Texas Stream Team Final Report: Contract #20-10156

NOVEMBER 27, 2019 – NOVEMBER 30, 2020

Report: 2021-11
September 2021

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The Meadows Center
for Water and the Environment
Texas State University

Texas Stream Team

EPA United States Environmental Protection Agency

Texas Commission on Environmental Quality

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The rising STAR of Texas

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Acknowledgments

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The Texas Stream Team encourages life-long learning about the environment and people's relationship to the environment through its multidisciplinary citizen science programs. We also provide hands-on opportunities for Texas State University students and inspire future careers and studies in natural resource related fields. Preparation of final reports serve as contract deliverables for granting entities, but they also serve as valuable educational experiences for the students and staff that prepare the reports. Texas Stream Team values the staff contributions and recognizes each individual for their role. The following staff and student workers assisted in the preparation of this report and are acknowledged for their contributions:

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Report: 2021-02

The Meadows Center
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Texas State University

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I. PROJECT BACKGROUND

Texas Stream Team at The Meadows Center for Water and the Environment (the Meadows Center) is dedicated to facilitating environmental stewardship by empowering a statewide network of concerned stakeholders in a collaborative effort to promote water quality education and nonpoint source pollution reduction. Through water quality monitoring, data collection and analysis, and educational programs, Texas Stream Team and our partner organizations work to expand the public's understanding of how human activity impacts water quality in Texas. Participation in the Texas Stream Team citizen science program influences individuals to adopt activities that positively impact water quality and mitigate the effects of nonpoint source pollution, while also involving them directly in watershed protection plans (WPPs) and citizen science initiatives.

Throughout the past year, Texas Stream Team worked to support and enhance the public outreach objectives and priorities identified under the Texas Commission on Environmental Quality's (TCEQ) federal 319(h) Nonpoint Source Pollution Program, with a special emphasis placed on promoting services to organizations and partners identified as interested in, or actively developing a watershed protection plans (WPP). Increasing Texas Stream Team's services to these stakeholders, as well as working to expand citizen scientist monitoring in these areas, engages communities in the process of watershed stewardship and nonpoint source pollution reduction. Due to the COVID-19 pandemic, efforts shifted to a virtual platform, which reduced on the ground efforts for targeted areas. However, Texas Stream Team was able to continue training and engaging partners. This shift has allowed for Texas Stream Team to save costs on travel while also reaching a diverse group of Texans.

TEXAS STREAM TEAM CITIZEN SCIENCE TRAINING

Texas Stream Team offers several trainings for people to get involved with Texas Stream Team and monitor Texas' valuable natural resources. Currently, Texas Stream Team offers:

- Standard Core Water Quality Citizen Scientist Training – monitors basic parameters such as conductivity, dissolved oxygen, pH, total depth, water and air temperature, field observations, and water transparency using a chemical Standard Core kit.
- Probe Core Water Quality Citizen Scientist Training - monitors basic parameters such as conductivity, dissolved oxygen, pH, total depth, water and air temperature, field observations, and water transparency using digital probe meters.
- *E. coli* Bacteria Water Quality Citizen Scientist Training - involves performing tests for E. coli to assess the potential risk of contact recreation in a water body.
- Advanced Water Quality Citizen Scientist Training – monitors parameters such as nitrate-nitrogen, orthophosphate, turbidity, and streamflow using an Advanced monitoring kit.
- Macroinvertebrate Bioassessment Citizen Scientist Training - assess the health of lakes, rivers, streams, or estuaries based on the aquatic insects that live there.
- Riparian Evaluation Citizen Scientist Training - assess the health of lakes, rivers, streams, or estuaries based on the riparian habitat.

Figure 1: Citizen scientists participating in Texas Stream Team's Standard Core Training in San Marcos on 1/27/19. Photo by Andrew Shirey.

