

Texas Nonpoint Source Grant Program

***Recreational Use Attainability Analysis
for Five Creeks in the Canadian River and Red River Basins***

**TSSWCB Project # 12-52
Revision 0**

Quality Assurance Project Plan

Texas State Soil and Water Conservation Board

**Prepared by
Texas Institute for Applied Environmental Research
Stephenville, Texas**

**Effective Period: Upon TSSWCB Approval through July 2014
with annual updates required**

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A1 Approval Sheet

Quality Assurance Project Plan (QAPP) for *Recreational Use Attainability Analysis for Five Creeks in the Canadian River and Red River Basins*.

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List of Acronyms

CAFO	Confined Animal Feeding Operation
CAR	Corrective Action Report
CBMS	Computer Based Mapping System
DEM	Digital Elevation Model
DMR	Discharge Monitoring Report
DOQQ	Digital Ortho Quarter Quads
ECHO	Enforcement & Compliance History Online
EPA	United States Environmental Protection Agency
FM	Farm-to-Market
GIS	Geographic Information System
GPS	Global Positioning System
ICIS	Integrated Compliance Information System
NAIP	National Agricultural Imagery Program
NASS	National Agricultural Statistics Service
NHD	National Hydrography Dataset
NLCD	National Land Cover Dataset
NPDES	National Pollution Discharge Elimination System
PM	Project Manager
QA	Quality Assurance
QAM	Quality Assurance Manual
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	Quality Control
QPR	Quarterly Progress Report
RUAA	Recreational Use Attainability Analysis
SOP	Standard Operating Procedure
SSURGO	Soil Survey Geographic database
SWQMIS	Surface Water Quality Monitoring Information System
TCEQ	Texas Commission on Environmental Quality
TIAER	Texas Institute for Applied Environmental Research
TMDL	Total Maximum Daily Load
TPDES	Texas Pollution Discharge Elimination System

TNRIS	Texas Natural Resources Information System
TSSWCB	Texas State Soil and Water Conservation Board
TSWQS	Texas Surface Water Quality Standards
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WWTF	Wastewater Treatment Facility

A3 Distribution List

Organizations, and individuals within, which will receive copies of the approved QAPP and any subsequent revisions include:

Texas State Soil and Water Conservation Board (TSSWCB)

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Title: TIAER Field Operations Supervisor

Name: Sarah Robinson
Title: TIAER Field Operations Supervisor

Name: Anne McFarland
Title: TIAER Project QAO

A4 Project/Task Organization

The following is a list of individuals and organizations participating in the project with their specific roles and responsibilities:

TSSWCB

Wesley Gibson

TSSWCB PM

Maintains a thorough knowledge of work activities, commitments, deliverables, and time frames associated with project. Develops lines of communication and working relationships between TIAER and TSSWCB. 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. Participates in the development, approval, implementation, and maintenance of the QAPP. Assists the TSSWCB QAO in technical review of the QAPP. Responsible for verifying that the QAPP is followed by project participants. Notifies the TSSWCB QAO of particular circumstances that may adversely affect the quality of data derived from the collection and analysis of samples. Enforces corrective action.

Pamela Casebolt

TSSWCB QAO

Reviews and approves QAPP and any amendments or revisions and ensures distribution of approved/revised QAPPs to TSSWCB and project participants. Responsible for verifying that the QAPP is followed by project participants. Determines that the project meets the requirements for planning, quality assurance (QA), quality control (QC), and reporting under the TSSWCB Texas Nonpoint Source Grant Program. Coordinates or conducts audits of field and laboratory systems and procedures. Monitors implementation of corrective actions.

TIAER

Nikki Jackson

TIAER PM

Responsible for ensuring tasks and other requirements assigned to TIAER in the contract are executed on time and are of acceptable quality. Coordinates attendance at conference calls, training, meetings, and related project activities with the TSSWCB. Monitors and assesses the quality of work. Responsible for verifying the QAPP is followed and the project produces data of known and acceptable quality. Complies with corrective action requirements. Reports status, issues, and progress of the overall project to TSSWCB PM.

Leah Brown & Calvin Clary

TIAER Project Coordinators and Data Managers

Responsible for writing and maintaining the QAPP. Oversee data management for the study. Responsible for reviewing and formatting data according to workplan specifications for final reporting of the data. Provide the point of contact for resolving issues related to the data.

