The Meadows Center for Water and the Environment
Texas State University
Texas Stream Team

ADVANCED WATER QUALITY CITIZEN SCIENTIST TRAINING PACKET

This training packet is an official record of the Texas Stream Team Advanced Water Quality Citizen Scientist Training.

Advanced Water Quality Citizen Scientist Training

The Texas Stream Team Advanced Water Quality Citizen Scientist Training is offered to citizen scientists who have completed the Core training and have exhibited substantial dedication to continued citizen scientist water quality monitoring. This Advanced training covers the procedures for collecting and/or analyzing streamflow, nitrate-nitrogen, orthophosphate, and turbidity. Citizen scientists receive instructions on the significance of monitoring for these Advanced parameters**,** covering topics such as the sources of excessive quantities, standards, screening levels, and relevant natural processes.

It is important to routinely collect Advanced water quality data because this information helps establish baseline waterbody conditions, as well as identify abnormal environmental events when they occur. Baseline conditions are the expected environmental conditions for a waterbody, including an expected range of values for each parameter. An understanding of baseline conditions is established through substantial, routine observation. Once the expected environmental conditions of a water body are understood, trend analysis can be performed based on phosphate concentrations, turbidity measurements, and fluctuations in stream flow. This analysis provides essential clues in assessing and managing non-point source pollution and protecting the health of Texas waterways.

The trainee must successfully complete a three-phase training program:

- **Prerequisites** – citizen scientists must have completed either the Standard Core Water Quality Citizen Scientist Training or the Probe Core Water Quality Citizen Scientist Training, in addition to a minimum of 6 months monitoring experience using core procedures at an established site.
- **Phase I** – introduction to Advanced parameters and the significance of Advanced monitoring and collecting streamflow. Side-by-side monitoring is conducted with the certified trainer(s).
- **Phase II** –trainees conduct streamflow and Advanced monitoring procedures in the field with the assistance of the trainer(s). The trainer carefully observes the trainees' procedures, answers any questions, and corrects obvious mistakes.
- **Phase III** – trainee conducts Advanced parameters and completes the monitoring form without guidance from the trainer.

What is Texas Stream Team?

Texas Stream Team is a network of trained citizen scientists and supportive trainers and partners working together to gather information about the natural resources of Texas while ensuring the information is available to all Texans. Established in 1991, Texas Stream Team is funded by the Texas Commission on Environmental Quality (TCEQ) and the U.S. Environmental Protection Agency (EPA).

Currently, hundreds of Texas Stream Team citizen scientists voluntarily collect water quality and additional environmental data on lakes, rivers, streams, wetlands, bays, bayous, estuaries, and riparian zones in Texas. Effective collection and management of water quality and environmental data provides citizen scientists the opportunity to establish baseline conditions and identify changes in water quality and the environment and empowers them to take action if necessary. Texas Stream

Team promotes the use of citizen scientist data at the local level, through partners, volunteers, schools, government agencies, business, industry, and others, for education and use in natural resource management decisions.

Texas Stream Team supports a wide range of citizen scientist activities, including water quality monitoring programs, bioassessment monitoring, environmental education programs, community action projects, statewide and regional conferences, and workshops.

Texas Stream Team Trainings and Programs

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* bacteria 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 your lake, river, stream, or estuary based on the aquatic insects that live there.
- Riparian Evaluation Citizen Scientist Training - assess the health of your lake, river, stream, or estuary based on the riparian habitat.

Along with our trainings, we offer a wide variety of engagement programs focused on taking citizen science monitoring to the next step through community involvement, awareness, and additional data collection. Currently, Texas Stream Team the following programs:

- Student Organizations – provides assistance and materials needed to create a Texas Stream Team student chapter.
- Watershed Protection Plans and Total Maximum Daily Load – works to improve water quality in impaired or threatened water bodies by endorsing stakeholder meetings, concerns, resources, and Texas Stream Team monitoring.

To get more information about upcoming trainings and events, visit http://bit.ly/tst-calendar-view to view our Texas Stream Team calendar.

