will address TCEQ comments. If the TCEQ Project Manager determines that the Draft Task Report requires no edits by the Performing Party, the Draft Task Report will also serve as the Final Task Report.

Deliverables:

5.1 Documentation of correspondence with Watershed Coordinators or project leads, minimum of 8 per year (quarterly, in PRs)

5.2 Draft Watershed Services Task Report (quarter 8, month 1)

5.2 Final Watershed Services Task Report (within 15 business days of receiving comments)

Task 6: Water Resource Education and Outreach

Objective: To provide watershed education to a minimum of 2,500 people annually on nonpoint source pollution and activities that support water conservation and management.

Subtask 6.1: Texas Stream Team Curriculum, Spring Lake Education Program — The Performing Party will incorporate Texas Stream Team activities into the Meadows Center’s existing Spring Lake education program to reach a targeted portion of the 125,000 annual expected visitors. The Performing Party will use the Spring Lake education program to:

- Promote/hold one teacher workshop per year.
- Conduct four Enviroscope watershed model demonstrations or watershed activities per year.
- Provide four water quality monitoring certifications for all grade levels per year.

Subtask 6.2: Newsletters — The Performing Party will produce and distribute four online newsletters to community scientists, partners, and other interested parties per year. Information in the newsletters will target new potential partners and users of the

Performing Party's data and services. Draft newsletters will be submitted to the TCEQ Project Manager for review and approval at least two weeks prior to distribution or release. The final newsletters will address TCEQ comments.

Subtask 6.3: Research Publication Submission — The Performing Party will submit an article regarding the evaluation of the effectiveness of water resource community science to a research journal and will present the findings at a scientific conference(s). The Performing Party will provide the abstract and presentation to the TCEQ Project Manager for review and approval at least 14 days prior to deadlines for submission to scientific conference(s).

Subtask 6.4: Watershed Education and Outreach Task Report — The Performing Party will produce a Draft and Final Watershed Education and Outreach Task Report that describes project activities under this Task and discusses the extent to which goals have been achieved. The report will emphasize successes, failures, and lessons learned. The Draft Watershed Education and Outreach Task Report will be submitted to the TCEQ Project Manager for review. The Final Watershed Education and Outreach Task Report will address TCEQ comments. If the TCEQ Project Manager determines that the Draft Task Report requires no edits by the Performing Party, the Draft Task Report will also serve as the Final Task Report.

Deliverables:

- 6.1 Documentation of teacher workshops, including agenda, sign-in sheets, and presentation materials, minimum of one per year (quarters 4 and 8, with PRs)
- 6.1 Documentation of Enviroscope watershed model demonstrations, minimum of four per year (quarters 4 and 8, with PRs)
- 6.1 Documentation of providing water quality monitoring certifications, minimum of four per year (quarters 4 and 8)
- 6.2 Draft online newsletters, minimum of eight (at least two weeks prior to distribution or release)
- 6.2 Final online newsletters, minimum of eight (quarterly, with PRs)
- 6.3 Draft research publication (quarter 7, month 2)
- 6.3 Documentation of research publication submission (quarter 8, month 1)
- 6.3 Draft abstract and presentation for scientific conference(s) (at least 14 business days before submission)
- 6.3 Documentation of presentation at scientific conference(s) (quarter 8, month 1)
- 6.4 Draft Watershed Education and Outreach Task Report (quarter 8, month 1)
- 6.5 Final Watershed Education and Outreach Task Report (within 15 business days of receiving comments)

Task 7: Final Report

Objective: To produce a Final Report that summarizes all activities completed and conclusions reached during the project. The Final Report will discuss the extent to which project goals and purposes have been achieved and information about methods used. The Final Report should emphasize successes, failures, lessons learned. The Final Report should include analyses estimating the project's water quality improvements and/or load reductions, if applicable. The Final Report will

summarize all the Task Reports either in the text or as appendices.

Subtask 7.1: Draft Final Report — At least 30 days prior to submitting the Final Report, the Performing Party will provide a Draft Final Report. The comprehensive report should document all Deliverables under this Scope of Work. The Draft Final Report will be structured per the following outline:

- Title
- Table of Contents
- Project Description and Purpose
- Study Area (including maps)
- Summary of all Tasks
- Amount of project funding and amount spent
- Discussion: include deliverables not completed and lessons learned
- Water quality results achieved and estimated load reductions (if applicable to project)
- Appendices (if needed)

Subtask 7.2: Final Report — The Performing Party will revise the Draft Final Report to address comments provided by the TCEQ Project Manager. At least two weeks before the expiration of the Contract, the Performing Party will submit the Final Report to the TCEQ Project Manager.

Deliverables:

7.1 Draft Final Report (quarter 8, month 1)

7.2 Final Report (at least two weeks prior to end of contract)

Scope of Work (22-30176)

This project will support the Performing Party’s statewide water quality monitoring program by providing supplies and training for volunteer citizen monitors. Watershed services and nonpoint source pollution education focused on impaired waters will also be provided in watersheds where Watershed Protection Plans (WPPs) are being developed or implemented.

Task 1: Project Administration

Objective: To effectively administer, coordinate, and monitor all work performed under this project including technical and financial supervision and preparation of status reports.

Subtask 1.1: Project Oversight — The Performing Party will provide technical and fiscal oversight of the staff and/or subgrantee(s)/subcontractor(s) to ensure Tasks and Deliverables are acceptable and completed as scheduled and within budget. With the TCEQ Project Manager’s authorization, the Performing Party may secure the services of subgrantees(s)/subcontractors(s). Project oversight status will be provided to the TCEQ Project Manager with the quarterly Progress Reports (PRs).

Subtask 1.2: Progress Reports (PRs) — The Performing Party will submit PRs to the TCEQ Project Manager by the 15th of the month following each state fiscal quarter (Sept - Nov, Dec - Feb, March - May, June - August). PRs will include reporting on the status of Deliverables and proposed revisions to due dates, narrative description of progress by Task, and status of nonconformances/corrective actions. The TCEQ Project Manager will provide a template for the PR to the Performing Party.

Subtask 1.3: Reimbursement Forms (Financial Status Reports) — The Performing Party will submit Reimbursement Forms in accordance with the Special Terms and Conditions.

Subtask 1.4: Contract Communication — The Performing Party will participate in a call/meeting with TCEQ to discuss project scope and contract requirements within 30 days of Contract execution. The Performing Party will maintain regular telephone and/or e-mail communication with the TCEQ Project Manager regarding the status and progress of the project and any matters that require attention between PRs. Communications will include a quarterly conference call to discuss items such as project Tasks, financial status, Quality Assurance Project Plans (QAPPs), corrective actions, and any other matters that require attention. The TCEQ Project Manager may request additional information from the Performing Party prior to the call or meeting. The Performing Party will provide meeting notes, identifying action items, for the telephone calls within five days of the call.

The first conference call held each fiscal year of the project will cover, as applicable, any staff changes, the previous year's performance, budget estimates, invoicing issues, quality assurance issues, and overall project progress.

Matters that will be communicated to the TCEQ Project Manager include, but are not limited to:

- Notification a minimum of 14 days before the Performing Party has scheduled public meetings or events, initiation of construction, or other major Task activities.
- Notification within 48 hours following events or circumstances that may require changes to the Budget, Scope of Work, or Schedule of Deliverables.
- Requests for prior approval of activities or expenditures for which the Contract requires advance approval or that are not specifically included in the Scope of Work

Subtask 1.5: Contractor Evaluation — The Performing Party will participate in an annual Contractor Evaluation at the end of each state fiscal year.

Subtask 1.6: Coordination Call with EPA — Upon request by TCEQ and EPA, the Performing Party will participate in a call with EPA to share progress on goals, measures of success, challenges, and draft documents.

Subtask 1.7: Project Article — The Performing Party, upon request by TCEQ, will provide a project article. The article will state the project’s purpose, describe the activities of the past fiscal year, and include photographs of the project.

Subtask 1.8: Contract Budget Updates — The Performing Party will discuss annual fiscal year budgets with the TCEQ Project Manager on a quarterly basis at a minimum. Starting in the second year of the project, the Performing Party will provide an Annual Budget Update that details state fiscal year spending projections associated with planned project activities. These updates will be revised when fiscal year spending projections change by ten percent or more, or upon request by the TCEQ Project Manager. The update in the final year of the project will include a budget for all remaining project activities. The TCEQ Project Manager will provide a template for the Annual Budget Update.

Deliverables:

- 1.2 PRs (by the 15th of the month following each state fiscal quarter)
- 1.3 Reimbursement forms (see Special Terms and Conditions)
- 1.4 Conference calls with meeting notes and action items (quarterly, notes within five days of meeting)
- 1.5 Contractor Evaluation (annually, upon request by TCEQ)
- 1.6 EPA coordination call (upon request by TCEQ)
- 1.7 Project article and photographs (upon request by TCEQ)
- 1.8 Contract Budget updates (by the 15th of the month following the end of each state fiscal quarter, in PRs)
- 1.8 Annual Budget Updates (within 2 weeks following TCEQ request)

Task 2: Quality Assurance

Objective: To refine, document, and implement data quality objectives (DQOs) and quality assurance/quality control (QA/QC) activities that ensure data of known and acceptable quality are generated by this project.

Subtask 2.1: QAPP Planning Meetings — The Performing Party will schedule a QAPP planning meeting with the TCEQ Project Manager, QA staff, technical staff, and contractors within 30 days of Contract execution, to implement a systematic planning process based on the elements in the applicable QAPP Shell. A QAPP shell/examples will be provided by the TCEQ Project Manager. The information developed during this meeting will be incorporated into a QAPP by the Performing Party. The Performing Party may conduct additional meetings to determine whether changes to an existing QAPP are needed.

Subtask 2.2: Monitoring QAPP — The Performing Party will develop and submit to TCEQ a QAPP with project-specific DQOs and other components consistent with the following documents:

- [TCEQ NPS QAPP Shell\(s\)](#)
- [EPA Requirements for QAPPs \(QA/R5\)](#)

- [EPA Guidance for Geospatial Data QAPPs \(QA/G-5G\)](#)
- [EPA QAPP Requirements for Secondary Data Research Projects](#)
- [TCEQ Surface Water Quality Monitoring \(SWQM\) Procedures](#)

The Performing Party will develop the QAPP in consultation with the TCEQ Project Manager, QA staff, and contractors. The Performing Party will address comments and submit a final QAPP for review. The QAPP must be signed/fully approved by TCEQ and, if necessary, EPA, before any environmental data operations begin.

Subtask 2.3: QAPP Annual Reviews, Revisions, and Updates — The Performing Party will submit documentation certifying its annual review or supporting the revision or reissuance of the QAPP at least 90 days prior to the QAPP anniversary or expiration date. Amendments approved since the initial QAPP approval or a subsequent certified annual review (if applicable) or revision must be submitted along with the certification. For multi-year QAPPs, if extensive changes are necessary, a full revision/update is required. No work described in a QAPP will be conducted outside the effective period for the QAPP.

Subtask 2.4: QAPP Amendments — The Performing Party will submit Draft QAPP Amendments for TCEQ review when changes to the QAPP are necessary. Draft QAPP Amendments should be submitted at least 90 days prior to the scheduled initiation of changes and must be accompanied by a justification, summary of changes, and detail of changes. The Performing Party will submit Final QAPP Amendments within 30 days of receipt of any comments provided by TCEQ. Final QAPP Amendments will be submitted to TCEQ with the Performing Party’s signatures and responses to comments and circulated for appropriate TCEQ signatures. The QAPP Amendments must be signed/fully approved by TCEQ and, if necessary, EPA, before any changes conveyed within Amendments are implemented.

Subtask 2.5: Corrective Action Reports — The Performing Party will provide corrective action reports (CARs), as needed, to document deviations from sampling method requirements or sample design, failures associated with chain-of-custody procedures or in field and laboratory measurement systems. The Performing Party will submit CARs with PRs.