Develop and maintain relationships with landowners and stakeholders. Ensure tasks and other requirements in the contract are executed on time and are of acceptable quality. Responsible for verifying the QAPP is followed and the project produces data of known and acceptable quality. Comply with corrective action requirements.

Jeff Stroebel & Sarah Robinson

TIAER Field Operations Supervisors

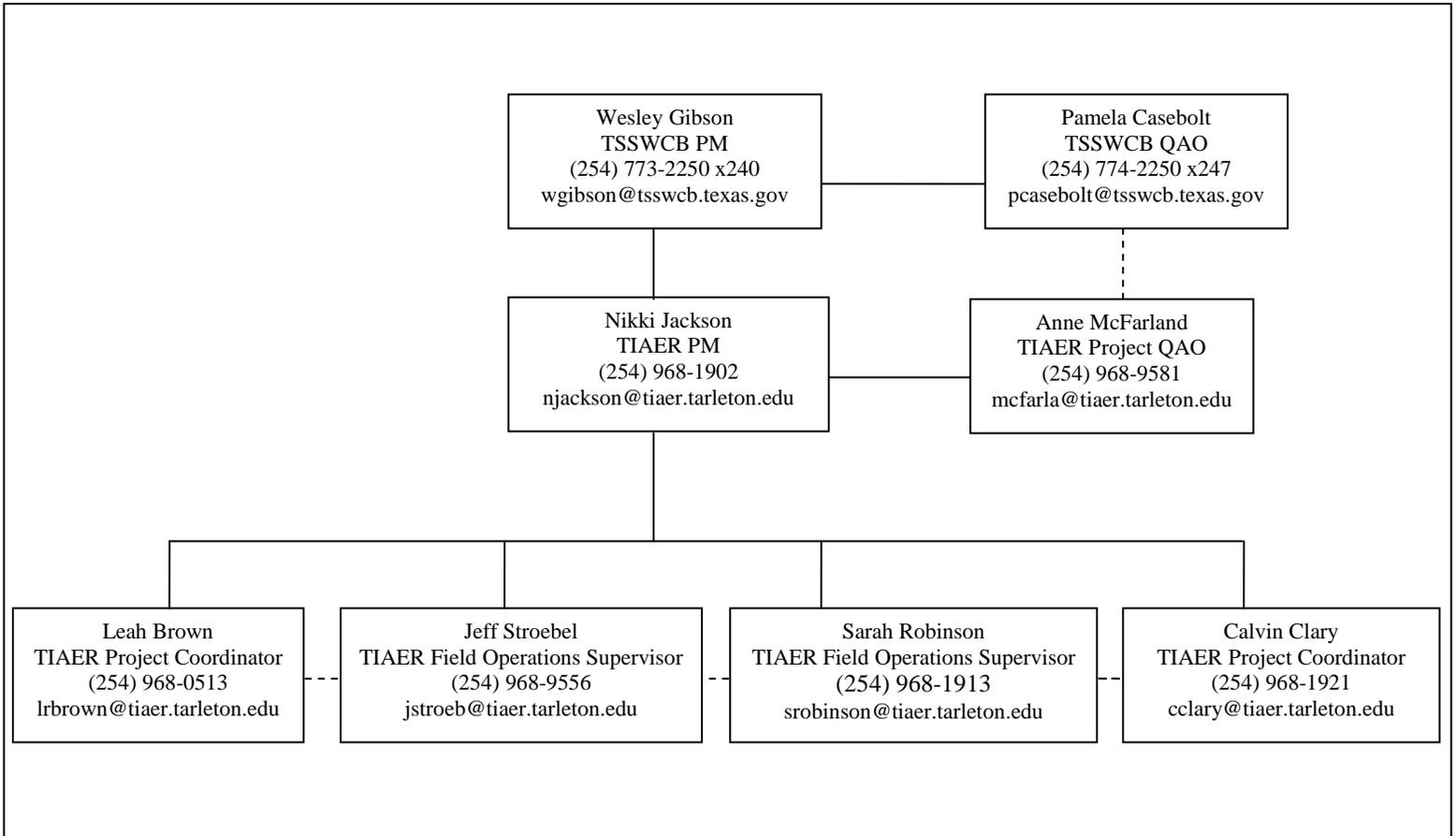
Responsible for supervising all aspects of the measurements and data collection for surface water and other RUAA information in the field. Responsible for the acquisition of field data measurements in a timely manner that meet the quality objectives specified in Section A7 (Table A.1), as well as the requirements of Sections B1 through B8. Responsible for field scheduling, staffing, and ensuring that staff is appropriately trained as specified in A8. Responsible for verifying the QAPP is followed and the project produces data of known and acceptable quality. Comply with corrective action requirements.