II. STUDY AREA

Texas Stream Team is dedicated to facilitating environmental stewardship by empowering a statewide network of concerned stakeholders in a collaborative effort to promote a healthy and safe environment. For this contract, Texas Stream Team has placed special emphasis on areas with an accepted or developing WPP, where stakeholders are interested in focused monitoring on the parameter of concern in their watershed. These WPPs are highlighted in Figure 2 below. Due to COVID-19, Texas Stream Team held trainings via Zoom and advertised to these specified locations shown in the map below, as well as areas outside the WPPs.

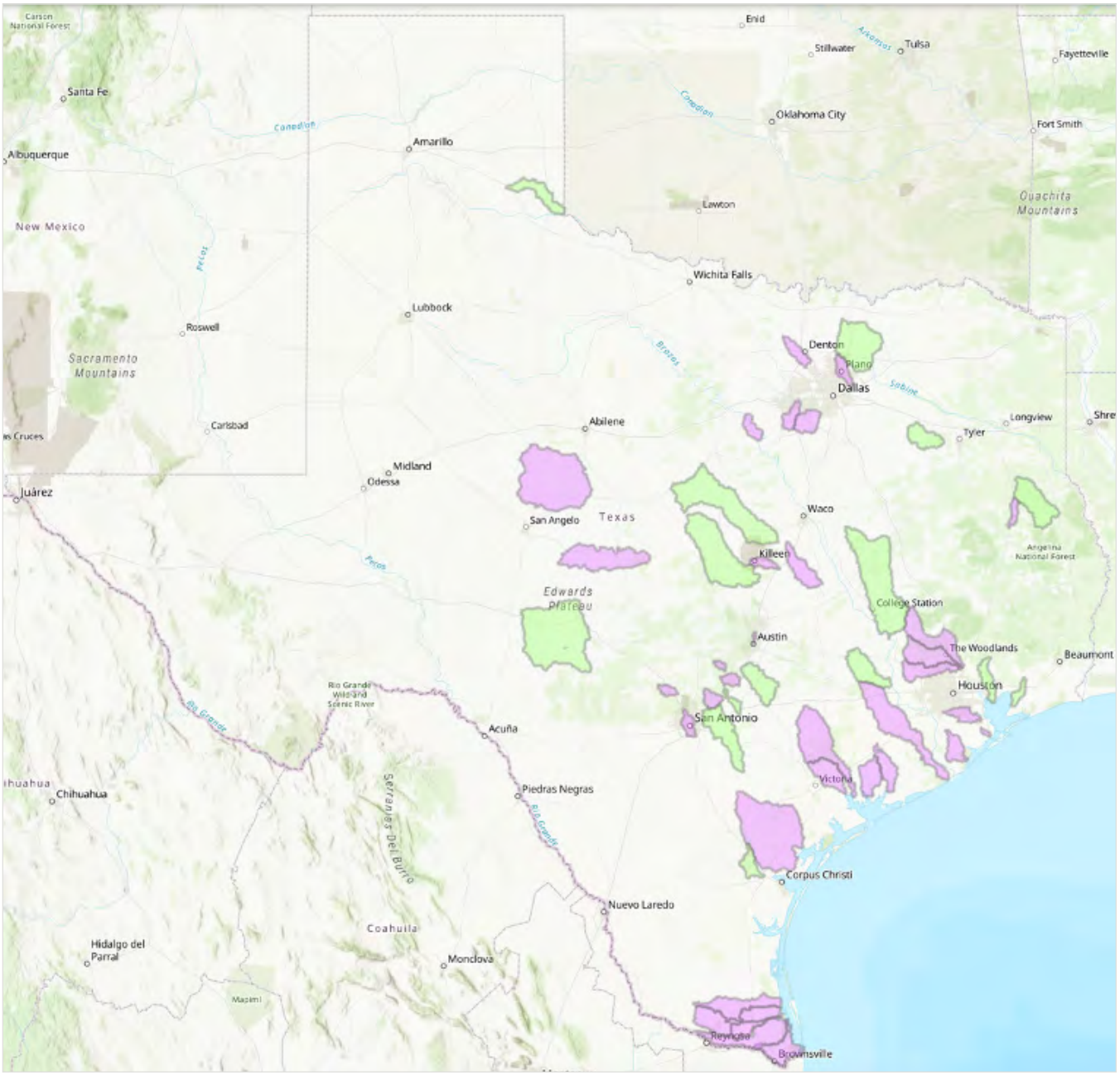

Figure 2: Texas Stream Team TCEQ contract #10156 study area. Map created by the Nonpoint Source Program of TCEQ, November 2020. Access here.