Our Goals and Philosophy

Texas Stream Team is guided by these goals:

- To produce quality-assured data that government agencies, permitted entities, and the public can use to make environmentally sound decisions
- To improve communication and facilitate education about the natural resources in Texas

- To resolve conflicts over environmental impacts collaboratively
- These goals are founded on the premise that water issues are inextricably linked with air, biological, land, and human issues, and that the protection of all-natural resources requires the active, positive cooperation of all Texans.

Who Can be Involved?

Anyone with a desire to become a citizen scientist, or learn more about the natural resources of Texas, can be involved in our citizen scientist trainings and programs. Citizen scientists below the age of 18 must be accompanied by a parent or legal guardian during all Texas Stream Team training and monitoring events. Citizen scientists below the sixth grade cannot be certified as a Texas Stream Team citizen scientist, however, they can attend training events and assist in monitoring alongside a certified parent or legal guardian.

Texas Stream Team Citizen Scientists

Citizen scientists volunteer with Texas Stream Team by performing water quality and environmental monitoring activities or are students working under the guidance of a trained Texas Stream Team citizen scientist. Below are encouraged commitments for an Advanced citizen scientist participating in this program:

- Make at least a one-year commitment to monitor a site. One year of data is considered the minimum needed to capture baseline conditions and the natural variability at a site.
- Collect water quality data at least once a month. To capture an understanding of site variability, data must be collected at least once a month and at approximately the same interval. For example, citizen scientists could plan to monitor on the first Saturday of each month.
- Collect water quality data at approximately the same time each month. Adherence to a consistent monitoring time is crucial because the physical and chemical parameters fluctuate over a 24-hour period.
- Submit the Advanced Monitoring Form immediately following each monitoring event. Monitoring forms can be scanned or photographed and sent via email to TxStreamTeam@txstate.edu.

Texas Stream Team Trainers

Trainers are certified citizen scientists who have completed the Trainer Training process that qualifies them to train and perform quality control sessions. The Texas Stream Team Trainer Training is a four-phase process that introduces trainees to Texas Stream Team training procedures and processes. Trainer trainees must have successfully completed and received a certification for whichever Texas Stream Team training they intend to become certified to lead. Trainer trainees must have at least 1 year of experience actively monitoring a site using the procedures that they intend to become certified to instruct.

Teacher and Student Participation

Educators find Texas Stream Team to be a valuable teaching tool that lends itself to cross-disciplinary instruction. By teaching students how to measure what is happening in the environment around them, Texas Stream Team helps teachers effectively present the abstract concepts of biology, chemistry,

ecology, and geography. With a broader understanding of water quality issues, students are better prepared to understand and participate in local water resource management as well as career development.

Teachers who complete all phases of a training and become citizen scientists have two options for getting their students involved in Texas Stream Team citizen scientist activities. Students in grades K-12 can monitor a body of water alongside a teacher with activities based on the educational objectives of the class. A teacher who goes a step further and becomes a certified Texas Stream Team trainer for a training of their choice (ex. Core, Advanced, Riparian, etc.) can then train students (Grades 5-12) to become certified citizen scientists so students can monitor on their own.

Continuing Education Credit for Teachers

Teachers can receive credit hours for continuing professional education through the Texas Environmental Education Advisory Committee (TEEAC) by participating in meetings or training sessions offered by Texas Stream Team. Upon completion of the TEEAC requirements, each educator receives their TEEAC credit with their Texas Stream Team TEEAC certificate. More information can be found on the Texas Stream Team TEEAC Credit Trainings webpage.

Texas Stream Team Partners

Organizations partner with Texas Stream Team to grow citizen science activities in their communities. Texas Stream Team partners solicit public and private entities to help train, equip, manage, and offer general support to the growing number of citizen scientists across the state. Partners typically include citizens, industries, river authorities, government entities, water districts, cities, state and federal agencies, students, teachers, and private non-profit groups and foundations.