Anne McFarland

TIAER Project QAO

Responsible for coordinating development and implementation of the project QA program. Responsible for maintaining records of project QAPP distribution, including appendices and amendments. Responsible for maintaining written records of sub-tier commitment to requirements specified in this QAPP. Responsible for identifying, receiving, and maintaining project QA records. Responsible for coordinating with the TSSWCB QAO to resolve QA-related issues. Notifies TIAER PM of particular circumstances that may adversely affect the quality of data. Coordinates the review of technical QA material and data related to water quality monitoring system design and analytical techniques. Supervises monitoring systems audit for the project.

Figure A4.1 Organization Chart – Lines of Communication



Lines of Management —————
 Lines of Communication - - - - -

A5 Problem Definition/Background

This QAPP addresses four creeks located in the Panhandle Plains region of northern Texas listed for bacterial impairments on the 2010 Texas 303(d) List (see Appendix A for area location map). While the project title indicates five creeks, a fifth creek, Rock Creek (Segment 0101B), was originally part of the project, but has since been removed from the 303(d) List and, thus, will not be addressed in this QAPP. The four creeks to be addressed are Dixon Creek, Sweetwater Creek, Paradise Creek and Buffalo Creek. Dixon Creek is located in the Canadian River Basin, while the other three are located in the Red River Basin.

The Dixon Creek (Segment 0101A) is located Carson and Hutchinson Counties and its watershed includes portions of the City of Borger, Texas. Sweetwater Creek forms in Gray County and flows through Wheeler County with Segment 0299A truncated as Sweetwater River crosses the Texas-Oklahoma border. The watershed for Segment 0299A includes the cities of Mobeetie and Wheeler, Texas. Paradise Creek (Segment 0230A) initiates in the eastern portion of Foard County and flows through Wilbarger County terminating at its confluence with the Pease River just east of Vernon Texas. Within Foard County, the Paradise Creek watershed includes the City of Thalia, Texas and small portions of Vernon, Texas. The eastern most of the four creeks is Buffalo Creek (Segment 0214B), which is located west of Wichita Falls, Texas entirely within Wichita County. The headwaters of Buffalo Creek include much of the City of Electra, Texas, and within the lower third of the Buffalo Creek watershed is the City of Iowa Park, Texas.

The *2010 Texas 303(d) List* included bacterial impairments for the assessment units 0101A_01 Dixon Creek, 0214B_01 Buffalo Creek, 0230A_03 Paradise Creek, and 0299A_01 Sweetwater Creek.

The Texas Commission on Environmental Quality (TCEQ) and the TSSWCB established a joint, technical Task Force on Bacteria Total Maximum Daily Loads (TMDLs) in September 2006 charged with making recommendations on cost-effective and time-efficient bacteria TMDL development methodologies. The Task Force recommended the use of a three-tier approach that is designed to be scientifically credible and accountable to watershed stakeholders. In June 2007, the TCEQ and the TSSWCB adopted the principles and general process recommended by the Task Force. Fundamental in the three-tier approach is ensuring that the appropriate water quality standard (i.e., designated use) is applied to the waterbody before initiating any watershed planning activity (e.g., TMDL or watershed protection plan).