Deliverables:

- 2.1 QAPP Planning Meeting notes (within 30 days of Contract execution)
- 2.2 Draft QAPP (120 days prior to the scheduled initiation of environmental data operations)
- 2.2 Final QAPP (30 days prior to the scheduled initiation of environmental data operations)
- 2.3 QAPP Annual Reviews and Revisions (at least 90 days prior to the QAPP approval anniversary)
- 2.4 Draft QAPP Amendments (at least 90 days prior to the scheduled initiation of changes or additions to activities listed in the current QAPP)
- 2.4 Final QAPP Amendments (within 30 days of receipt of comments)
- 2.5 CARs (as needed, with PRs, until the issue is resolved)

Task 3: Water Quality Data Reporting and Dataviewer Management

Objective: To maintain and update the Database and Dataviewer, and to generate reports. All submitted data collected under the QAPP are entered into the Performing Party's online Dataviewer.

Subtask 3.1: Data Submittals — The Performing Party will enter all data collected under the QAPP into the Dataviewer within 60 days of data submission by citizen scientists. The Performing Party will submit quarterly Data Activity Reports that will communicate the number of citizen scientists trained, number of citizen scientists monitoring, and number of monitoring events. The Performing Party will also submit data to EPA Water Quality Exchange (WQX) semi-annually. The Performing Party will e-mail the TCEQ Project Manager a confirmation of each data submittal to WQX.

Subtask 3.2: Data Summary Reports — The Performing Party will compile and distribute selected citizen science Data Summary Reports. The reports will use the data collected under the QAPP for sites/segments/basins agreed upon by the Performing Party, TCEQ, citizen scientist stakeholders, partners, and Clean Rivers Planning agencies. The Data Summary Reports will also contain maps that illustrate the citizen scientist water quality data collected for each respective watershed. The Performing Party will submit Draft Data Summary Reports and presentations to the TCEQ Project Manager for review and approval at least two weeks prior to the scheduled public release.

Subtask 3.3: Water Quality Online Database and Mapping Technique Study — The Performing Party will conduct a study to evaluate online database options currently on the market for efficiency and cost effectiveness and survey other successful citizen science programs across the United States. The Performing Party will submit a report summarizing the results of the water quality online database and mapping technique study.

Deliverables:

- 3.1 Data Activity Reports (quarterly, with PRs)
- 3.1 Data Submittals to EPA (twice per year, in PRs and proof of submission emailed to TCEQ Project Manager)
- 3.2 Draft Data Summary Reports with watershed maps (quarterly, with PRs)
- 3.2 Final Data Summary Reports and watershed maps with response to TCEQ comments (at least two weeks prior to the scheduled public release)
- 3.3 Draft Water Quality Online Database Technique Study Report (quarter 8, month 1)
- 3.3 Final Water Quality Online Database Technique Study Report (within 30 days after receipt of TCEQ comments)

Task 4: Citizen Science Activities

Objective: To engage, manage, expand, and strengthen a minimum of 400 statewide water quality citizen scientists and associated partner networks annually in activities related to water quality. The Performing Party will provide water quality monitoring training to support existing and new groups performing volunteer monitoring.

Subtask 4.1: Support Existing and New Citizen Scientists — The Performing Party will maintain a stock of water quality monitoring kits and supplies for use by the Performing Party staff for special monitoring events, trainings, and quality control sessions. The Performing Party will engage a minimum of 400 citizen scientists annually in activities related to water quality. The Performing Party will maintain a limited supply of kits and replacement reagents to equip citizen scientists who do not currently have partner support or where partner funding is unavailable.

Subtask 4.2: Establish New Partnerships and Groups — The Performing Party will create at least three new partnerships and three new citizen science groups per year to recruit citizen scientists in geographic areas approved by the TCEQ Project Manager.

Subtask 4.3: Annual Trainer Meeting — The Performing Party will hold one Statewide Trainer Meeting per year with the primary objective of gathering input and feedback toward the Performing Party's advancement of program objectives, QAPP/protocol updates, and improvement of volunteer and support efforts. The Performing Party will submit the agenda to the TCEQ Project Manager for review and approval at least two weeks prior to the meeting.

Subtask 4.4: Core Citizen Scientist Water Quality Monitoring Trainings — The Performing Party will support water quality monitoring trainings which cover core parameters (dissolved oxygen, pH, conductivity, salinity, Secchi disk, transparency tube, field observations/comments) and methods addressed in the latest TCEQ-approved QAPP. Training will emphasize watershed awareness through discussion and demonstration of the relationship between monitoring tests and field observations to corresponding nonpoint source pollution issues. The Performing Party's staff or certified trainers will conduct at least seven Core Trainings per year.

Subtask 4.5: Advanced and *E. coli* Bacteria Citizen Scientist Water Quality Monitoring Trainings — The Performing Party will support water quality monitoring trainings which cover the nonpoint source pollution suite (*E. coli* Bacteria and/or nitrates, orthophosphates, flow, turbidity) parameters and methods addressed in the latest TCEQ-approved QAPP. Training will emphasize watershed awareness through discussion and demonstration of the relationship between monitoring tests and field observations to corresponding nonpoint source pollution issues. The Performing Party's staff or certified trainers will conduct at least three Advanced or *E. coli* Bacteria Trainings per year.

Subtask 4.6: Certify Citizen Scientists as a Trainer — The Performing Party will train and certify citizen scientists to provide Texas Stream Team (TST) trainings, including watershed and nonpoint source pollution education. The Performing Party's staff or certified trainers will train at least three certified citizen scientists per year to become TST trainers.

Subtask 4.7: Bioassessment and Riparian Evaluation Program — The Performing Party will develop and support new citizen scientists and groups/partners in the adoption of Bioassessment and Riparian Evaluation activities. The Performing Party staff or certified trainers will conduct at least four Bioassessment or Riparian Evaluation trainings per year.

Subtask 4.8: Regional Citizen Scientists/Stakeholder Outreach Meetings — The Performing Party will participate in at least two regional citizen scientists/stakeholder meetings per year. These events will directly support citizen scientists, partners, and WPP collaborators and will enhance attendees' water quality knowledge and ability to better understand watershed functions. Topics for the meetings will include priority issues for the WPP areas. Networking and other open sessions will generate discussion between WPP projects.

Subtask 4.9: Citizen Science Tasks Report — The Performing Party will produce a Draft and Final Citizen Scientist Tasks Report that describes project activities completed under this task. The report will identify and discuss the extent to which goals and purposes have been achieved.

The report will emphasize successes, failures, and lessons learned. The Draft Citizen Scientist Tasks Report will be submitted to the TCEQ Project Manager for review. The Final Citizen Scientist Tasks Report will address TCEQ comments.

Deliverables:

- 4.1 Documentation of progress toward the goal of engaging 400 citizen scientists per year (quarterly, in PRs)
- 4.2 Documentation of new citizen scientist groups and new partnerships established (quarterly, with PRs, minimum of 3 new groups and 3 new partnerships per year)
- 4.3 Draft agenda (at least two weeks prior to Trainer Meeting)
- 4.3 Documentation of Annual Statewide Trainer Meeting (by the end of quarters 4 and 8, minimum of 2)
- 4.4 Documentation of core citizen scientist water quality monitoring trainings (quarterly, in PRs, minimum of 7 per year)
- 4.5 Documentation of advanced or *E. coli* bacteria citizen scientist water quality monitoring trainings (quarterly, in PRs, minimum of 3 per year)
- 4.6 Documentation of trainer certifications (by the end of quarters 3 and 7, with PRs, minimum of 3 per year)
- 4.7 Documentation of trainings for Bioassessment/Riparian program (quarterly, in PRs, minimum of 4 per year)
- 4.8 Documentation of regional citizen scientists/stakeholder outreach meetings (quarters 4 and 8, with PRs, minimum of 2 per year)
- 4.9 Draft Citizen Science Tasks Report (quarter 8, month 1)
- 4.9 Final Citizen Science Tasks Report (within 30 days after receipt of TCEQ comments)

Task 5: Watershed Services

Objective: To offer and provide services that contribute to the successful implementation of accepted WPPs across Texas. The Performing Party will achieve this by working with Watershed Coordinators to engage stakeholders in watersheds approved by the TCEQ Project Manager and assess the alignment of watershed/WPP needs with capabilities of the Performing Party.

Subtask 5.1: Outreach to Watershed Coordinators — The Performing Party will correspond with a minimum of eight Watershed Coordinators or project leads per year and offer services to support implementation of WPPs. Services may include:

- Providing information regarding matching/in-kind funds.
- Assisting with water quality and data collection.
- Assisting with analyses of monitoring data.
- Developing citizen science programming and curricula.

Subtask 5.2: Watershed Services Report — The Performing Party will provide a Draft and Final Watershed Services Report summarizing all activities covered by this task. The Draft Watershed Services Report will be submitted to the TCEQ Project Manager for review. The Final Watershed Services Report will address TCEQ comments.

Deliverables:

- 5.1 Documentation of correspondence with Watershed Coordinators or project leads (quarterly, in PRs, minimum of 8 per year)
- 5.2 Draft Watershed Services Report (quarter 8, month 1)
- 5.2 Final Watershed Services Report (within 30 days after receipt of TCEQ comments)

Task 6: Water Resource Education and Outreach

Objective: To provide watershed education to 2,500 people annually on nonpoint source pollution and activities that support water conservation and management.

Subtask 6.1: TST Curriculum, Spring Lake Education Program — The Performing Party will incorporate TST activities into the Meadows Center's existing Spring Lake Education program to reach a targeted portion of the 125,000 annual visitors.

The Performing Party will use the Spring Lake program to:

- Promote/hold one teacher workshop per year.
- Conduct four Enviroscape watershed model demonstrations per year.
- Provide four water quality monitoring certifications for all grade levels per year.

Subtask 6.2: TST Resources and Website — The Performing Party will maintain and update their website quarterly. The website includes watershed planning information and resources such as water quality monitoring information, data, maps, metrics,

volunteer monitoring activities, WPP development/implementation activities, educational events, and lessons learned.

Subtask 6.3: Newsletters — The Performing Party will produce and distribute four online newsletters to citizen scientists, partners, and other interested parties per year. Information in the newsletters will be targeted toward potential new partners and users of the Performing Party’s data and services. Draft Newsletters will be submitted to the TCEQ Project Manager for review and approval at least two weeks prior to distribution or release. The Final Newsletters will address TCEQ comments.

Subtask 6.4: Education — The Performing Party will incorporate educational activities and/or nonpoint source pollution water quality curriculum into one partner program per year.

Examples include water resource-focused school assemblies, water quality monitoring, adoption of interpretive and educational materials/signage, use of the Enviroscope watershed model, watershed demonstrations, nonpoint source pollution reduction/water quality protection activities, games, career days, or learning modules.

Subtask 6.5: Watershed Education and Outreach Task Report — The Performing Party will produce a Draft and Final Watershed Education and Outreach Task Report that describes project activities under this task and identifies and discusses the extent to which goals and purposes have been achieved. The report will emphasize successes, failures, and lessons learned. The Draft Watershed Education and Outreach Task Report will be submitted to the TCEQ Project Manager for review. The Final Watershed Education and Outreach Task Report will address TCEQ comments.

Subtask 6.6: Peer-Reviewed Journal Article — The Performing Party will produce a journal article to evaluate the effectiveness of water resource citizen science and present the findings at one conference.

Deliverables:

- 6.1 Documentation of teacher workshops, including agenda, sign-in sheets, and presentation materials (quarterly, with PRs, minimum of 1 per year)
- 6.1 Documentation of Enviroscope watershed model demonstrations (quarters 4 and 8, with PRs, minimum of 4 per year)
- 6.1 Documentation of providing water quality monitoring certifications (by the end of quarters 4 and 8, minimum of 4 per year)
- 6.2 Documentation of website maintenance and updates (quarterly, with PRs)
- 6.3 Draft online Newsletters (at least two weeks prior to distribution or release)
- 6.3 Final online Newsletters (quarterly, in PRs, minimum of 4 per year)
- 6.4 Documentation of incorporation of program activities/curriculum into partner education programs (by the end of quarters 4 and 8, minimum of 1 existing partner program per year)
- 6.5 Draft Watershed Education and Outreach Task Report (quarter 8, month 1)
- 6.5 Final Watershed Education and Outreach Task Report (within 30 days after receipt of TCEQ comments)

6.6 Peer-Reviewed Journal Article (quarter 8, month 1)

6.6 Documentation of research presentation at one conference (quarter 8, month 1)

Task 7: Final Report

Objective: To produce a Final Report that summarizes all activities completed and conclusions reached during the project period. The Final Report will discuss the extent to which project goals and purposes have been achieved. The Final Report should emphasize successes, failures, lessons learned and should include analyses estimating the project's water quality improvements and/or load reductions, if applicable. The Final Report will summarize all the Task Reports either in the text or as appendices.