Texas Stream Team partners:

- Support and enhance environmental problem solving in partnership with citizens and public agencies
- Develop student interest in math, science, and environmental stewardship
- Establish an early warning detection network for potential environmental issues
- Encourage pollution reduction and prevention
- Demonstrate local commitment to environmental protection

Partner Benefits

Every business and organization in Texas is encouraged to become a Texas Stream Team partner. As a Texas Stream Team partner, you will receive benefits that will help you and your community reach environmental goals and earn recognition for your leadership activities.

These benefits include:

- Waterways, a quarterly newsletter for Texas Stream Team participants
- Recognition on the Texas Stream Team website, social media, and at regional and statewide meetings
- Technical assistance in implementing citizen science monitoring and education activities
- Outreach materials and nonpoint source watershed model for distribution upon request

- Supplement professional monitoring resources
- Certification as a Texas Stream Team citizen scientists, trainers, and quality assurance officers
- Customized data reports and datasets through the Waterways Dataviewer
- Professional networking opportunities
- Building stakeholder involvement through monitoring
- Watershed protection plan (WPP) stakeholder recruitment, support, and coordination
- Implementation of water quality monitoring/improvement plans
- Collaborative grant writing and fundraising

Partner Requirements

1. Texas Stream Team is required to provide 40-percent match for 319 Federal funding received by Texas Commission on Environmental Quality (TCEQ). Every Texas Stream partner will submit quarterly partner activity reports for all Texas Stream Team related activities, such as trainings, travel, staff time, education and outreach events, and supply costs. These reports can be found on our Partners webpage and can be submitted via email to TxStreamTeam@txstate.edu. However, they can also be submitted by mail to:

   Texas Stream Team
   The Meadows Center for Water and the Environment - Texas State University
   601 University Drive
   San Marcos, TX 78666
2. Partners are strongly encouraged to attend Texas Stream Team partner meetings on an annual basis to stay informed about the most recent program updates.

Types of Partners

The different types of Partners allow organizations to best use their resources to support citizen scientists. Organizations may become Texas Stream Team partners in the following ways:

- Patron Partners contribute funds as a one-time contribution or as on-going support to maintain program activities and/or any Texas Stream Team activities within their own membership. These contributions may be used to assist smaller groups, facilitate watershed monitoring efforts, or to fund general Texas Stream Team activities.

- Supporting Partners contribute in-kind services to an existing network of partners and volunteers. These services might include laboratory services, data management resources, and/or organizational staff to provide field or training support. Supporting Partners are independent entities within the overall Texas Stream Team umbrella but may occasionally require financial assistance from Texas Stream Team.

- Leadership Partners coordinate their own monitoring and education programs using the Texas Stream Team Program's standardized protocols and environmental education tools. A Leadership Partner may work with a network of Patron and Supporting Partners to support its group. Unlike Patron or Supporting Partners, Leadership Partners are entirely financially self-sufficient in supporting their Texas Stream Team activities. However, Texas Stream Team staff may assist Leadership Partners in writing grants to secure extra funding and loan out training materials whenever necessary.

- Educational Partners utilize Texas Stream Team's Education and Outreach materials and curriculum for purposes that may include:
    - Incorporating Texas Stream Team water quality monitoring as part of their educational activities
    - Utilizing Texas Stream Team/environmental educational curriculum, but not necessarily employing active water quality monitoring as part of their educational activities.

Texas Stream Team Partner Programs

Texas Stream Team works with partners all over the State, some which have led to combined efforts within Texas Stream Team monitoring events:

- Monofilament Finders – joins the efforts of the Texas Monofilament Recovery and Recycling Program (MRPP), led by the Texas Sea Grant to encourage the removal of monofilament line through clean-up efforts and by increasing monofilament stations in Texas.
- Nurdle Patrol – is a citizen science program based out of Port Aransas, Texas. This program is run by the Mission-Aransas National Estuarine Research Reserve at the University of Texas Marine Science Institute and focuses on bringing the community together to tackle plastic pollution, specifically focusing around nurdle awareness, location, and removal efforts.
- Trash Free Texas – is a citizen science program developed by multiple partners across the State, including The Meadows Center for Water and the Environment. This program focuses on bringing the community together by cleaning up Texas waterways through adopt-a-spot trash clean-up initiatives.