III. SUMMARY OF TASKS

The project's scope of work included four main tasks and subsequent deliverables that fell within each task. The information within this section highlights each specific task, the objective, and the summarized deliverables. The final approved quarterly progress report (QPR) can be found in Appendix I, which provides further detail into each completed deliverable along with the date of submission to TCEQ.

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.

Deliverables:

- QPRs
- Reimbursement Forms
- Post-Award Meeting and Notes
- Conference Call and Notes
- Coordination Meeting with the EPA (upon request)
- Annual Report Article and Pictures (upon request)
- Contract Budget Updates
- Annual Budget Updates

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.

Deliverables

- QAPP Planning Meeting and Notes
- QAPP Annual Reviews and Revisions
- Draft and Final QAPP Amendments

TASK 3: FOCUSED CITIZEN SCIENCE ACTIVITIES IN WATERSHEDS IMPLEMENTING WPPS

Objective

To manage, expand, and strengthen the statewide water quality citizen science and partner network in areas implementing WPPs. The Performing Party will provide parameter of concern-focused water quality monitoring training to support existing and new groups performing volunteer monitoring.

Deliverables

- Documentation of one new citizen scientist group and one new partner

- Documentation of parameter of concern-focused water quality trainings, including agenda, presentation materials, and sign-in sheets (minimum of three)

TASK 4: FINAL REPORT

Objective

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

Deliverables

- Draft Final Report
- Final Report

IV. PROJECT FUNDING

The total amount of funding awarded at the execution of the contract was $8,333 with a total of $5,000 federal dollars for the duration of a one-year period. Project costs for this contract were allocated for supplies and travel for providing trainings in and supplies to citizen scientists in priority areas. The goal of this was to streamline and ensure citizen scientists transition effortlessly to monitoring water quality in their communities once certified.

The total cost share (40%) requirement for this contract totaled to $3,333. Currently, a total of $1,833 in-kind match funds has been reported. Cost share for this contract has been obtained from Texas Stream Team citizen scientist monitoring activities that is calculated using the Independent Sector's estimated national value of each volunteer hour, which is currently $25.43/hour, and the International Revenue Service (IRS) standard mileage rate. In-kind match is also obtained from the San Marcos Lions Club grant and Texas State University's waived indirect costs (IDC), which is calculated using Texas State University's IDC rate, to cover this contract's cost share requirement.

All contract dollars will be spent down by the end of the contract. Table 1 below includes a breakdown of the contract budget.

Table 1: Authorized budgeted expenditures for work performed through Texas Stream Team TCEQ contract #10156.

Budget Category	Total Project Costs
Salary / Wages	$1,479.00
Fringe Benefits	$444.00
Travel	$969.00
Supplies	$1,456.00
Equipment	$0.00
Contractual	$0.00
Construction	$0.00
Other	$0.00
Total Direct Cost	$4,348.00
Indirect Costs	$2,152.00
Other In-kind Contributions	$1,833.00
Total Contract Cost	$8,333.00
Cost Share (40%)	$3,333.00
TCEQ Reimbursement Amount (60%)	**$5,000.00**

V. DISCUSSION

PROJECT ACTIVITIES

For this contract, Texas Stream Team worked initially to increase citizen science in targeted watersheds. However, due to COVID-19, trainings and outreach had to be moved to a virtual platform until in-person trainings were able to continue locally starting in November of 2020. Due to COVID-19, staff had to adjust the focus and delivery of the Texas Stream Team citizen science program into the following strategies: online program organization; expansion of training events and activities into virtual platforms and online modules; improved data management and database structure; increased virtual collaboration with statewide partners; improved training procedures; refinement of online resources made available to citizen scientists; increased communication with citizen scientists and partners across multiple platforms, and more. Due to the limited scope of the contract, our team was able to meet and exceed contract requirements well before the contract end date. The dedicated work of Texas Stream Team staff and citizen scientists contributed to the success of our project goals and expansion of our program activities. Our successes in engaging citizens of Texas in water quality and citizen science has opened the opportunity for future program expansion.