Subtask 7.1: Draft Final Report — At least 30 days prior to submitting the Final Report, the Performing Party will provide a Draft Final Report. The comprehensive report should document all Deliverables under this Scope of Work. The Draft Final Report should be structured per the following outline:

- Title and Contract Number;
- Table of Contents;
- Project Significance and Background;
- Study Area (maps);
- Summary of all Task Reports and final approved PR;
- Amount of project funding and amount spent;
- Discussion: include deliverables not completed, lessons learned, recommendations for future work; and
- Appendices (if needed).

Subtask 7.2: Final Report — The Performing Party will revise the Draft Final Report to address comments provided by the TCEQ Project Manager. At least two weeks before the expiration of the Contract, the Performing Party will submit the Final Report to the TCEQ Project Manager.

Deliverables:

7.1 Draft Final Report (quarter 8, month 1)

7.1 Address TCEQ comments (within 10 days of receipt of comments)

7.2 Final Report (at least two weeks prior to end of contract)

APPENDIX C. FIELD DATA MONITORING FORMS AND QUALITY CONTROL CHECKLISTS

[Core environmental monitoring form and field quality control checklist](#) (for Standard Core and Probe core)

[Advanced environmental monitoring form and field quality control checklist](#)

[Texas Stream Team Observations Monitoring Form](#)

[E. coli bacteria environmental monitoring form and field quality control checklist](#)

[Riparian environmental monitoring form and field quality control checklist](#)

Macroinvertebrate bioassessment monitoring form (coming soon)

[Monofilament monitoring form](#)

[Optical brightener environmental monitoring form and field quality control checklist](#)

APPENDIX F. TEXAS STREAM TEAM MANUALS, FIELD GUIDES, TRAINER ENROLLMENT FORM, AND MAINTENANCE GUIDES

Manuals

[2023 Texas Stream Team Core Water Quality Community Scientist Manual](#) (May 2023)

[E. coli Bacteria Water Quality Citizen Scientist Manual](#) (May 2023)

[Texas Stream Advanced Water Quality Citizen Scientist Manual](#) (July 2023)

[Texas Stream Team Riparian Evaluation Citizen Scientist Manual](#) (January 2022)

Texas Stream Team Macroinvertebrate Bioassessment Citizen Scientist Manual (coming soon)

[Texas Stream Team Optical Brightener Water Quality Community Scientist Manual \(November 2024\)](#)

Field Guides

[Standard Core Field Guide](#)

[Standard Core Salinity Field Guide](#)

[Probe Core Field Guide](#)

[E. coli Bacteria Field Guide](#)

[Advanced Field Guide - Streamflow & Turbidity](#)

[Advanced Field Guide - Nitrate-Nitrogen & Phosphate](#)

Macroinvertebrate Bioassessment Filed Guide (coming soon)

[Optical Brightener Field Guide](#)

Trainer Enrollment Form

Maintenance Guides

[Standard Core Equipment Maintenance Guide](#)

[Probe Kit Maintenance Guide](#)


Distribution: QAPP Amendments will be distributed to all personnel on the original QAPP by the Contractor Project Manager. Records of distribution will be maintained by the Texas State University (TXST), the Texas Stream Team Program (TST), and documentation of distribution must be available upon request in the event of an audit.

Adherence Letters: The TXST TST will secure written documentation from additional project participants stating the organization's awareness of and commitment to requirements contained in this QAPP amendment. The TXST TST will maintain this documentation as part of the project's quality assurance records. This documentation will be available for review in the event of an

audit. Copies of this documentation will also be submitted as deliverables to the TCEQ NPS Project Manager within 30 days of final TCEQ approval of the QAPP Amendment.

Approval: The changes are effective upon final approval of the amendment by all signatories. These changes will be incorporated into the full QAPP document during the annual review certification on the QAPP anniversary date. The TCEQ and TXST TST acknowledge and accept these changes by signing this amendment. TCEQ will accept scanned copies of signature pages.


----- 1/7/2025
Aspen Navarro, Project Manager Date


----- 1/7/2025
Aspen Navarro, QAO Date

Laura Parchman
----- 1/7/2025
Laura Parchman, Data Manager Date

Marcella Lanzillotti
----- 1/9/2025
Marcella Lanzillotti, TCEQ NPS Project Manager Date


----- 1/9/2025
Kristin DeBone, TCEQ NPS QA Coordinator Date

Faith Hambleton
----- 1/9/2025
Faith Hambleton, TCEQ NPS Team Leader Date

James Babcock
----- 01/09/2025
James Babcock, TCEQ Lead NPS QA Specialist Date

D. Jody Koehler
----- 01/09/2025
D. Jody Koehler, TCEQ QA Manager Date

Annual Review Certification
for
Texas Stream Team Program Surface Water Quality Monitoring
Project Quality Assurance Project Plan (QAPP)
Revision 1
Federal ID # 99614625, 99614626, 99614628
QTRAK # 23-057
Original QAPP Effective Period - 12-02-2022 - 12-02-2025
Year - 3 of 3

Signatures below document certification of the annual review of Nonpoint Source Program Clean Water Act 319(h) Texas Stream Team Program Surface Water Quality Monitoring Project QAPP, Revision 1 by Texas State University and the Texas Commission on Environmental Quality (TCEQ) Project Managers. The original QAPP was approved by TCEQ on December 2, 2022. An annual review was conducted last year, on September 21, 2023, and no QAPP Amendments have occurred since that time.

The Texas State University and TCEQ Project Managers have verified that the original QAPP accurately reflects current project requirements. Organizational changes that occurred in the last year are provided in attachments to this certification. The QAPP is now approved until December 2, 2025.

The QAPP ends December 2, 2025, so this will be the final annual review. Amendments that are necessary in the interim must be fully approved before their provisions are implemented.



Aspen Navarro, Date
Texas State University Project Manager,
Texas State University

Marcella Lanzillotti 10/2/2024

Marcella Lanzillotti, Date
TCEQ Project Manager,
Nonpoint Source Program, TCEQ

Enclosures: Organizational Changes

cc: Melissa Benfer, Project Officer, EPA
D. Jody Koehler, QA Manager, TCEQ
James Babcock, NPS QA Specialist, TCEQ

Organizational Changes

QAPP Section (page number)	Change
A3 (pg 7), A4 (pg 10), Figure A4.1 (pg 11)	Update EPA Project Officer from Anthony Suttice to Melissa Benfer.
A1 (pg 2), A4 (pg 8), Figure A4.1 (pg 11)	Update Lead NPS QA Specialist from Jason Natho to James Babcock.
A1 (pg 2), A4 (pg 9), Figure A4.1 (pg 11)	Update NPS QA Coordinator from Heather Robinson to Kristin DeBone.
A1 (pg 3), A3 (pg 7), A4 (pg 9), Figure A4.1 (pg 11), B10 (pg 31)	Update QAO from Sandra Arismendez to Aspen Navarro.

Annual Review Certification
for
Texas Stream Team Program Surface Water Quality Monitoring Project Quality
Assurance Project Plan, Revision 1
Federal ID # 99614625, 99614626, 99614628
QTRAK # 23-057
Original QAPP Effective Period - (12-02-2022 - 12-02-2025)
Year - (2 of 3)

Signatures below document certification of the annual review of Nonpoint Source Program Clean Water Act 319(h) Texas Stream Team Program Surface Water Quality Monitoring Project Quality Assurance Project Plan (QAPP) Revision 1 by Texas State University and the TCEQ Project Manager. The original QAPP was approved by the Texas Commission on Environmental Quality on December 2, 2022. This is the first annual review and QAPP Amendment number 1 and 2 are included along with documentation in this review.

The Texas State University and TCEQ Project Managers have verified that the original QAPP and the attached Amendment number 1 and 2 accurately reflect current project requirements. QAPP amendments that were approved in the last year are provided in attachments to this certification. The QAPP is now approved until December 2, 2024.

The next annual review will be initiated on September 3, 2024. Amendments that are necessary in the interim must be fully approved before their provisions are implemented.

Aspen Navarro 9/21/2023
Aspen Navarro, Date
Texas State University Project Manager,
Texas State University

Marcella Lanzillotti 9/21/2023
Marcella Lanzillotti, Date
TCEQ Project Manager, TCEQ

Enclosures: QAPP Amendment # 1
QAPP Amendment # 2

cc: Anthony Suttice, Project Officer, EPA
D. Jody Koehler, QA Manager, TCEQ
Jason Natho, NPS QA Specialist, TCEQ

QAPP Amendment # 1

From: Jason Natho <Jason.Natho@tceq.texas.gov>
Sent: Tuesday, May 30, 2023 9:18 AM
To: Marcella Lanzillotti <Marcella.Lanzillotti@tceq.texas.gov>
Cc: Samantha Litchke <Samantha.Litchke@tceq.texas.gov>; Jody Koehler <Jody.Koehler@tceq.texas.gov>; Heather Robinson <Heather.Robinson@tceq.texas.gov>; Maria Trevino <Maria.Trevino@tceq.texas.gov>
Subject: RE: Amendment #1 to Texas Stream Team Monitoring QAPP R1 (Expedited)

Good morning Marcella,

The subject amendment is approved effective today, May 30, 2023. Please cc Jody and I when you send to EPA.

Thank you,

Jason Natho
NPS Lead Quality Assurance Specialist
Quality Assurance Team
Laboratory and Quality Assurance Section

From: Marcella Lanzillotti <Marcella.Lanzillotti@tceq.texas.gov>
Sent: Thursday, May 18, 2023 11:51 AM
To: Jason Natho <Jason.Natho@tceq.texas.gov>
Cc: Samantha Litchke <Samantha.Litchke@tceq.texas.gov>; Jody Koehler <Jody.Koehler@tceq.texas.gov>
Subject: Amendment #1 to Texas Stream Team Monitoring QAPP R1 (Expedited)

Hi Jason,

Please see below for an amendment 1 to the Texas Stream Team Program Surface Water Quality Monitoring QAPP R1. I have formatted this as an expedited amendment. If you would like this changed or have any questions, please let me know.

As a reminder, the contractor does not submit their community scientist water quality data to TCEQ, only to EPA. Therefore, DM&A does not need to review the amendment.

Thank you,
Marcella

--

Marcella Lanzillotti (she/her)
Project Manager | Nonpoint Source Program
Texas Commission on Environmental Quality
marcella.lanzillotti@tceq.texas.gov | (512) 239-1712

Amendment 1
to the Texas Stream Team Program Surface Water Quality Monitoring
Quality Assurance Project Plan (QAPP)
Revision #1

The Meadows Center for Water and the Environment, Texas State University
San Marcos, Texas 78666

Funding Source: Nonpoint Source Program CWA §319(h)

Prepared in cooperation with the Texas Commission on Environmental
Quality
and the U.S. Environmental Protection Agency
Federal ID #99614623, 99614624, 99614625, 99614626
QTRAK #23-057

Effective Date: Upon date of final approval of the amendment

Questions concerning this QAPP should be directed to:

Aspen Navarro
Project Manager
The Meadows Center for Water and the Environment, Texas State University
601 University Drive, San Marcos, Texas 78666
(512) 245-7376
aspennavarro@txst.edu

Justification:

This QAPP amendment is taking place in response to the Nonconformance Report (#1) and Corrective Action Plan issued February 21, 2023. The 2020 Texas Stream Team Core Water Quality Citizen Scientist Manual, Standard Core Field Guide, and Standard Core Salinity Field Guide were revised with updated pH monitoring protocols. The three revised documents have been uploaded to the Texas Stream Team website and the previous versions of those documents were replaced with the current, revised ones.