When you are out monitoring, be sure to indicate on your monitoring form if you have performed a nurdle survey or removed larger pollutants!

Quality Assurance Program

If citizen scientists choose to participate in the Texas Stream Team, they are required to follow the Quality Assurance Project Plan (QAPP). The QAPP is a TCEQ-approved document that ensures the information citizen scientists collect is of the highest quality by providing the framework for citizen scientists to collect comparable data that can augment professional monitoring. By adhering to these procedures, Texas Stream Team program personnel and citizen scientists ensure data can be used for educational purposes, research, best management practice (BMP) effectiveness, and any other uses deemed appropriate.

For more information on the QAPP and how you as a citizens scientist should uphold the QAPP protocols, please visit our Data and Research webpage.

Texas Stream Team Waterways Dataviewer and Datamap

The Texas Stream Team Waterways Dataviewer is a web platform for trained citizen scientists to enter and view water quality data. The Dataviewer requires an account for access, so newly trained citizen scientists should contact their Training Coordinator and/or Data Coordinator to determine if they need to setup a Dataviewer account.

The Texas Stream Team Datamap is an online map that displays the locations and data for active and inactive Texas Stream Team monitoring sites. The Datamap was created for the general public to access and download historical citizen scientist data.

To access the Dataviewer and the Datamap, visit Dataviewer.TexasStreamTeam.org.

Texas Stream Team Newsletter and Website

Citizen scientists receive the Texas Stream Team Waterways Newsletter on a quarterly basis. They can unsubscribe to the newsletter any time by clicking the link at the bottom of the newsletter. Updates and information can also be found on the Texas Stream Team website, TexasStreamTeam.org.

Texas Surface Water Quality: What Is It, and How Is It Measured?

To protect water quality, we must define and measure it. The state of Texas has established water quality standards to protect specific uses associated with streams, lakes, and estuaries, and has defined measurements to determine whether those uses are attained.

Based on the standards, the Texas Commission on Environmental Quality (TCEQ), in concert with other federal, regional, and local organizations, carries out a monitoring and assessment program to determine which water bodies are meeting the standards set for their use, and which are not. The state produces a periodic report, the Texas Water Quality Integrated Report for Clean Water Act Sections 305(b) and 303(d), which compares water quality conditions to established standards, as required by the federal Clean Water Act.

Texas Surface Water Quality Standards

- Designate the uses, or purposes, for which the state's waterways should be suitable;
- Establish numerical and narrative criteria for water quality throughout the state;
- Provide a basis on which TCEQ regulatory programs can establish reasonable methods to implement and attain the state's goals (criteria) for water quality.

Water quality criteria are designed to be protective of uses. Substantial deviations from criteria indicate that related uses might be impaired. For example, the concentration of dissolved oxygen is one criterion for determining the attainment of the aquatic life use. Where oxygen concentrations are low, the use of the water body to support aquatic life might be impaired. However, since other factors affect the health of an aquatic environment, additional data, such as the presence of a high number and variety of species, may show that the use is fully attained, even if oxygen concentrations are lower than the standard.

Four major categories for water use are defined in the Texas Surface Water Quality Standards:

- Aquatic life use
- Contact recreation (swimming)
- Public water supply

- Fish and shellfish (oyster) consumption

A variety of other general uses are also considered, such as navigation, water supply for agriculture and industry, seagrass propagation, and wetland functions.

Aquatic Life Use

The standards associated with the aquatic life use are designed to protect aquatic species and to protect the propagation of both aquatic and terrestrial species. They establish optimal conditions for the support of aquatic life and define indicators used to measure whether these conditions are met. Some pollutants or conditions that may violate this standard include low levels of dissolved oxygen, or high concentrations of toxins such as metals or pesticides in water.