Major revisions to the Texas Surface Water Quality Standards (TSWQS) were adopted by TCEQ in 2010 and approved by the United States Environmental Protection Agency (EPA) in 2011, including modifications to contact recreation use and bacteria criteria. As part of this process, TCEQ developed formal procedures for conducting Recreational Use Attainability Analysis (RUAAs). In order for a new category of recreational use, and, thus, a different water quality criterion for bacteria to be applied to a waterbody, an RUAAs will need to be conducted. TCEQ and TSSWCB have collaborated on developing a list of priority waterbodies for collecting information needed for RUAAs and the waterbodies for this project (Dixon Creek, Buffalo Creek, Paradise Creek, and Sweetwater Creek) are on that list. Because primary contact

recreation use is presumed for the unclassified segments in the study area and it is not known with certainty that recreational use in these waterbodies occurs, the findings from an RUAA will provide information regarding the level of recreational use actually occurring in these waterbodies.

In accordance with the Watershed Action Planning process (<http://www.tceq.texas.gov/waterquality/planning/wap/>) and the *Memorandum of Agreement Between the TCEQ and the TSSWCB Regarding TMDLs, Implementation Plans, and Watershed Protection Plans*, the TSSWCB has agreed to take the lead role in addressing the bacteria impairments in this project's study area. Through this project, the TSSWCB and TIAER will work with local stakeholders to complete the data collection components of an RUAA and at the end of this project have adequate data that either supports the existing designated use (primary contact recreation) or supports a change in designated use (e.g., secondary contact recreation) for the four segments for this project.

A6 Project/Task Description

The overall goal of the project is to collect data that provide stakeholders and agencies with sufficient information to determine recreational use status throughout the four watersheds (Dixon Creek, Sweetwater Creek, Buffalo Creek, and Paradise Creek). This project consists of performing Comprehensive RUAs on Segment 0101A within the Canadian River and Segments 0230A, 0299A and 0214B within the Red River Basin for the purpose of ascertaining the level of recreational use within each waterbody. This project will follow the February 2012 *TCEQ Procedures for a Comprehensive RUA and a Basic RUA Survey*.

These comprehensive RUAs consist of four main tasks: a) public participation and stakeholder interaction through educational outreach meetings, interviews and historical review of the recreational use of each waterbody; b) compilation of existing Geographic Information System (GIS) data pertaining to each watershed including spatial identification of potential sources, such as point source dischargers; c) completion of the required two RUA field surveys of each creek; and d) review of water quality data including a survey of potential bacteria sources. This QAPP focuses specifically on the direct data collection associated with the RUA field surveys.

Project-related tasks and the schedule of deliverables are defined in Table A6.1.

Table A6.1. Schedule of Milestones

Task	Project Milestones	Start¹	End²
2	Quality Assurance		
2.1	QAPP development and approval by the TSSWCB	Month 1	Month 10
2.2	Annual QAPP updates and amendments, as needed	Month 10	Month 24
3	Assess Attainability of Recreational Use		
3.1	Conduct RUAA site reconnaissance and coordinate with landowners for access where appropriate	Month 1	Month 9
3.2	Develop comprehensive GIS inventory	Month 1	Month 9
3.3	Identify sites for RUAA data collection	Month 7	Month 9
3.4	Conduct historical information review on recreation uses	Month 1	Month 20
3.5	Conduct RUAA field surveys	Month 10	Month 14
3.6	Collect digital photographic record	Month 10	Month 14
3.7	Conduct interviews	Month 10	Month 16
3.8	Develop technical RUAA report	Month 15	Month 19
4	Public Participation and Stakeholder Coordination		
4.1	Facilitate public participation and coordinate stakeholder involvement	Month 1	Month 24
4.2	Contact entities on Contact Information Form	Month 1	Month 9
4.3	Conduct at a minimum two informational meetings, one prior to the first RUAA field survey and the second to present findings. An interim meeting of preliminary findings may be conducted after the first field survey.	Month 1	Month 24
4.4	Participate in other public meetings, as appropriate	Month 1	Month 24
4.5	Develop and disseminate educational material	Month 1	Month 24
5	Water Quality Data Review and Survey of Possible Bacteria Sources		
5.1	Incorporate potential bacteria sources into GIS inventory	Month 1	Month 24
5.2	Conduct historical data review of each waterbody to assess and characterize trends in water quality, specifically bacteria	Month 1	Month 18
5.3	Conduct a basic source survey of potential bacteria sources and report findings	Month 2	Month 24