Summary of Changes:

Section	QAPP Page #	Change	Justification
Cover Page	1	Removed Federal ID numbers 99614623 and 99614624 (see above).	There are no active QAPPs in the two grant years.
A7	19	Updated Table A7.1 Reference <i>TST Core Water Quality Citizen Scientist Manual</i> date from “August 2020” to “May 2023.”	To reflect the manual revision.
Appendix F	61	Updated hyperlink and reference to the 2020 Texas Stream Team Core Water Quality Citizen Scientist Manual from “August 2020” to “May 2023.”	To reflect manual revision.
Appendix F	61	Updated hyperlink to the Standard Core Field Guide.	To reflect guide revision.
Appendix F	61	Updated hyperlink to the Standard Core Salinity Field Guide.	To reflect guide revision.

Detail of Changes:**A7 QUALITY OBJECTIVES AND CRITERIA**

Table A7.1 References

- TST SOP: TST Core Water Quality Citizen Scientist Manual, **August 2020 May 2023**; TST Advanced Water Quality Citizen Scientist Manual, April 2019; TST Field Guide(s).

APPENDIX F. TEXAS STREAM TEAM MANUALS, FIELD GUIDES, TRAINER ENROLLMENT FORM, AND MAINTENANCE GUIDESManuals

[2020 Texas Stream Team Core Water Quality Citizen Scientist Manual \(August 2020\)](#)

[2023 Texas Stream Team Core Water Quality Citizen Scientist Manual \(May 2023\)](#)

[E. coli Bacteria Water Quality Citizen Scientist Manual \(coming soon\)](#)

[Texas Stream Advanced Water Quality Citizen Scientist Manual \(April 2019\)](#)

[Texas Stream Team Riparian Evaluation Citizen Scientist Manual \(January 2022\)](#)

[Texas Stream Team Macroinvertebrate Bioassessment Citizen Scientist Manual \(coming soon\)](#)

Field Guides

~~[Standard Core Field Guide](#)~~

[Standard Core Field Guide](#)

~~[Standard Core Salinity Field Guide](#)~~

[Standard Core Salinity Field Guide](#)

[Probe Core Field Guide](#)

[E. coli Bacteria Field Guide](#)

[Advanced Field Guide – Nitrate-Nitrogen & Turbidity](#)

[Advanced Field Guide – Orthophosphate](#)

[Advanced Field Guide – Streamflow Estimate](#)

[Macroinvertebrate Bioassessment Field Guide \(coming soon\)](#)

Distribution: QAPP Amendments will be distributed to all personnel on the original QAPP by the contractor Project Manager. Records of distribution will be maintained by the Texas State University (TXST), the Texas Stream Program (TST), and documentation of distribution must be available upon request in the event of an audit.

Adherence Letters: The TXST TST will secure written documentation from additional project participants stating the organization's awareness of and commitment to requirements contained in this QAPP amendment if applicable. The TXST TST will maintain this documentation as part of the project's quality assurance records. This documentation will be available for review in the event of an audit. Copies of this documentation will also be submitted as deliverables to the TCEQ NPS Project Manager within 30 days of final TCEQ approval of the QAPP Amendment.

Approval: The changes are effective upon final approval of the amendment. These changes will be incorporated into the full QAPP document during the annual review certification on the QAPP anniversary date. The TCEQ and TXST TST acknowledge and accept these changes by approval through e-mail.

QAPP Amendment # 2

From: Jason Natho <Jason.Natho@tceq.texas.gov>
Sent: Wednesday, September 20, 2023 1:30 PM
To: Marcella Lanzillotti <Marcella.Lanzillotti@tceq.texas.gov>
Cc: Jody Koehler <Jody.Koehler@tceq.texas.gov>; Heather Robinson <Heather.Robinson@tceq.texas.gov>
Subject: RE: Amendment #2 to Texas Stream Team Monitoring QAPP R1 (Expedited)

Good afternoon Marcella,

The subject amendment is approved effective today, September 20, 2023. Please cc Jody and I when you send to EPA.

Thank you,

Jason Natho
NPS Lead Quality Assurance Specialist
Quality Assurance Team
Laboratory and Quality Assurance Section

From: Marcella Lanzillotti <Marcella.Lanzillotti@tceq.texas.gov>
Sent: Wednesday, September 20, 2023 1:09 PM
To: Jason Natho <Jason.Natho@tceq.texas.gov>
Cc: Jody Koehler <Jody.Koehler@tceq.texas.gov>; Heather Robinson <Heather.Robinson@tceq.texas.gov>
Subject: Amendment #2 to Texas Stream Team Monitoring QAPP R1 (Expedited)

Good afternoon Jason,

Please see below for an Expedited Amendment 2 to the Texas Stream Team Program Surface Water Quality Monitoring QAPP R1.

Thank you,
Marcella

--

Marcella Lanzillotti (she/her)
Project Manager, Nonpoint Source Program
Texas Commission on Environmental Quality
marcella.lanzillotti@tceq.texas.gov | (512) 239-1712

Expedited Amendment # 2
to the Texas Stream Team Program Surface Water Quality
Monitoring Project Quality Assurance Project Plan (QAPP)
Revision #1

The Meadows Center for Water and the Environment, Texas
State University
San Marcos, Texas 78666

Funding Source: Nonpoint Source Program CWA §319(h)

Prepared in cooperation with the Texas Commission on
Environmental Quality
and the U.S. Environmental Protection Agency
Federal ID # 99614625, 99614626, **99614628**
QTRAK #23-057

Effective Date: Upon date of final approval of the amendment

Questions concerning this QAPP should be directed to:

Aspen Navarro
Project Manager
The Meadows Center for Water and the Environment, Texas State University
601 University Drive, San Marcos, Texas 78666
(512) 245-7376
aspennavarro@txst.edu

Justification: This QAPP amendment will add the new contract (24-50135) Scope of Work to the activities covered under the QAPP, reflect TCEQ organizational changes, and update hyperlinks for Texas Stream Team Manuals.

Summary of Changes:

Section	QAPP Page #	Change	Justification
Cover Page	1	Added Federal ID number 99614628 (see above).	This is an update to add the new contract to the QAPP.
A1	2	Heather Robinson replaces Samantha Litchke as the NPS QA Coordinator.	Heather Robinson is the current NPS QA Coordinator.
A4	9	Heather Robinson replaces Samantha Litchke as the NPS QA Coordinator.	Heather Robinson is the current NPS QA Coordinator.
Figure A4.1	11	Heather Robinson replaces Samantha Litchke as the NPS QA Coordinator.	Heather Robinson is the current NPS QA Coordinator.
Appendix B	43	Added contract 24-50135 Scope of Work.	This is an update to cover the new contract activities under the QAPP.
Appendix F	61	Added hyperlink and updated reference to the <i>E. coli</i> Bacteria Water Quality Citizen Scientist Manual from “coming soon” to “May 2023.”	To include the new manual.
Appendix F	61	Updated hyperlink and reference to the Texas Stream Advanced Water Quality Citizen Scientist Manual from “April 2019” to “July 2023.”	To reflect manual revision.

Detail of Changes:

A1 Approval Page

By signing this document, signatories acknowledge their respective organizations’ awareness of and adherence to requirements contained in this Quality Assurance Project Plan (QAPP) in accordance with roles and responsibilities as described in Section A4 Project/Task Organization and throughout.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ)

Monitoring Division

Laboratory and Quality Assurance Section

D. Jody Koehler Date
TCEQ Quality Assurance Manager

Jason Natho Date
Lead Nonpoint Source Quality Assurance Specialist

Water Quality Planning Division

Faith Hambleton, Team Leader Date
Nonpoint Source Program

Samantha Litchke, Heather Robinson Nonpoint Source Quality Assurance
Coordinator Date
Nonpoint Source Program

Marcella Lanzillotti, Nonpoint Source Project Manager Date
Nonpoint Source Program

Texas State University (TXST), Texas Stream Team (TST) Program

Aspen Navarro Date
Project Manager

Sandra Arismendez Date
Quality Assurance Officer

Laura Parchman Date
Data Manager

A4 Project/Task Organization

TCEQ

Monitoring Division

Jason Natho, Lead Nonpoint Source Quality Assurance Specialist

Assists the TCEQ Nonpoint Source Project Manager in quality assurance related issues. Participates in the planning, development, approval, implementation, and maintenance of the QAPP. Determines conformance with program quality system requirements. Coordinates or performs audits as necessary and using a wide variety of assessment guidelines and tools. Concurs with proposed corrective actions and verifications. Provides technical expertise and/or consultation on quality services. Recommends to TCEQ management that work be stopped to safeguard project and programmatic objectives, worker safety, public health, or environmental protection.

Water Quality Planning Division

Faith Hambleton, Team Leader

Nonpoint Source Program

Responsible for management and oversight of the TCEQ Nonpoint Source Program. Oversees the development of quality assurance guidance for the Nonpoint Source program to be sure it is within pertinent frameworks of the TCEQ. Monitors the effectiveness of the program quality system. Reviews and approves all Nonpoint Source projects, internal quality assurance audits, program corrective actions, work plans, and contracts. Enforces program corrective action, as required. Ensures Nonpoint Source personnel are fully trained and adequately staffed.

Marcella Lanzillotti

TCEQ Nonpoint Source Project Manager

Maintains a thorough knowledge of work activities, commitments, deliverables, and time frames associated with projects. Develops lines of communication and working relationships between the contractor, the TCEQ, and the U.S. Environmental Protection Agency. Tracks deliverables to ensure that tasks are completed as specified in the contract. Responsible for ensuring that the project deliverables are submitted on time and are of acceptable quality and quantity to achieve project objectives. Serves on planning team for Nonpoint Source Program projects. Provides contractor with most recent version of QAPP shell document. Participates in the development, approval, implementation, and maintenance of the QAPP. Conducts independent technical review of the QAPP to ensure compliance with project needs/requirements. Responsible for verifying that the approved QAPP is implemented by the contractor. Notifies the Lead Nonpoint Source Quality Assurance Specialist and Nonpoint Source Data Manager of circumstances which adversely affect the quality of data derived from the collection and analysis of samples. Monitors and enforces corrective action.

Samantha Litchke Heather Robinson

Nonpoint Source Quality Assurance Coordinator

Assists Lead Nonpoint Source Quality Assurance Specialist with Nonpoint Source Quality Assurance management. Serves as liaison between Nonpoint Source Program management and TCEQ Quality Assurance management. Responsible for Nonpoint Source guidance development related to program QA. Assists with development and maintenance of data management-related standard operating procedures for Nonpoint Source data management. Participates in the development, approval, implementation, and maintenance of the QAPP. Provides input and oversight regarding corrective actions. Maintains record of corrective actions.

Texas State University
TST

Aspen Navarro

TST Project Manager

Responsible for ensuring tasks and other requirements in the contract are executed on time and are of acceptable quality. Monitors and assesses the quality of work. Coordinates attendance at conference calls, training, meetings, and related project activities with the TCEQ. Responsible for verifying the QAPP is followed, and the project is producing data of known and acceptable quality. Ensures adequate training and supervision of all monitoring and data collection activities. Complies with corrective action requirements.

Sandra Arismendez

TST Quality Assurance Officer

Responsible for coordinating development and implementation of the quality assurance program. Responsible for ensuring the most recent version of the Nonpoint Source Program QAPP shell document is acquired from the TCEQ Nonpoint Source Project Manager and used for writing and maintaining the QAPP. 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 quality assurance records. Responsible for coordinating with the TCEQ Nonpoint Source Project Manager to resolve quality assurance issues. Notifies the TST Project Manager and TCEQ Nonpoint Source Project Manager and documents circumstances which may adversely affect the quality of data. Coordinates the research and review of technical quality assurance material and data related to water quality monitoring system design and analytical techniques. Facilitates, conducts, and documents readiness reviews, monitoring and/or technical systems audits.

Laura Parchman

TST Data Manager

Oversees data management for the QAPP. Responsible for validation and verification of all data collected and acquired. Responsible for the acquisition, verification, and transfer of data to the U.S. Environmental Protection Agency's Water Quality Exchange database, the mechanism for data partners to *submit* water monitoring data to U.S. Environmental Protection Agency. Performs data quality assurances prior to transfer of data to Water Quality Exchange. Ensures data are submitted according to QAPP and work plan specifications. Provides the point of contact for the TCEQ Nonpoint Source Project Manager, TST Partners, and participating volunteers to resolve issues related to the data.