Contact Recreation

The standard associated with the contact recreation use measures the level of certain bacteria in water that indicate the relative risk of swimming or other water sports involving direct contact with the water. It is possible to swim in water that does not meet this standard without becoming ill; however, the probability of becoming ill is higher than it would be if the standard was being met.

Public Water Supply

Standards associated with the public water supply use indicate whether water from a lake or river is suitable for use as a source for a public water supply system. Source water is treated before it is delivered to the tap. A separate set of standards governs treated drinking water.

Indicators used to measure the safety or usability of surface water bodies as a source for drinking water include the presence or absence of substances such as metals or pesticides. Concentrations of salts, such as sulfate or chloride, are also measured, since treatment to remove high levels of salts from drinking water may be expensive.

Fish Consumption

The standards associated with the fish consumption use are designed to protect the public from consuming fish or shellfish that may be contaminated by pollutants in the water. The standards identify levels at which there is a significant risk that certain toxic substances dissolved in water may accumulate in the tissue of aquatic species.

Because toxic substances in water may exceed these levels while no accumulation in fish tissue is observable, the state conducts tests on fish and shellfish tissue to determine if there is a risk to the public from consuming fish caught in state waters. The standards also specify bacterial levels in marine waters to assure that oysters or other shellfish subject to commercial harvest and marketing are safe for public sale and consumption.

Indicators of water quality that are not tied to specific uses—such as dissolved solids, nutrients, and toxic substances in sediment—are also described in the standards. Indicators of water quality are discussed in more detail later in this document. A complete copy of the Texas Surface Water Quality Standards is available from the TCEQ Publications Library at 512/239-0020, or on the TCEQ website at https://www.tceq.texas.gov/waterquality/standards Texas Water Quality Integrated Report.

Fish Consumption Advisories and Closures

The Texas Department of State Health Services (TDSHS) conducts chemical testing of fish tissue to determine whether there is a risk to human health from consuming fish or shellfish caught in Texas streams, lakes, and bays. Fish seldom contain levels of contaminants high enough to cause an imminent threat to human health. However, risk increases for people who regularly consume larger, predatory fish from the same area over a long period of time. To reduce health risks, people should eat smaller fish from a variety of water bodies. When the TDSHS issues a fish consumption advisory, a person may still legally take fish or shellfish from the water body under the advisory, but it is not recommended. When a fish consumption closure is issued for a water body, the taking of fish or shellfish is legally prohibited.

Indicators of Water Quality

Several different water quality parameters are measured by the Texas Stream Team and the TCEQ to determine whether a water body meets the standards for its use. Some of the most common are listed here, with an explanation of why they are important to the health of a water body.

Bacteria

E. coli and Enterococci bacteria are measured to determine the relative risk of swimming (contact recreation), depending on whether the water body is fresh or marine. These bacteria originate from the wastes of warm-blooded animals. The presence of these bacteria indicates that associated pathogens from these wastes may be reaching a body of water. Sources may include inadequately treated sewage, improperly managed animal waste from livestock, pets in urban areas, aquatic birds and mammals, or failing septic systems.

Dissolved Oxygen

The concentration of dissolved oxygen is a single, easy-to-measure characteristic of water that correlates with the occurrence and diversity of aquatic life in a water body. A water body that can support diverse, abundant aquatic life is a good indication of high-water quality. A problem frequently related to dissolved oxygen concentrations is an excess of nutrients in water. Large quantities of nutrients in water can cause excessive growth of vegetation. This excessive vegetation, in turn, can cause low dissolved oxygen.

Dissolved Solids

High levels of dissolved solids such as chloride and sulfate can cause water to be unusable, or simply too costly to treat for drinking water uses. Changes in dissolved solids concentrations also affect the quality of habitat for aquatic life.