¹ Month 1 = August 2012

² Month 24 = July 2014

Using GIS inventory and other pertinent information, TIAER will identify sites, with the help of stakeholders, for RUAA field data collection. Sites will be located in areas where the waterbody is accessible to the public and have the highest potential for recreational use (primary contact). Sites will be well-spaced and, where practical, distributed such that there are at least 3 sites for every 5 miles of stream. Due to the significant amount of public input considered during the RUAA, relocation of survey sites may occur without an amendment to the QAPP as noted in the February 2012 *TCEQ Procedures for a Comprehensive RUAA and a Basic RUAA Survey*, but

require notification and approval by the TSSWCB PM. Relocation may include but is not limited to instances when landowner access has changed, new public information regarding survey locations is made available, or suitability of a previously identified survey location has changed due to lack of access or un-safe conditions.

RUAA survey site selection is predicated on reconnaissance trips, public participation, and stakeholder interaction. An initial reconnaissance trip will be completed prior to meeting with stakeholders about the project, and follow-up trips will occur when interaction with local landowners provides opportunities for additional sites. Two surveys will be conducted at each of the selected sites by TIAER. Each survey will be conducted per the February 2012 version of the *TCEQ Procedures for a Comprehensive RUAA and a Basic RUAA Survey* and will include the collection of transect information along a stretch of the creek at each site documenting the presence or absence of water recreation activities and characteristics regarding stream flow type and pool depths (see Appendix B for RUAA Field Data Sheets). Obstructions, stream color, water surface characteristics, stream trash and observed evidence of wildlife (tracks or fecal material) will be included in the photographic record of each site. Interview survey information will also be collected from individuals either actively recreating at each site or knowledgeable of the site and the project creeks in general (see Appendix C). Each survey will be performed at a time of year under weather and hydrologic conditions that are conducive to observing recreational use, which means when air temperatures are warm to hot (>70° F). Field surveys will be conducted during the period people would most likely be using the waterbody for contact recreation. A historical information review will be conducted on recreation use that occurred on each creek on and after November 28, 1975.

To ascertain the suitability of the streams for contact recreation use, field surveys shall document hydrological characteristics of the stream, such as flow type, width and depth of channel and substantial pools, bank access, and stream substrate. Information to be collected shall at least satisfy those questions found on the Field Data Sheet from the *TCEQ Procedures for a Comprehensive RUAA and a Basic RUAA Survey* (February 2012). TIAER shall document antecedent rainfall conditions (approximately 30 days prior to fieldwork) and the source of the data per the RUAA procedures. TIAER shall also collect a digital photographic record of each selected site during the field surveys. Photographs shall include upstream, left and right bank, and downstream views clearly depicting the entire channel and each transect measured. Any evidence of observed uses or indications of human use shall be photographed.

In conjunction with the RUAA, TIAER will also conduct a watershed source survey to better characterize possible sources of bacteria loadings. Local stakeholders and technical experts will be consulted on possible sources of bacteria loadings. Locations of possible bacteria sources identified during the source survey will be incorporated into the GIS inventory.

Section B1 contains detailed information on direct data to be collected during the RUAA field surveys. Maps of RUAA site locations are presented in Appendix A.

Information on acquired or non-direct data is addressed in Section B9.

A7 Quality Objectives and Criteria

The project objective is to collect data that may be used to support decisions related to recreational use designation. Data to be collected in the RUAA surveys at each site are listed in *Procedures for a Comprehensive Recreational UAA and a Basic UAA Survey* (February 2012). A copy of the field data sheet is located in Appendix B. Most of the data to be collected is based on observations, such as channel flow status, stream type and recreational activities, or experience of individuals interviewed and not directly measured with an instrument. Direct measurements and quality objectives are indicated below.

Measurements under wadeable conditions include depth of the thalweg; depth, length and width of substantial pools; and stream width. Thalweg depth should be reported in meters to 2 significant figures. If depths are too deep at a particular transect to measure then thalweg should be reported as >1.5 meters. Stream width should be noted to represent 1) the typical average width of the 300 meter reach; 2) the width at the narrowest point of the stream within the 300 meter reach; and (3) the width at the widest point of the stream within the 300 meter reach. Stream width values should be reported in meters to 2 significant figures.

For substantial pools, the width (at the widest point) and deepest depth of each pool should be reported. A substantial pool is considered a pool greater than 10 meters in length for the purposes of a RUAA Survey. Report pool measurements to 2 significant figures in meters. If depths are too deep to measure then report >1.5 meters.