TST Partners

Ensure volunteer participants receive the resources and training needed to perform the water quality monitoring and coordinate monitoring activities in accordance with this QAPP. For a complete list of partners, visit the Partner List on the TST's website at

<https://www.meadowscenter.txst.edu/Leadership/TexasStreamTeam/Partners.html>

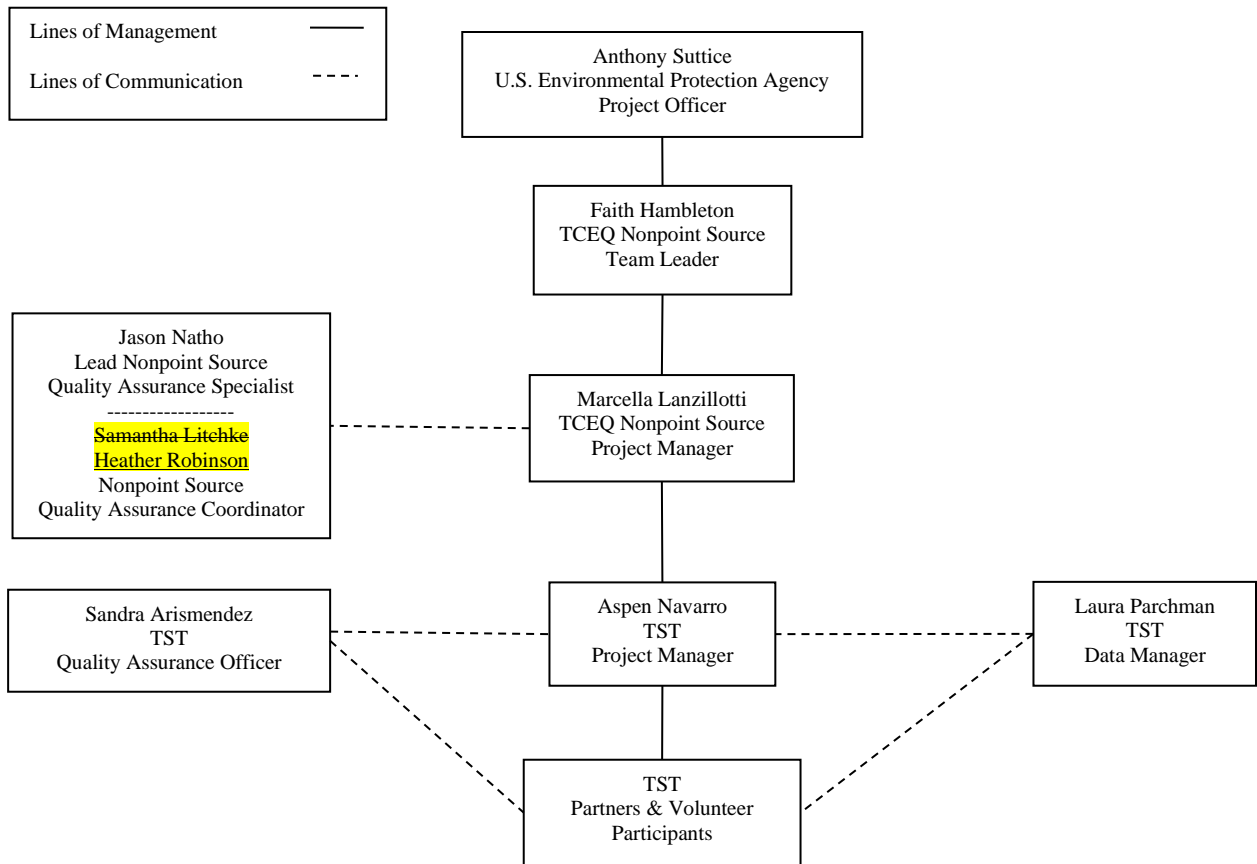
U.S. Environmental Protection Agency Region 6

Anthony Suttice

U.S. Environmental Protection Agency Project Officer

Responsible for managing the Clean Water Act Section 319 funded grant on behalf of U.S. Environmental Protection Agency. Assists the TCEQ in approving projects that are consistent with the management goals designated under the State's Nonpoint Source Management Plan and meet federal guidance. Coordinates the review of project work plans, draft deliverables, and works with the State in making these items approvable. Meets with the State at least annually to evaluate the progress of each project and, when conditions permit, participates in project site visits. Fosters communication within U.S. Environmental Protection Agency by updating management and others, both verbally and in writing, on the progress of the State's program and on other issues as they arise. Assists in grant close-out procedures ensuring all deliverables have been satisfied prior to closing a grant.

Figure A4.1 Organization Chart - Lines of Communication



APPENDIX B. CONTRACT SCOPE OF WORK AND SCHEDULE OF DELIVERABLES

Scope of Work (24-50135)

This project will support the Performing Party's statewide water quality monitoring program by providing supplies and training for volunteer community monitors. Watershed services and nonpoint source pollution education focused on impaired waters will also be provided in watersheds where watershed protection plans (WPPs) are being developed or implemented.

All deliverable dates are calendar days unless otherwise specified.

Task 1: Project Administration

Objective: To effectively administer, coordinate, and monitor all work performed under this project including technical and financial supervision and preparation of status reports.

Subtask 1.1: Project Oversight — The Performing Party will provide technical and fiscal oversight of the staff and/or subgrantee(s)/subcontractor(s) to ensure Tasks and Deliverables are acceptable and completed as scheduled and within budget. Project oversight status will be provided to the TCEQ Project Manager with the quarterly Progress Reports.

Subtask 1.2: Progress Reports (PRs) — The Performing Party will submit PRs to the TCEQ Project Manager by the 15th of the month following the end of each quarter. PRs will include reporting on the status of Deliverables and proposed revisions to due dates, narrative description of progress by Task, and status of nonconformances/corrective actions. The TCEQ Project Manager will provide a PR template to the Performing Party.

Subtask 1.3: Reimbursement Forms (Financial Status Reports) — The Performing Party will submit reimbursement forms in accordance with the Special Terms and Conditions in the Contract.

Subtask 1.4: Contract Communication — The Performing Party will maintain regular telephone and/or email communication with the TCEQ Project Manager regarding the status and progress of the project and any matters that require attention between PRs. The Performing Party will participate in quarterly conference calls with the TCEQ Project Manager to discuss items such as project Tasks, financial status, Quality Assurance Project Plans (QAPPs), corrective actions, and any other matters that require attention. The TCEQ Project Manager may request additional information from the Performing Party prior to the call or meeting. The Performing Party will provide meeting notes and identify action items from the conference calls.

The first conference call held each fiscal year of the project will cover, as applicable, any staff changes, the previous year's performance, budget estimates, invoicing issues, quality assurance issues, corrective actions, and overall project progress.

Matters that must be communicated to the TCEQ Project Manager include, but are not limited to:

- Notification a minimum of 14 days before the Performing Party has scheduled public meetings or events, or other major Task activities.
- Notification within 48 hours following events or circumstances that may require changes to the Budget, Scope of Work, or Deliverable Due Dates.
- Requests for prior approval of activities or expenditures for which the Contract requires advance approval or that are not specifically included in the Scope of Work.

Subtask 1.5: Contractor Evaluation — The Performing Party will participate in an annual Contractor Evaluation at the end of each state fiscal year.

Subtask 1.6: Contractor Workshop and Post Award Meeting — The Performing Party will attend a contractor workshop hosted by TCEQ at the beginning of the project. The Performing Party will attend a post award meeting with the TCEQ Project Manager to discuss details of the project and due dates for deliverables. The Performing Party will provide meeting notes and identify action items from the post award meeting.

Subtask 1.7: Coordination Call with EPA — Upon request by TCEQ and EPA, the Performing Party will participate in a call with EPA to share progress on goals, measures of success, challenges, and draft documents.

Subtask 1.8: Project Article — Upon request by TCEQ, the Performing Party will provide a project article. The article will state the project's purpose, describe the activities of the past fiscal year, and include photographs of the project. The Performing Party will address TCEQ comments on the article and provide a final article.

Subtask 1.9: Contract Budget Updates — The Performing Party will discuss fiscal year budgets with the TCEQ Project Manager on a quarterly basis, at a minimum. These updates, recoded in PRs, will be revised when fiscal year spending projections change, or upon request by the TCEQ Project Manager. In the second year of the project, the Performing Party will provide an Annual Budget Update that details fiscal year spending projections associated with planned project activities. The update in the final year of the project will include a budget for all remaining project activities. The TCEQ Project Manager will provide a template for the Annual Budget Update.

Deliverables:

- 1.2 PRs (quarterly)
- 1.3 Reimbursement forms (see Special Terms and Conditions in the Contract)
- 1.4 Quarterly conference call meeting notes and action items (within five business days of the call)
- 1.5 Documentation of the Performing Party's participation in the Contractor Evaluation (annually, within five business days following request)
- 1.6 List of Performing Party attendees and date of contractor workshop (in PR)

- 1.6 Post award meeting notes and action items (within five business days of the meeting)
- 1.7 Coordination call with EPA (upon request)
- 1.8 Project Article and photographs (upon request)
- 1.9 Annual Budget Update (within two weeks following request)

Task 2: Quality Assurance

Objective: To refine, document, and implement data quality objectives (DOOs) and quality assurance/quality control (QA/QC) activities that ensure data of known and acceptable quality are generated by this project.

Subtask 2.1: OAPP Planning Meetings — The Performing Party will schedule a OAPP planning meeting with the TCEO Project Manager within 30 days of Contract execution, to implement a systematic planning process based on the elements in the applicable OAPP Shell, which will be provided by the TCEO Project Manager. The information developed during this meeting will be incorporated into a OAPP by the Performing Party.

Subtask 2.2: OAPP — The Performing Party will develop and submit to TCEO a OAPP with project-specific DOOs and other components consistent with the following documents:

[TCEO NPS OAPP Shell\(s\)](#)
[EPA Requirements for OAPPs \(QA/R5\)](#)
[EPA Guidance for Geospatial Data OAPPs \(QA/G-5G\)](#)
[EPA OAPP Requirements for Secondary Data Research Projects TCEO Surface Water Quality Monitoring \(SWQM\) Procedures](#)

The Performing Party will develop the OAPP in consultation with the TCEO Project Manager, QA staff, and contractors. The Performing Party will address comments and submit a final OAPP for review. The OAPP must be signed/fully approved by TCEO before any environmental data operations begin.

Subtask 2.3: OAPP Annual Reviews, Revisions, and Updates — The Performing Party will submit documentation certifying its annual review or supporting the revision or reissuance of the OAPP at least 90 days prior to the OAPP anniversary date. Amendments approved since the initial OAPP approval, or a subsequent certified annual review (if applicable) or revision must be submitted along with the certification. For multi-year OAPPs, if extensive changes to a OAPP are necessary, a full revision/update is required. No work described in a OAPP will be conducted outside the effective period of the OAPP.

Subtask 2.4: Amendments — The Performing Party will submit Draft OAPP Amendments for TCEO review when changes to OAPPs are necessary. Draft OAPP Amendments should be submitted at least 90 days prior to the scheduled initiation of changes and must be accompanied by a justification, summary of changes, and detail of changes. The Performing Party will submit Final OAPP Amendments within 30 days of receipt of any comments provided by TCEO. Final OAPP Amendments will

be submitted to TCEO with the Performing Party's signatures and responses to comments and circulated for appropriate TCEO signatures. QAPP Amendments must be approved by TCEO before any changes conveyed within Amendments are implemented.

Subtask 2.5: Corrective Action Plans (CAPs) — The Performing Party will provide CAPs, as needed, to document deviations from the approved QAPP, including, but not limited to sampling method requirements or sample design, failures associated with chain-of-custody procedures, or failures associated with field and laboratory measurement systems. Draft CAPs will be submitted to TCEO for review by TCEO's designated due date. The Performing Party will address TCEO's comments. The Performing Party will submit final CAPs to TCEO by the designated due date.