Metals

High concentrations of metals such as cadmium, mercury, and lead pose a threat to drinking water supplies and human health. Eating fish contaminated with metals can cause these toxic substances to accumulate in human tissue, posing a long-term, but significant health threat. Metals also pose a threat to livestock and aquatic life. Potentially dangerous levels of metals and other toxic substances are identified through chemical analysis of water, sediment, and fish tissue.

PHASE I

Prepared in cooperation with the Texas Commission on Environmental Quality and the United States Environmental Protection Agency.

The Meadows Center for Water and the Environment
Texas State University
Texas Stream Team

Email to: TxStreamTeam@txstate.edu
Send to:
Texas Stream Team
The Meadows Center - Texas State University
601 University Dr
San Marcos, TX 78666-4616

ADVANCED CITIZEN SCIENTIST ENVIRONMENTAL MONITORING FORM

PLEASE PRINT LEGIBLY (BLACK INK OR #2 PENCIL)

Group ID # ____

Citizen Scientist's Name _____

Station ID # ____

Site Description _____

Sample Date ____ (M M D D Y Y)

Sample Time (military) ____ (H H M M)

Sample Depth (meters) ____ (not total depth)

Turbidity:

☐ RESULT (JTU)

GRADUATION _____

OF DROPS ADDED _____

Orthophosphate:

☐ OBSERVED READING

FILTERED ❑Yes ❑No

TIME SPENT TRANSPORTING (minutes) _____

RANGE ❑Low ❑Mid ❑High

LOW: *OBSERVED READING* _____ */50* = _____ mg/L

MID: *OBSERVED READING* _____ */10* = _____ mg/L

HIGH: *OBSERVED READING* _____ mg/L

Nitrate-Nitrogen:

☐ RESULT (mg/L)

FILTERED ❑Yes ❑No

TIME SPENT TRANSPORTING (minutes) _____

Streamflow:

☐ DISCHARGE (cfs) = *WIDTH x AVG DEPTH x AVG VELOCITY*

☐ WIDTH (ft)

☐ AVG DEPTH (ft)

Depth 1 _____ Depth 6 _____

Depth 2 _____ Depth 7 _____

Depth 3 _____ Depth 8 _____

Depth 4 _____ Depth 9 _____

Depth 5 _____ Depth 10 _____

☐ AVG TIME (sec)

Trial 1 Time _____

Trial 2 Time _____

Trial 3 Time _____

☐ AVG VELOCITY (ft/s) = *10ft / AVG TIME*

Measurement Comments and Field Observations:

INCLUDE TOTAL TIME SPENT ON THE CITIZEN SCIENTIST ENVIRONMENTAL MONITORING FORM

I CERTIFY THAT ALL PROCEDURES HAVE BEEN FOLLOWED AND THIS INFORMATION IS ACCURATE TO THE BEST OF MY ABILITY.

_____ CERTIFIED CITIZEN SCIENTIST'S SIGNATURE

_____ DATE

_____ DATA MANAGER'S SIGNATURE

_____ DATE

PHASE II

Prepared in cooperation with the Texas Commission on Environmental Quality and the United States Environmental Protection Agency.

The Meadows Center for Water and the Environment
Texas State University
Texas Stream Team

Email to: TxStreamTeam@txstate.edu
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The Meadows Center - Texas State University
601 University Dr
San Marcos, TX 78666-4616

ADVANCED CITIZEN SCIENTIST ENVIRONMENTAL MONITORING FORM

PLEASE PRINT LEGIBLY (BLACK INK OR #2 PENCIL)

Group ID # ____ Citizen Scientist's Name _____

Station ID # ____ Site Description _____

Sample Date ____ (M M D D Y Y) Sample Time (military) ____ (H H M M) Sample Depth (meters) ____ (not total depth)

Turbidity:

☐ RESULT (JTU)

GRADUATION _____

OF DROPS ADDED _____

Orthophosphate:

☐ OBSERVED READING

FILTERED ❑Yes ❑No

TIME SPENT TRANSPORTING (minutes) _____

RANGE ❑Low ❑Mid ❑High

LOW: *OBSERVED READING* _____ */50* = _____ mg/L

MID: *OBSERVED READING* _____ */10* = _____ mg/L

HIGH: *OBSERVED READING* _____ mg/L

Nitrate-Nitrogen:

☐ RESULT (mg/L)

FILTERED ❑Yes ❑No

TIME SPENT TRANSPORTING (minutes) _____

Streamflow:

☐ DISCHARGE (cfs) = *WIDTH x AVG DEPTH x AVG VELOCITY*

☐ WIDTH (ft)

☐ AVG DEPTH (ft)

Depth 1 _____ Depth 6 _____

Depth 2 _____ Depth 7 _____

Depth 3 _____ Depth 8 _____

Depth 4 _____ Depth 9 _____

Depth 5 _____ Depth 10 _____

☐ AVG TIME (sec)

Trial 1 Time _____

Trial 2 Time _____

Trial 3 Time _____

☐ AVG VELOCITY (ft/s) = *10ft / AVG TIME*

Measurement Comments and Field Observations:

INCLUDE TOTAL TIME SPENT ON THE CITIZEN SCIENTIST ENVIRONMENTAL MONITORING FORM

I CERTIFY THAT ALL PROCEDURES HAVE BEEN FOLLOWED AND THIS INFORMATION IS ACCURATE TO THE BEST OF MY ABILITY.

_____ CERTIFIED CITIZEN SCIENTIST'S SIGNATURE _____ DATE _____ DATA MANAGER'S SIGNATURE _____ DATE

PHASE III

Prepared in cooperation with the Texas Commission on Environmental Quality and the United States Environmental Protection Agency.

The Meadows Center for Water and the Environment
Texas State University
Texas Stream Team

Email to: TxStreamTeam@txstate.edu
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ADVANCED CITIZEN SCIENTIST ENVIRONMENTAL MONITORING FORM

PLEASE PRINT LEGIBLY (BLACK INK OR #2 PENCIL)

Group ID # ____

Citizen Scientist's Name _____

Station ID # ____

Site Description _____

Sample Date ____ (M M D D Y Y)

Sample Time (military) ____ (H H M M)

Sample Depth (meters) ____ (not total depth)

Turbidity:

☐ RESULT (JTU)

GRADUATION _____

OF DROPS ADDED _____

Orthophosphate:

☐ OBSERVED READING

FILTERED ❑Yes ❑No

TIME SPENT TRANSPORTING (minutes) _____

RANGE ❑Low ❑Mid ❑High

LOW: *OBSERVED READING* _____ */50* = _____ mg/L

MID: *OBSERVED READING* _____ */10* = _____ mg/L

HIGH: *OBSERVED READING* _____ mg/L

Nitrate-Nitrogen:

☐ RESULT (mg/L)

FILTERED ❑Yes ❑No

TIME SPENT TRANSPORTING (minutes) _____

Streamflow:

☐ DISCHARGE (cfs) = *WIDTH x AVG DEPTH x AVG VELOCITY*

☐ WIDTH (ft)

☐ AVG DEPTH (ft)

Depth 1 _____ Depth 6 _____

Depth 2 _____ Depth 7 _____

Depth 3 _____ Depth 8 _____

Depth 4 _____ Depth 9 _____

Depth 5 _____ Depth 10 _____

☐ AVG TIME (sec)

Trial 1 Time _____

Trial 2 Time _____

Trial 3 Time _____

☐ AVG VELOCITY (ft/s) = *10ft / AVG TIME*

Measurement Comments and Field Observations:

INCLUDE TOTAL TIME SPENT ON THE CITIZEN SCIENTIST ENVIRONMENTAL MONITORING FORM

I CERTIFY THAT ALL PROCEDURES HAVE BEEN FOLLOWED AND THIS INFORMATION IS ACCURATE TO THE BEST OF MY ABILITY.

_____ CERTIFIED CITIZEN SCIENTIST'S SIGNATURE

_____ DATE

_____ DATA MANAGER'S SIGNATURE

_____ DATE