Measurements on non-wadeable streams, if accessible, should represent typical widths along the 300 meter reach with measurements reported in meters to 2 significant figures.

A photographic record will be made of each site during each survey. Photographs will include an upstream view, left and right bank views, downstream view (as described in the Field Data Sheets), any evidence of recreational uses or indications of human use, hydrologic modifications, etc. Photograph should clearly depict the entire channel and, if feasible, the depth of water in the channel and pools or the absence of water, if dry. Photos should document evidence of recreational use (e.g., rope swings) and actual recreation. No identifiable photographs should be taken of minor children without the permission of an accompanying adult. Efforts should be made not to show the faces of any child (person considered a minor) photographed. Photos may also show a lack of use, such as dry creek beds. Photos need an obvious scale. Photographs must be cataloged in a manner that indicates the site location, date, view orientation and what is being shown.

Precision

Precision is the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. It is a measure of agreement among replicate measurements of the same property, under prescribed similar conditions, and is an indication of random error.

The precision of the information gathered for this project, because it is largely observations, will be dependent on training of field crew personnel for consistency.

Bias

Bias is a statistical measurement of correctness and includes components of systemic error. A measurement is considered unbiased when the value reported does not differ from the true value. Bias in measurements (both direct and observational) will be addressed through training on obtaining the information required on the RUAA field data sheets to assure consistency within and between field teams.

Representativeness

Representativeness is a measure of how accurately a monitoring program reflects actual water quality conditions and recreational uses. The representativeness of the data is dependent on the sampling locations, the conditions under which surveys are performed, and the survey procedures.

The RUAA surveys will ideally be performed at a frequency of three sites per five stream miles to assure maximum capture of stream recreational uses and conditions. Additionally, sites will be surveyed hydrologically, preferentially during high recreational use potential. Representativeness will be measured with the completion of data collected in accordance with the approved QAPP.

Comparability

Confidence in the comparability of data sets from this project and those for similar uses is based on the commitment of TIAER to use only the methods and QA/QC protocols prescribed in the *Procedures for a Comprehensive Recreational UAA and a Basic UAA Survey* (February 2012) in accordance with quality system requirements and as described in this QAPP.

Completeness

The completeness of the data is basically a function of weather, site access, and the availability and willingness of individual responders. Ideally, 100% of the data should be available. Unavailable data due to weather and the inability to access the sites and interview individuals are to be expected. Therefore, it will be a general goal of the project that 90% data completion is achieved. Interviewing the required contacts, completing the field data sheets and interview forms for each site, and providing the required photographic evidence, maps, and final report will guarantee the completeness of the each data set.

A8 Special Training/Certification

Field personnel will receive training in proper field analysis techniques prior to the RUAA field surveys. Before actual field measurements occur, field personnel will demonstrate to the TIAER Project QAO or designee their ability to properly perform field analysis procedures required on the RUAA field data sheet (see Appendix B). Training will be documented and retained in the TIAER Monitoring Staff Training file and be available during a monitoring systems audit. TIAER staff collecting Global Positioning System (GPS) data will be certified TCEQ and will maintain their certification throughout the project.

A9 Documents and Records

Quarterly progress reports (QPRs) will note activities conducted in connection with the RUAA, items or areas identified as potential problems, and any variations or supplements to the QAPP. Corrective Action Reports (CARs) will be utilized when necessary (see example in Appendix D). CARs that result in any changes or variations from the QAPP will be made known to pertinent project personnel and documented in an update or amendment to the QAPP. All QPR and QAPP revisions will be distributed to personnel listed in Section A3.

The TSSWCB may elect to take possession of records at the conclusion of the specified retention period.