Deliverables:

- 2.1 QAPP Planning Meeting and notes (meeting within 30 days of Contract execution, notes within five business days following meeting)
- 2.2 Draft QAPP (120 days prior to the scheduled initiation of environmental data operations)
- 2.2 Final QAPP (30 days prior to the scheduled initiation of environmental data operations)
- 2.3 QAPP Annual Reviews and Revisions (at least 90 days prior to the QAPP approval anniversary)
- 2.4 Draft QAPP Amendments (at least 90 days prior to the scheduled initiation of changes or additions to activities listed in the current QAPP)
- 2.4 Final QAPP Amendments (at least 30 days prior to the scheduled initiation of changes or additions to activities listed in the current QAPP)
- 2.5 Draft CAPs (as needed, within 14 business days after receiving request)
- 2.5 Final CAPs (within 14 business days of receiving comments)

Task 3: Water Quality Data Reporting and Dataviewer Management

Objective: To maintain and update the Database and Dataviewer, and to generate reports. All submitted data collected under the QAPP are entered into the Dataviewer.

Subtask 3.1: Data Submittals — The Performing Party will enter all data collected under the QAPP into their Database within 90 days of data submission by community scientists. Data from the Dataviewer will be transferred to an online publicly accessible Datamap within 60 days of data submission by community scientists. The Performing Party will submit quarterly Data Activity Reports to the TCEO Project Manager that will communicate the number of community scientists trained, number of community scientists monitoring, and number of monitoring events. The Performing Party will also submit data to EPA Water Quality Exchange (WOX) semi-annually. The Performing Party will email the TCEO Project Manager a confirmation of each data submittal to WOX.

Subtask 3.2: Data Summary Reports — The Performing Party will compile and distribute selected community science Data Summary Reports on a quarterly basis. The reports will contain the data collected under the QAPP for sites/segments/basins agreed upon by the Performing Party, TCEO, community

scientist stakeholders, partners, and Clean Rivers Planning agencies. The Data Summary Reports will also contain maps that illustrate the community scientist water quality data collected for each respective watershed. The Performing Party will submit Draft Data Summary Reports and presentations to the TCEQ Project Manager for review and approval at least two weeks prior to the scheduled public release.

Subtask 3.3: Water Quality Monitoring Optical Brightener Technique Study — The Performing Party will conduct a study to evaluate water quality testing methods and tools targeting optical brighteners from human sources of sewage wastewater for cost effectiveness and efficiency. The Performing Party will submit a report summarizing the results of the water quality monitoring optical brightener study.

Deliverables:

- 3.1 Data Activity Reports (quarterly, with PRs)
- 3.1 Data Submittals to EPA (twice per year, documented in PRs and proof of submission emailed to TCEQ Project Manager)
- 3.2 Draft Data Summary Reports with watershed maps (quarterly, at least two weeks prior to the scheduled public release)
- 3.2 Final Data Summary Reports and watershed maps with response to comments (quarterly, with PRs)
- 3.3 Draft Water Quality Monitoring Optical Brightener Technique Study Report (quarter 5, with PR)
- 3.3 Final Water Quality Monitoring Optical Brightener Technique Study Report (quarter 7, month 1)

Task 4: Community Science Activities

Objective: To engage, manage, expand, and strengthen a minimum of 400 statewide water quality community scientists and associated partner networks in activities related to water quality. The Performing Party will provide water quality monitoring training to support existing and new groups performing volunteer monitoring.

Subtask 4.1: Support Existing and New Community Scientists —The Performing Party will engage a minimum of 400 community scientists annually in activities related to water quality. The Performing Party will maintain a limited supply of kits and replacement reagents to equip community scientists who do not currently have partner support or where partner funding is unavailable.

Subtask 4.2: Establish New Partnerships and Groups — The Performing Party will create at least three new partnerships and three new community science groups per year to recruit community scientists in areas developing and implementing WPPs, along with other areas in the state.

Subtask 4.3: Annual Trainer Meeting — The Performing Party will hold one Statewide Trainer Meeting per year with the primary objective of gathering input and feedback toward the Performing Party's advancement of program objectives, OAPP/protocol updates, and improvement of volunteer and support efforts. The Performing Party will submit the agenda to the TCEQ Project Manager for review and approval at least two weeks prior to the meeting.

Subtask 4.4: Core Community Scientist Water Quality Monitoring Trainings — The Performing Party will support water quality monitoring trainings which cover core parameters (dissolved oxygen, pH, conductivity, salinity, Secchi disk, transparency tube, field observations/comments) and methods addressed in the latest TCEQ-approved OAPP. Training will emphasize watershed awareness through discussion and demonstration of the relationship between monitoring tests and field observations to corresponding nonpoint source pollution issues. The Performing Party's staff or certified trainers will conduct at least eight Core Trainings per year.

Subtask 4.5: Advanced and *E. coli* Bacteria Community Scientist Water Quality Monitoring Trainings — The Performing Party will support water quality monitoring trainings which cover the nonpoint source pollution suite (*E. coli* bacteria, nitrates, orthophosphates, flow, turbidity) parameters and methods addressed in the latest TCEQ-approved OAPP. Training will emphasize watershed awareness through discussion and demonstration of the relationship between monitoring tests and field observations to corresponding nonpoint source pollution issues. The Performing Party's staff or certified trainers will conduct at least four Advanced or *E. coli* Bacteria Trainings per year.

Subtask 4.6: Certify Community Scientists as a Trainer — The Performing Party will train and certify community scientists to provide Texas Stream Team Trainings, including watershed and nonpoint source pollution education. The Performing Party's staff or certified trainers will train at least three certified community scientists per year to become Texas Stream Team trainers.

Subtask 4.7: Bioassessment and Riparian Evaluation Program — The Performing Party will develop and support new community scientists and groups/partners in the adoption of Bioassessment and Riparian Evaluation activities. The Performing Party staff or certified trainers will conduct at least one Bioassessment or Riparian Evaluation trainings per year.

Subtask 4.8: Community Science Tasks Report — The Performing Party will produce a Draft and Final Community Scientist Tasks Report that describes project activities completed under this Task. The report will identify and discuss the extent to which goals and purposes have been achieved. The report will emphasize successes, failures, and lessons learned. The Draft Community Scientist Tasks Report will be submitted to the TCEQ Project Manager for review. The Final Community Scientist Tasks Report will address TCEQ comments. If the TCEQ Project Manager determines that the Draft Task Report requires no edits by the Performing Party, the Draft Task Report will also serve as the Final Task Report.

Deliverables:

- 4.1 Documentation of progress toward the goal of engaging 400 community scientists per year (quarterly, with PRs)
- 4.2 Documentation of new community scientist groups and new partnerships established, minimum of three new groups and three new partnerships per year (quarterly, with PRs)
- 4.3 Draft Annual Statewide Trainer Meeting agenda (annually, at least two weeks prior to Annual Trainer Meeting)

- 4.3 Documentation of Annual Statewide Trainer Meeting, minimum of two (quarters 3 and 7, with PRs)
- 4.4 Documentation of core community scientist water quality monitoring trainings, minimum of eight per year (quarterly, with PRs)
- 4.5 Documentation of Advanced or *E. coli* bacteria community scientist water quality monitoring trainings, minimum of four per year (quarterly, with PRs)
- 4.6 Documentation of trainer certifications, minimum of three per year (quarters 3 and 7, with PRs)
- 4.7 Documentation of trainings for Bioassessment/Riparian program, minimum of one per year (quarters 3 and 7, with PRs)
- 4.8 Draft Community Science Tasks Report (quarter 8, month 1)
- 4.8 Final Community Science Tasks Report (within 15 business days of receiving comments)

Task 5: Watershed Services

Objective: To offer and provide services that contribute to the successful implementation of accepted WPPs across Texas. The Performing Party will achieve this by working with Watershed Coordinators to engage stakeholders in watersheds approved by the TCEO Project Manager and assess the alignment of watershed/WPP needs with capabilities of the Performing Party.

Subtask 5.1: Outreach to Watershed Coordinators — The Performing Party will correspond with a minimum of eight Watershed Coordinators or project leads per year and offer services to support implementation of WPPs. Services may include:

- Providing information regarding matching/in-kind funds.
- Assisting with water quality and data collection.
- Assisting with analyses of monitoring data.
- Providing community science programming and curricula.

Subtask 5.2: Watershed Services Task Report — The Performing Party will provide a Draft and Final Watershed Services Task Report summarizing all activities covered by this Task. The Draft Watershed Services Task Report will be submitted to the TCEO Project Manager for review. The Final Watershed Services Task Report will address TCEO comments. If the TCEO Project Manager determines that the Draft Task Report requires no edits by the Performing Party, the Draft Task Report will also serve as the Final Task Report.

Deliverables:

- 5.1 Documentation of correspondence with Watershed Coordinators or project leads, minimum of 8 per year (quarterly, in PRs)
- 5.2 Draft Watershed Services Task Report (quarter 8, month 1)
- 5.2 Final Watershed Services Task Report (within 15 business days of receiving comments)

Task 6: Water Resource Education and Outreach

Objective: To provide watershed education to a minimum of 2,500 people annually on nonpoint source pollution and activities that support water conservation and management.

Subtask 6.1: Texas Stream Team Curriculum, Spring Lake Education Program — The Performing Party will incorporate Texas Stream Team activities into the Meadows Center’s existing Spring Lake education program to reach a targeted portion of the 125,000 annual expected visitors.

The Performing Party will use the Spring Lake education program to:

- Promote/hold one teacher workshop per year.
- Conduct four Enviroscape watershed model demonstrations or watershed activities per year.
- Provide four water quality monitoring certifications for all grade levels per year.

Subtask 6.2: Newsletters — The Performing Party will produce and distribute four online newsletters to community scientists, partners, and other interested parties per year. Information in the newsletters will target new potential partners and users of the Performing Party’s data and services. Draft newsletters will be submitted to the TCEQ Project Manager for review and approval at least two weeks prior to distribution or release. The final newsletters will address TCEQ comments.

Subtask 6.3: Research Publication Submission — The Performing Party will submit an article regarding the evaluation of the effectiveness of water resource community science to a research journal and will present the findings at a scientific conference(s). The Performing Party will provide the abstract and presentation to the TCEQ Project Manager for review and approval at least 14 days prior to deadlines for submission to scientific conference(s).

Subtask 6.4: Watershed Education and Outreach Task Report — The Performing Party will produce a Draft and Final Watershed Education and Outreach Task Report that describes project activities under this Task and discusses the extent to which goals have been achieved. The report will emphasize successes, failures, and lessons learned. The Draft Watershed Education and Outreach Task Report will be submitted to the TCEQ Project Manager for review. The Final Watershed Education and Outreach Task Report will address TCEQ comments. If the TCEQ Project Manager determines that the Draft Task Report requires no edits by the Performing Party, the Draft Task Report will also serve as the Final Task Report.

Deliverables:

- 6.1 Documentation of teacher workshops, including agenda, sign-in sheets, and presentation materials, minimum of one per year (quarters 4 and 8, with PRs)
- 6.1 Documentation of Enviroscape watershed model demonstrations, minimum of four per year (quarters 4 and 8, with PRs)
- 6.1 Documentation of providing water quality monitoring certifications, minimum of four per year (quarters 4 and 8)

- 6.2 Draft online newsletters, minimum of eight (at least two weeks prior to distribution or release)
- 6.2 Final online newsletters, minimum of eight (quarterly, with PRs)
- 6.3 Draft research publication (quarter 7, month 2)
- 6.3 Documentation of research publication submission (quarter 8, month 1)
- 6.3 Draft abstract and presentation for scientific conference(s) (at least 14 business days before submission)
- 6.3 Documentation of presentation at scientific conference(s) (quarter 8, month 1)
- 6.4 Draft Watershed Education and Outreach Task Report (quarter 8, month 1)
- 6.5 Final Watershed Education and Outreach Task Report (within 15 business days of receiving comments)

Task 7: Final Report

Objective: To produce a Final Report that summarizes all activities completed and conclusions reached during the project. The Final Report will discuss the extent to which project goals and purposes have been achieved and information about methods used. The Final Report should emphasize successes, failures, lessons learned. The Final Report should include analyses estimating the project's water quality improvements and/or load reductions, if applicable. The Final Report will summarize all the Task Reports either in the text or as appendices.