Partnerships

Texas Stream Team continues to develop new partnerships with organizations across the state. These partnerships are focused on collaborations wherein Texas Stream Team water quality monitoring activities and Texas Stream Team educational materials align with partner goals. Partnerships were established with the following organizations during the project period.

City of Irving (Irving)

The City of Irving is a municipal government entity that serves the greater Irving area. Texas Stream Team has established a working relationship with the City of Irving to further develop citizen science efforts in the Dallas-Fort Worth metroplex. The City of Irving has taken on the initiative of coordinating monitoring and educational activities.

City of Carrolton (Carrolton)

The City of Carrolton is a municipal government entity that serves the greater Carrolton area. The City of Carrolton has partnered up with Texas Stream Team as an Educational Partner. The City of Carrolton will utilize Texas Stream Team resources and materials to further expand education efforts made in the Carrolton area.

Monitoring Groups

Friends of the Pecos (Iraan)

The Friends of the Pecos is a nonprofit organization that focuses on promoting public awareness of and protecting the Pecos River located near Iraan, TX. The Friends of the Pecos Monitoring Group was established on March 13th, 2020 and is working on developing a water quality monitoring program to monitor changes in water quality in the Pecos River. Currently, the group consists of two trainers, one of which is a Data Coordinator, and monitors within Iraan ISD. Iraan ISD students can get hands-on experience with water quality monitoring within the class curriculum. Throughout the past year, Texas Stream Team has been working alongside Friends of the Pecos to establish and support monitoring efforts in the area.

City of Fort Worth

The City of Fort Worth is a local government entity that serves the Fort Worth public. The City of Fort Worth had been previously involved with Texas Stream Team, however due to staff turnover, monitoring efforts stagnated for almost two years. With new staff, the City of Fort Worth has taken the initiative to reignite their monitoring program efforts throughout the area. The City of Fort Worth will lead trainings, monitoring efforts, and be the point of contact for citizen scientists in a high demand area.

Citizen Scientist Trainings

9/12 Online Riparian Evaluation Training

A virtual Riparian Evaluation Citizen Scientist (Riparian Evaluation) Training was held on September 12th for the public via ZOOM. The training was led by Aspen Navarro and Sandra Arismendez of Texas Stream Team and had a total trainee attendance of 16.

This Riparian Evaluation Training represented the first training to include a prerequisite segment, which was compiled to reduce the total length of the live training. The prerequisite video was created to be viewed before the trainees joined the live portion of the training. The prerequisite video includes the lecture portion of the training and proved to be hugely successful in cutting down live screen time with trainees, allowing trainees to go at their own pace, while keeping them engaged. Due to the success of this training, Texas Stream Team moved forward with setting up an official module platform to begin converting more trainings to a self-paced prerequisite format. The homepage of the module platform can be seen in Figure 3.