RUAA Reports and Forms

- Information to be collected shall at least satisfy those questions found on Contact Information Form (Appendix C)
- Field Data Sheets and Interview Forms in electronic format (Appendix B and C)
- Digital photographic record, cataloged in an appropriate manner

Records and Documents Retention Requirements

<u>Document/Record</u>	<u>Location at TIAER</u>	<u>Retention</u>	<u>Form</u>
QAPP, amendments, and appendices	Central Files	5 years	Paper
QAPP distribution documentation	Central Files	5 years	Paper/Electronic
Training records	Central Files	5 years	Paper
Field notebooks or field data sheets	Central Files	5 years	Paper/Electronic
RUAA Contact Information, Field Data, And Interview Forms	Central Files	5 years	Paper/Electronic
Field SOPs	Central Files	5 years	Paper/Electronic
Corrective action documentation	Central Files	5 years	Paper/Electronic

Revisions to the QAPP

Until the work described is completed, this QAPP shall be revised as necessary and reissued annually or revised and reissued within 120 days of significant changes, whichever is sooner.

Amendments

Amendments to the QAPP may be necessary to reflect changes in project organization, tasks, schedules, objectives, and methods; address deficiencies and nonconformances; improve operational efficiency; and/or accommodate unique or unanticipated circumstances. Requests for amendments are directed in writing from the TIAER PM to the TSSWCB PM. Changes are effective immediately upon approval by the TSSWCB PM and QAO.

Amendments to the QAPP and the reasons for the changes will be documented, and revised pages will be forwarded to all persons on the QAPP distribution list by the TIAER QAO.

Amendments shall be reviewed, approved, and incorporated into a revised QAPP during the annual revision process or within 120 days of the initial approval in cases of significant changes.

As per the February 2012 *TCEQ Procedures for a Comprehensive RUAA and a Basic RUAA Survey*, site changes may be made to this QAPP without the need for an amendment. If site changes occur, these changes will be incorporated into a revised QAPP during the annual revision for distribution. Prior to the annual revision, all individuals on the QAPP distribution will be notified of any site changes with an updated site list within 120 days of notification and approval by the TSSWCB PM.

B1 Sampling Process Design (Experimental Design)

TIAER will collect information that can be used to evaluate recreational uses in the study area. Methods used and sampling process design shall be consistent with the TCEQ *Procedures for a Comprehensive RUAA and a Basic RUAA Survey* (February 2012). TIAER will conduct field surveys at selected sites during periods people would most likely use the waterbody for contact recreation; surveys shall ascertain the suitability of the streams for contact recreation use and shall document the hydrological characteristics of the stream.

Field data will be collected following procedures detailed in *Procedures for a Comprehensive RUAA and a Basic RUAA Survey* (February 2012). Tables B1-1 – B1-4 provide the sites selected for use in the project for each watershed. Maps of the RUAA sites within each watershed are provided in Appendix A showing the location of sites as identified in Tables B1.1-B1.4.

Buffalo Creek (Segment 0214B) Buffalo Creek (Segment 0214B) is just under 35 river miles long, which indicates a goal of 21 sites (3 sites per 5 miles of river) for the RUAA survey. Eleven sites have been identified for the RUAA field surveys, six of which are publically accessible via road crossings and five of which is accessible via private property (Table B1.1).

Public access to Buffalo Creek is available by several road crossings. There were no parks along Buffalo Creek.

Table B1.1 and a map in Appendix A indicate the RUAA survey stations for Buffalo Creek and are labeled based on their location in a downstream to upstream order. The map gives an overview of the entire Buffalo Creek watershed and shows locations of the RUAA stations. Of note, both major and minor roads are shown on the map. Many of the minor roads are private roads and are not publically accessible. The RUAA sites include the two existing monitoring stations in TCEQ's Surface Water Quality Monitoring Information System (SWQMIS) along the mainstem of Buffalo Creek.

With regard to assessing the impact of permitted discharges on Buffalo Creek, there are two wastewater treatment facilities (WWTFs) within the Buffalo Creek watershed. The City of Electra has a discharge permitted WWTF located southeast of Electra on the west side of Midway Church Rd immediately north of Buffalo Creek. Effluent is treated before being discharged into Buffalo Creek. The WWTF has an operation capacity of 1 million gallons per day, but typically operates well under maximum capacity. The City of Iowa Park WWTF discharges into a water district canal that joins Buffalo Creek between Coleman Park Rd and FM 367 south of Iowa Park. RUAA survey locations have been identified above and below the WWTF outfall in Iowa Park; however, no landowner access was granted above the City of Electra WWTF outfall.

Table B1.1. Buffalo Creek (Segment 0214B) RUAA Sites. Sites are listed in downstream to upstream order along the segment.