Subtask 7.1: Draft Final Report — At least 30 days prior to submitting the Final Report, the Performing Party will provide a Draft Final Report. The comprehensive report should document all Deliverables under this Scope of Work. The Draft Final Report will be structured per the following outline:

- Title
- Table of Contents
- Project Description and Purpose
- Study Area (including maps)
- Summary of all Tasks
- Amount of project funding and amount spent
- Discussion: include deliverables not completed and lessons learned
- Water quality results achieved and estimated load reductions (if applicable to project)
- Appendices (if needed)

Subtask 7.2: Final Report — The Performing Party will revise the Draft Final Report to address comments provided by the TCEQ Project Manager. At least two weeks before the expiration of the Contract, the Performing Party will submit the Final Report to the TCEQ Project Manager.

Deliverables:

- 7.1 Draft Final Report (quarter 8, month 1)
- 7.2 Final Report (at least two weeks prior to end of contract)

Scope of Work

This project will support the Performing Party's statewide water quality monitoring program by providing supplies and training for volunteer citizen monitors. Watershed

services and nonpoint source pollution education focused on impaired waters will also be provided in watersheds where Watershed Protection Plans (WPPs) are being developed or implemented.

Task 1: Project Administration

Objective: To effectively administer, coordinate, and monitor all work performed under this project including technical and financial supervision and preparation of status reports.

Subtask 1.1: Project Oversight — The Performing Party will provide technical and fiscal oversight of the staff and/or subgrantee(s)/subcontractor(s) to ensure Tasks and Deliverables are acceptable and completed as scheduled and within budget. With the TCEQ Project Manager's authorization, the Performing Party may secure the services of subgrantees(s)/subcontractors(s). Project oversight status will be provided to the TCEQ Project Manager with the quarterly Progress Reports (PRs).

Subtask 1.2: Progress Reports (PRs) — The Performing Party will submit PRs to the TCEQ Project Manager by the 15th of the month following each state fiscal quarter (Sept - Nov, Dec - Feb, March - May, June - August). PRs will include reporting on the status of Deliverables and proposed revisions to due dates, narrative description of progress by Task, and status of nonconformances/corrective actions. The TCEQ Project Manager will provide a template for the PR to the Performing Party.

Subtask 1.3: Reimbursement Forms (Financial Status Reports) — The Performing Party will submit Reimbursement Forms in accordance with the Special Terms and Conditions.

Subtask 1.4: Contract Communication — The Performing Party will participate in a call/meeting with TCEQ to discuss project scope and contract requirements within 30 days of Contract execution. The Performing Party will maintain regular telephone and/or e-mail communication with the TCEQ Project Manager regarding the status and progress of the project and any matters that require attention between PRs. Communications will include a quarterly conference call to discuss items such as project Tasks, financial status, Quality Assurance Project Plans (QAPPs), corrective actions, and any other matters that require attention. The TCEQ Project Manager may request additional information from the Performing Party prior to the call or meeting. The Performing Party will provide meeting notes, identifying action items, for the telephone calls within five days of the call.

The first conference call held each fiscal year of the project will cover, as applicable, any staff changes, the previous year's performance, budget estimates, invoicing issues, quality assurance issues, and overall project progress.

Matters that will be communicated to the TCEQ Project Manager include, but are not limited to:

- Notification a minimum of 14 days before the Performing Party has scheduled public meetings or events, initiation of construction, or other major Task activities.

- Notification within 48 hours following events or circumstances that may require changes to the Budget, Scope of Work, or Schedule of Deliverables.
- Requests for prior approval of activities or expenditures for which the Contract requires advance approval or that are not specifically included in the Scope of Work

Subtask 1.5: Contractor Evaluation — The Performing Party will participate in an annual Contractor Evaluation at the end of each state fiscal year.

Subtask 1.6: Coordination Call with EPA — Upon request by TCEQ and EPA, the Performing Party will participate in a call with EPA to share progress on goals, measures of success, challenges, and draft documents.

Subtask 1.7: Project Article — The Performing Party, upon request by TCEQ, will provide a project article. The article will state the project's purpose, describe the activities of the past fiscal year, and include photographs of the project.

Subtask 1.8: Contract Budget Updates — The Performing Party will discuss annual fiscal year budgets with the TCEQ Project Manager on a quarterly basis at a minimum. Starting in the second year of the project, the Performing Party will provide an Annual Budget Update that details state fiscal year spending projections associated with planned project activities. These updates will be revised when fiscal year spending projections change by ten percent or more, or upon request by the TCEQ Project Manager. The update in the final year of the project will include a budget for all remaining project activities. The TCEQ Project Manager will provide a template for the Annual Budget Update.

Deliverables:

- 1.2 PRs (by the 15th of the month following each state fiscal quarter)
- 1.3 Reimbursement forms (see Special Terms and Conditions)
- 1.4 Conference calls with meeting notes and action items (quarterly, notes within five days of meeting)
- 1.5 Contractor Evaluation (annually, upon request by TCEQ)
- 1.6 EPA coordination call (upon request by TCEQ)
- 1.7 Project article and photographs (upon request by TCEQ)
- 1.8 Contract Budget updates (by the 15th of the month following the end of each state fiscal quarter, in PRs)
- 1.8 Annual Budget Updates (within 2 weeks following TCEQ request)

Task 2: Quality Assurance

Objective: To refine, document, and implement data quality objectives (DQOs) and quality assurance/quality control (QA/QC) activities that ensure data of known and acceptable quality are generated by this project.

Subtask 2.1: QAPP Planning Meetings — The Performing Party will schedule a QAPP planning meeting with the TCEQ Project Manager, QA staff, technical staff, and contractors within 30 days of Contract execution, to implement a systematic planning process based on the elements in the applicable QAPP Shell. A QAPP shell/examples will be provided by the TCEQ Project Manager. The information developed during this

meeting will be incorporated into a QAPP by the Performing Party. The Performing Party may conduct additional meetings to determine whether changes to an existing QAPP are needed.

Subtask 2.2: Monitoring QAPP — The Performing Party will develop and submit to TCEQ a QAPP with project-specific DQOs and other components consistent with the following documents:

- TCEQ NPS QAPP Shell(s)
- EPA Requirements for QAPPs (QA/R5)
- EPA Guidance for Geospatial Data QAPPs (QA/G-5G)
- EPA QAPP Requirements for Secondary Data Research Projects
- TCEQ Surface Water Quality Monitoring (SWQM) Procedures

The Performing Party will develop the QAPP in consultation with the TCEQ Project Manager, QA staff, and contractors. The Performing Party will address comments and submit a final QAPP for review. The QAPP must be signed/fully approved by TCEQ and, if necessary, EPA, before any environmental data operations begin.

Subtask 2.3: QAPP Annual Reviews, Revisions, and Updates — The Performing Party will submit documentation certifying its annual review or supporting the revision or reissuance of the QAPP at least 90 days prior to the QAPP anniversary or expiration date. Amendments approved since the initial QAPP approval or a subsequent certified annual review (if applicable) or revision must be submitted along with the certification. For multi-year QAPPs, if extensive changes are necessary, a full revision/update is required. No work described in a QAPP will be conducted outside the effective period for the QAPP.

Subtask 2.4: QAPP Amendments — The Performing Party will submit Draft QAPP Amendments for TCEQ review when changes to the QAPP are necessary. Draft QAPP Amendments should be submitted at least 90 days prior to the scheduled initiation of changes and must be accompanied by a justification, summary of changes, and detail of changes. The Performing Party will submit Final QAPP Amendments within 30 days of receipt of any comments provided by TCEQ. Final QAPP Amendments will be submitted to TCEQ with the Performing Party's signatures and responses to comments and circulated for appropriate TCEQ signatures. The QAPP Amendments must be signed/fully approved by TCEQ and, if necessary, EPA, before any changes conveyed within Amendments are implemented.

Subtask 2.5: Corrective Action Reports — The Performing Party will provide corrective action reports (CARs), as needed, to document deviations from sampling method requirements or sample design, failures associated with chain-of-custody procedures or in field and laboratory measurement systems. The Performing Party will submit CARs with PRs.

Deliverables:

- 2.1 QAPP Planning Meeting notes (within 30 days of Contract execution)
- 2.2 Draft QAPP (120 days prior to the scheduled initiation of environmental data operations)

- 2.2 Final QAPP (30 days prior to the scheduled initiation of environmental data operations)
- 2.3 QAPP Annual Reviews and Revisions (at least 90 days prior to the QAPP approval anniversary)
- 2.4 Draft QAPP Amendments (at least 90 days prior to the scheduled initiation of changes or additions to activities listed in the current QAPP)
- 2.4 Final QAPP Amendments (within 30 days of receipt of TCEQ comments)
- 2.5 CARs (as needed, with PRs, until the issue is resolved)

Task 3: Water Quality Data Reporting and Dataviewer Management

Objective: To maintain and update the Database and Dataviewer, and to generate reports. All submitted data collected under the QAPP are entered into the Performing Party's online Dataviewer.

Subtask 3.1: Data Submittals — The Performing Party will enter all data collected under the QAPP into the Dataviewer within 60 days of data submission by citizen scientists. The Performing Party will submit quarterly Data Activity Reports that will communicate the number of citizen scientists trained, number of citizen scientists monitoring, and number of monitoring events. The Performing Party will also submit data to EPA Water Quality Exchange (WOX) semi-annually. The Performing Party will e-mail the TCEQ Project Manager a confirmation of each data submittal to WOX.

Subtask 3.2: Data Summary Reports — The Performing Party will compile and distribute selected citizen science Data Summary Reports. The reports will use the data collected under the QAPP for sites/segments/basins agreed upon by the Performing Party, TCEQ, citizen scientist stakeholders, partners, and Clean Rivers Planning agencies. The Data Summary Reports will also contain maps that illustrate the citizen scientist water quality data collected for each respective watershed. The Performing Party will submit Draft Data Summary Reports and presentations to the TCEQ Project Manager for review and approval at least two weeks prior to the scheduled public release.

Subtask 3.3: Water Quality Online Database and Mapping Technique Study — The Performing Party will conduct a study to evaluate online database options currently on the market for efficiency and cost effectiveness and survey other successful citizen science programs across the United States. The Performing Party will submit a report summarizing the results of the water quality online database and mapping technique study.

Deliverables:

- 3.1 Data Activity Reports (quarterly, with PRs)
- 3.1 Data Submittals to EPA (twice per year, in PRs and proof of submission emailed to TCEQ Project Manager)
- 3.2 Draft Data Summary Reports with watershed maps (quarterly, with PRs)
- 3.2 Final Data Summary Reports and watershed maps with response to TCEQ comments (at least two weeks prior to the scheduled public release)
- 3.3 Draft Water Quality Online Database Technique Study Report (quarter 8, month 1)

- 3.3 Final Water Quality Online Database Technique Study Report (within 30 days after receipt of TCEQ comments)

Task 4: Citizen Science Activities

Objective: To engage, manage, expand, and strengthen a minimum of 400 statewide water quality citizen scientists and associated partner networks annually in activities related to water quality. The Performing Party will provide water quality monitoring training to support existing and new groups performing volunteer monitoring.

Subtask 4.1: Support Existing and New Citizen Scientists — The Performing Party will maintain a stock of water quality monitoring kits and supplies for use by the Performing Party staff for special monitoring events, trainings, and quality control sessions. The Performing Party will engage a minimum of 400 citizen scientists annually in activities related to water quality. The Performing Party will maintain a limited supply of kits and replacement reagents to equip citizen scientists who do not currently have partner support or where partner funding is unavailable.

Subtask 4.2: Establish New Partnerships and Groups — The Performing Party will create at least three new partnerships and three new citizen science groups per year to recruit citizen scientists in geographic areas approved by the TCEQ Project Manager.

Subtask 4.3: Annual Trainer Meeting — The Performing Party will hold one Statewide Trainer Meeting per year with the primary objective of gathering input and feedback toward the Performing Party's advancement of program objectives, QAPP/protocol updates, and improvement of volunteer and support efforts. The Performing Party will submit the agenda to the TCEQ Project Manager for review and approval at least two weeks prior to the meeting.