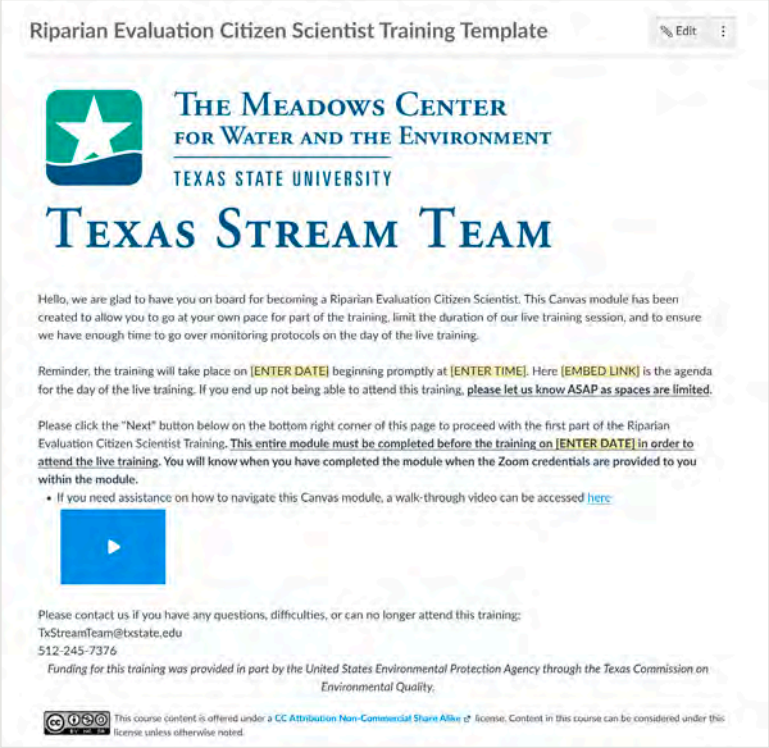

Figure 3: Online Training Module Template

10/21 E. coli Bacteria Training at San Marcos

Texas Stream Team held its first in-person training since the start of the COVID-19 pandemic on October 21st. This training was an *E. coli* Bacteria Water Quality (*E. coli* Bacteria) Training which took place in San Marcos, TX, and was led by Aspen Navarro and Sandra Arismendez. Due to safety concerns, this training was held privately to a small group and was not open to the public. The importance of this private training was to conduct an *E. coli* Bacteria refresher, see if additional safety protocols were needed for public trainings, and to get two citizen scientists on the road to becoming *E. coli* Bacteria trainers for the San Marcos and Lockhart regions.

11/14 E. coli Bacteria Training at New Braunfels

An *E. coli* Bacteria Training was held on November 14th at the Headwaters at the Comal in New Braunfels, TX. Rachel Sanborn, Jason Biemer, and Daniel Vasquez led the training for the public which consisted of group members from Wimberley, New Braunfels, San Antonio, San Marcos, and Lockhart. This training was the first public in-person training since the onset of COVID-19. In compliance with CDC guidelines, the maximum capacity for the training

was capped at 10 individuals, including trainers. Training materials were properly spaced out and organized individually allowing for social distancing and little risk for COVID-19 transmission. A pre-training online module was assigned for this training via Canvas. The online module allowed us to cut the in-person training down to 2.5 hours. All trainees successfully completed the pre-training, and the in-person portion took place without any issues.

CHALLENGES

Throughout the year, Texas Stream Team has had to navigate the COVID-19 pandemic, which severely impacted our trainings, monitoring frequency, monitoring accessibility, and has ceased all education and outreach activities. Texas Stream Team has adapted to the current situation by moving the Riparian Evaluation Training, Phase I of our Standard Core Training, as well as the lecture portion of our E. coli Bacteria Training all to an online platform. An online platform allowed trainings to take place despite the lack of in-person interaction.

Challenges with the online platform included cohesive presentations, the need for engaging material, as well as the need to be able to see how long each trainee spent on the module to ensure the prerequisite material for each training was thoroughly completed. Microsoft Teams was the initial choice for our online platform, however, a transition to Canvas was made as its interface is more user friendly and allowed for more tracking and resources for the creator.

LESSONS LEARNED

Soon after transitioning to an online platform, the lengthy duration of our training process did not transfer well into the virtual world. Training delivery through a live virtual format could not be as long as our in-person trainings without loss of engagement. Texas Stream Team made the decision to break up the training process to provide the trainees with a self-paced prerequisite portion before they joined the live video portion of the training. The prerequisite phase proved to be largely successful as it greatly cut down the live video time with trainees, allowed trainees to go at their own pace, and gave trainees a platform for the training resources.

Along with transitioning to an online platform, came the need for more frequent communication with trainees. Trainees had to be regularly reminded of the mandatory prerequisite materials that must be completed prior to joining the live training portion. Further, it became important to provide roughly a month to complete the prerequisite portion as some waited until last minute to complete the materials. Additionally, how-to videos were developed, and consistent reminders sent out to ensure trainees have ample opportunity to get all prerequisite material done before the live training. To date, all trainees have completed their requirements and we have received wonderful feedback on both the module and the live training.

VI. APPENDIX I: FINAL APPROVED QUARTERLY PROGRESS REPORT

		If a deliverable is or will be late, a new due date must be proposed. A justification describing the circumstances necessitating the new due date must be provided.			
ID#	Sub Task #	Deliverable	Current Due Date	Date Sent	Discussion of Progress During Reporting Quarter (leave blank if no progress occurred)
12267	1.2	QPR (FY20Q1)	12/15/19	12/16/19	
12268	1.2	QPR (FY20Q2)	03/15/20	03/13/20	
12269	1.2	QPR (FY20Q3)	06/15/20	06/15/20	
12270	1.2	QPR (FY20Q4)	09/15/20	09/15/20	
12271	1.2	QPR (FY21Q1)	12/15/20	12/15/20	
12272	1.2	QPR (FY21Q2)	03/15/21	03/15/21	
12272	1.2	QPR (FY21Q3)	06/15/21	06/15/21	
12274	1.2	QPR (FY21Q4)	09/15/21	09/15/21	
12283	1.3	Invoice (FY20Q1)	12/30/19	12/16/19	
12284	1.3	Invoice (FY20Q2)	03/30/20	03/13/20	
12285	1.3	Invoice (FY20Q3)	06/30/20	06/29/20	
12286	1.3	Invoice (FY20Q4)	09/30/20	09/30/20	
12287	1.3	Invoice (FY21Q1)	12/31/20	12/21/20	
12288	1.3	Invoice (FY21Q2)	03/31/21	03/29/21	
12289	1.3	Invoice (FY21Q3)	06/30/21	06/23/21	
12290	1.3	Invoice (FY21Q4)	09/30/21		Submitting end of September 2021
12301	1.4	Post-Award Mtg and Notes	09/30/19	10/08/19	
12302	1.4	Quarterly Call (FY20Q2)	01/16/20	01/16/20	
12303	1.4	Quarterly Call (FY20Q3)	04/15/20	04/02/20	
12304	1.4	Quarterly Call (FY20Q4)	07/15/20	07/16/20	
12305	1.4	Quarterly Call (FY21Q1)	10/15/20	09/30/20	
12306	1.4	Quarterly Call (FY21Q2)	01/15/21	01/12/21	
12307	1.4	Quarterly Call (FY21Q3)	04/15/21	03/30/21	
12308	1.4	Quarterly Call (FY21Q4)	07/15/21	07/13/21	
12317	1.5	EPA Coordination Call (If Requested)	08/31/23		Not requested
12318	1.6	Annual Report Article (If Requested)	08/31/23		Not requested
12462	1.7	FY 20 Annual Budget Update	02/07/20	02/07/20	
12322	2.1	QAPP Planning Mtg and notes	09/30/19	10/02/19	
12323	3.1	Establishment of one new citizen science group and one new partner	06/15/20	06/15/20	
12324	3.1	Establishment of one new citizen science group and one new partner	06/15/21	12/15/20	
12325	3.2	Documentation of parameter of concern-focused water quality monitoring trainings, including agenda, presentation materials, and sign-in sheets	12/15/20	12/15/20	
12326	3.2	Documentation of parameter of concern-focused water quality monitoring trainings, including agenda, presentation materials, and sign-in sheets	03/15/21	12/15/20	
12327	3.2	Documentation of parameter of concern-focused water quality monitoring trainings, including agenda, presentation materials, and sign-in sheets	06/15/21	12/15/20	
12328	4.1	Draft Final Report to TCEQ	06/01/23	11/23/20	
12329	4.2	Final Report	08/17/23	09/15/21	

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