Subtask 4.4: Core Citizen Scientist Water Quality Monitoring Trainings — The Performing Party will support water quality monitoring trainings which cover core parameters (dissolved oxygen, pH, conductivity, salinity, Secchi disk, transparency tube, field observations/comments) and methods addressed in the latest TCEQ-approved QAPP. Training will emphasize watershed awareness through discussion and demonstration of the relationship between monitoring tests and field observations to corresponding nonpoint source pollution issues. The Performing Party's staff or certified trainers will conduct at least seven Core Trainings per year.

Subtask 4.5: Advanced and *E. coli* Bacteria Citizen Scientist Water Quality Monitoring Trainings — The Performing Party will support water quality monitoring trainings which cover the nonpoint source pollution suite (*E. coli* Bacteria and/or nitrates, orthophosphates, flow, turbidity) parameters and methods addressed in the latest TCEQ-approved QAPP. Training will emphasize watershed awareness through discussion and demonstration of the relationship between monitoring tests and field observations to corresponding nonpoint source pollution issues. The Performing Party's staff or certified trainers will conduct at least three Advanced or *E. coli* Bacteria Trainings per year.

Subtask 4.6: Certify Citizen Scientists as a Trainer — The Performing Party will train and certify citizen scientists to provide Texas Stream Team (TST) trainings, including watershed and nonpoint source pollution education. The Performing Party's staff or certified trainers will train at least three certified citizen scientists per year to become TST trainers.

Subtask 4.7: Bioassessment and Riparian Evaluation Program — The Performing Party will develop and support new citizen scientists and groups/partners in the adoption of Bioassessment and Riparian Evaluation activities. The Performing Party staff or certified trainers will conduct at least four Bioassessment or Riparian Evaluation trainings per year.

Subtask 4.8: Regional Citizen Scientists/Stakeholder Outreach Meetings — The Performing Party will participate in at least two regional citizen scientists/stakeholder meetings per year. These events will directly support citizen scientists, partners, and WPP collaborators and will enhance attendees' water quality knowledge and ability to better understand watershed functions. Topics for the meetings will include priority issues for the WPP areas. Networking and other open sessions will generate discussion between WPP projects.

Subtask 4.9: Citizen Science Tasks Report — The Performing Party will produce a Draft and Final Citizen Scientist Tasks Report that describes project activities completed under this task. The report will identify and discuss the extent to which goals and purposes have been achieved.

The report will emphasize successes, failures, and lessons learned. The Draft Citizen Scientist Tasks Report will be submitted to the TCEQ Project Manager for review. The Final Citizen Scientist Tasks Report will address TCEQ comments.

Deliverables:

- 4.1 Documentation of progress toward the goal of engaging 400 citizen scientists per year (quarterly, in PRs)
- 4.2 Documentation of new citizen scientist groups and new partnerships established (quarterly, with PRs, minimum of 3 new groups and 3 new partnerships per year)
- 4.3 Draft agenda (at least two weeks prior to Trainer Meeting)
- 4.3 Documentation of Annual Statewide Trainer Meeting (by the end of quarters 4 and 8, minimum of 2)
- 4.4 Documentation of core citizen scientist water quality monitoring trainings (quarterly, in PRs, minimum of 7 per year)
- 4.5 Documentation of advanced or *E. coli* bacteria citizen scientist water quality monitoring trainings (quarterly, in PRs, minimum of 3 per year)
- 4.6 Documentation of trainer certifications (by the end of quarters 3 and 7, with PRs, minimum of 3 per year)
- 4.7 Documentation of trainings for Bioassessment/Riparian program (quarterly, in PRs, minimum of 4 per year)
- 4.8 Documentation of regional citizen scientists/stakeholder outreach meetings (quarters 4 and 8, with PRs, minimum of 2 per year)
- 4.9 Draft Citizen Science Tasks Report (quarter 8, month 1)

- 4.9 Final Citizen Science Tasks Report (within 30 days after receipt of TCEQ comments)

Task 5: Watershed Services

Objective: To offer and provide services that contribute to the successful implementation of accepted WPPs across Texas. The Performing Party will achieve this by working with Watershed Coordinators to engage stakeholders in watersheds approved by the TCEQ Project Manager and assess the alignment of watershed/WPP needs with capabilities of the Performing Party.

Subtask 5.1: Outreach to Watershed Coordinators — The Performing Party will correspond with a minimum of eight Watershed Coordinators or project leads per year and offer services to support implementation of WPPs. Services may include:

- Providing information regarding matching/in-kind funds.
- Assisting with water quality and data collection.
- Assisting with analyses of monitoring data.
- Developing citizen science programming and curricula.

Subtask 5.2: Watershed Services Report — The Performing Party will provide a Draft and Final Watershed Services Report summarizing all activities covered by this task. The Draft Watershed Services Report will be submitted to the TCEQ Project Manager for review. The Final Watershed Services Report will address TCEQ comments.

Deliverables:

- 5.1 Documentation of correspondence with Watershed Coordinators or project leads (quarterly, in PRs, minimum of 8 per year)
- 5.2 Draft Watershed Services Report (quarter 8, month 1)
- 5.2 Final Watershed Services Report (within 30 days after receipt of TCEQ comments)

Task 6: Water Resource Education and Outreach

Objective: To provide watershed education to 2,500 people annually on nonpoint source pollution and activities that support water conservation and management.

Subtask 6.1: TST Curriculum, Spring Lake Education Program — The Performing Party will incorporate TST activities into the Meadows Center's existing Spring Lake Education program to reach a targeted portion of the 125,000 annual visitors. The Performing Party will use the Spring Lake program to:

- Promote/hold one teacher workshop per year.
- Conduct four Enviroscope watershed model demonstrations per year.
- Provide four water quality monitoring certifications for all grade levels per year.

Subtask 6.2: TST Resources and Website — The Performing Party will maintain and update their website quarterly. The website includes watershed planning information and resources such as water quality monitoring information, data, maps, metrics, volunteer monitoring activities, WPP development/implementation activities, educational events, and lessons learned.

Subtask 6.3: Newsletters — The Performing Party will produce and distribute four online newsletters to citizen scientists, partners, and other interested parties per year. Information in the newsletters will be targeted toward potential new partners and users of the Performing Party’s data and services. Draft Newsletters will be submitted to the TCEQ Project Manager for review and approval at least two weeks prior to distribution or release. The Final Newsletters will address TCEQ comments.

Subtask 6.4: Education — The Performing Party will incorporate educational activities and/or nonpoint source pollution water quality curriculum into one partner program per year. Examples include water resource-focused school assemblies, water quality monitoring, adoption of interpretive and educational materials/signage, use of the Enviroscape watershed model, watershed demonstrations, nonpoint source pollution reduction/water quality protection activities, games, career days, or learning modules.

Subtask 6.5: Watershed Education and Outreach Task Report — The Performing Party will produce a Draft and Final Watershed Education and Outreach Task Report that describes project activities under this task and identifies and discusses the extent to which goals and purposes have been achieved. The report will emphasize successes, failures, and lessons learned. The Draft Watershed Education and Outreach Task Report will be submitted to the TCEQ Project Manager for review. The Final Watershed Education and Outreach Task Report will address TCEQ comments.

Subtask 6.6: Peer-Reviewed Journal Article — The Performing Party will produce a journal article to evaluate the effectiveness of water resource citizen science and present the findings at one conference.

Deliverables:

- 6.1 Documentation of teacher workshops, including agenda, sign-in sheets, and presentation materials (quarterly, with PRs, minimum of 1 per year)
- 6.1 Documentation of Enviroscape watershed model demonstrations (quarters 4 and 8, with PRs, minimum of 4 per year)
- 6.1 Documentation of providing water quality monitoring certifications (by the end of quarters 4 and 8, minimum of 4 per year)
- 6.2 Documentation of website maintenance and updates (quarterly, with PRs)
- 6.3 Draft online Newsletters (at least two weeks prior to distribution or release)
- 6.3 Final online Newsletters (quarterly, in PRs, minimum of 4 per year)
- 6.4 Documentation of incorporation of program activities/curriculum into partner education programs (by the end of quarters 4 and 8, minimum of 1 existing partner program per year)
- 6.5 Draft Watershed Education and Outreach Task Report (quarter 8, month 1)
- 6.5 Final Watershed Education and Outreach Task Report (within 30 days after receipt of TCEQ comments)
- 6.6 Peer-Reviewed Journal Article (quarter 8, month 1)
- 6.6 Documentation of research presentation at one conference (quarter 8, month 1)

Task 7: Final Report

Objective: To produce a Final Report that summarizes all activities completed and conclusions reached during the project period. The Final Report will discuss the extent to which project goals and purposes have been achieved. The Final Report should emphasize successes, failures, lessons learned, and should include analyses estimating the project's water quality improvements and/or load reductions, if applicable. The Final Report will summarize all the Task Reports either in the text or as appendices.

Subtask 7.1: Draft Final Report — At least 30 days prior to submitting the Final Report, the Performing Party will provide a Draft Final Report. The comprehensive report should document all Deliverables under this Scope of Work. The Draft Final Report should be structured per the following outline:

- Title and Contract Number;
- Table of Contents;
- Project Significance and Background;
- Study Area (maps);
- Summary of all Task Reports and final approved PR;
- Amount of project funding and amount spent;
- Discussion: include deliverables not completed, lessons learned, recommendations for future work; and
- Appendices (if needed).

Subtask 7.2: Final Report — The Performing Party will revise the Draft Final Report to address comments provided by the TCEQ Project Manager. At least two weeks before the expiration of the Contract, the Performing Party will submit the Final Report to the TCEQ Project Manager.

Deliverables:

- 7.1 Draft Final Report (quarter 8, month 1)
- 7.1 Address TCEQ comments (within 10 days of receipt of comments)
- 7.2 Final Report (at least two weeks prior to end of contract)

APPENDIX F. TEXAS STREAM TEAM MANUALS, FIELD GUIDES, TRAINER ENROLLMENT FORM, AND MAINTENANCE GUIDES

Manuals

[2023 Texas Stream Team Core Water Quality Citizen Scientist Manual](#) (May 2023)

~~[E. coli Bacteria Water Quality Citizen Scientist Manual \(coming soon\)](#)~~

~~[E. coli Bacteria Water Quality Citizen Scientist Manual \(May 2023\)](#)~~

~~[Texas Stream Advanced Water Quality Citizen Scientist Manual \(April 2019\)](#)~~

[Texas Stream Advanced Water Quality Citizen Scientist Manual \(July 2023\)](#)

[Texas Stream Team Riparian Evaluation Citizen Scientist Manual](#) (January 2022)

[Texas Stream Team Macroinvertebrate Bioassessment Citizen Scientist Manual \(coming soon\)](#)

Field Guides

[Standard Core Field Guide](#)

[Standard Core Salinity Field Guide](#)

[Probe Core Field Guide](#)

[E. coli Bacteria Field Guide](#)

[Advanced Field Guide – Streamflow & Turbidity](#)

[Advanced Field Guide – Nitrate-Nitrogen & Phosphate](#)

[Macroinvertebrate Bioassessment Field Guide \(coming soon\)](#)

Distribution: QAPP Amendments will be distributed to all personnel on the original QAPP by the Contractor Project Manager. Records of distribution will be maintained by the Texas State University (TXST), the Texas Stream Program (TST), and documentation of distribution must be available upon request in the event of an audit.

Adherence Letters: The TXST TST will secure written documentation from additional project participants stating the organization's awareness of and commitment to requirements contained in this QAPP amendment. The TXST TST will maintain this documentation as part of the project's quality assurance records. This documentation will be available for review in the event of an audit. Copies of this documentation will also be submitted as deliverables to the TCEQ NPS Project Manager within 30 days of final TCEQ approval of the QAPP Amendment.

Approval: The changes are effective upon final approval of the amendment. These changes will be incorporated into the full QAPP document during the annual review certification on the QAPP anniversary date. The TCEQ and TXST TST acknowledge and accept these changes by approval through e-mail.