TCEQ ID	Site ID	Site Description	Latitude	Longitude	Distance from Previous Site (mi) ¹	Distance from Confluence (mi) ¹	Distance from Upper Reach (mi) ¹	Access
10097	BF001	Buffalo Creek at Bell Rd south of Iowa Park, east of road	33.921748	-98.654205	-	1.18	33.94	Public
	BF002	Buffalo Creek at FM 367 south of Iowa Park, south of road	33.926077	-98.678127	2.37	3.55	31.57	Public
16036	BF003	Buffalo Creek at Coleman Park Rd south of Iowa Park, east of road	33.933848	-98.689599	1.19	4.74	30.38	Public
	BF004	Buffalo Creek 1.83 river miles east of Old Electra Rd	33.944218	-98.712534	2.86	7.60	27.52	Private
	BF005	Buffalo Creek at Old Electra Rd southwest of Iowa Park, east of road	33.954803	-98.725636	1.83	9.43	25.69	Public
	BF006	Buffalo Creek 1.06 river miles west of Old Electra Rd, near railroad	33.961670	-98.734895	1.06	10.49	24.63	Private
	BF007	Buffalo Creek 3.47 river miles east of FM 2384	33.980992	-98.814977	10.87	21.36	13.76	Private
	BF008	Buffalo Creek at FM 2384, west of road	33.979637	-98.837430	3.47	24.83	10.29	Public
	BF009	Buffalo Creek 2.02 river miles west of FM 2384	33.985000	-98.849970	2.02	26.85	8.27	Private
	BF010	Buffalo Creek at Old Gun Club Rd southeast of Electra	33.9958	-98.8575	1.61	28.46	6.66	Private
	BF011	Buffalo Creek at Midway Church Rd southeast of Electra WWTF, east of road	34.006860	-98.872330	2.56	31.02	4.10	Public

¹ Distances were digitally estimated using the measuring tool in ArcGIS 9.3 with the 2010 NAIP 1m DOQQs and the NHD stream layer as reference guides.

Dixon Creek (Segment 0101A) Dixon Creek (Segment 0101A) is just under 20 river miles long, which indicates a goal of 12 sites (3 sites per 5 miles of river) for the RUAA survey. Eight sites have been identified for the RUAA field surveys, only one of which is publically accessible via road crossings and seven of which access is via private property (Table B1.2).

Public access to Dixon Creek is limited to a one road crossing at State Highway 152. There are no other public access points along Dixon Creek. Most access along Dixon Creek is available only via private property, the majority of which is held in fairly large land holdings, often bordered with high game fences.

Table B1.2 and a map in Appendix A indicate the RUAA survey stations for Dixon Creek and are labeled based on their location in a downstream to upstream order. The map in Appendix A gives an overview of the entire Dixon Creek watershed and shows locations of the RUAA stations. Of note, both major and minor roads are shown on this map. Many of the minor roads are private roads and are not publically accessible. The RUAA sites include one of the two existing monitoring stations in TCEQ's SWQMIS along the mainstem of Dixon Creek. TCEQ site 17045 was selected as a RUAA survey station. The only TCEQ station excluded was station 10016. Exclusion of station 10016 was due to the landowner not allowing TIAER field workers access to their property.

With regard to assessing the impact of permitted discharges on Dixon Creek, there is one WWTF within the Dixon Creek watershed owned by Conoco Phillips. The WWTF's outflow discharges into directly into Dixon Creek. The discharge contributes to the downstream flow at County Road V. The City of Borger has one WWTF permitted outfall, however it is outside of the Segment 0101A watershed boundaries.

Table B1.2. Dixon Creek (Segment 0101A) RUAA Sites. Sites are listed in downstream to upstream order along the segment.

TCEQ ID	Site ID	Site Description	Latitude	Longitude	Distance from Previous Site (mi) ¹	Distance from Confluence (mi) ¹	Distance from Upper Reach (mi) ¹	Access
	DX001	Dixon Creek 4.84 river miles north of Hwy 152	35.706302	-101.334300	-	5.12	9.99	Private
	DX002	Dixon Creek 3.46 river miles north of Hwy 152	35.690383	-101.340472	1.38	6.5	8.61	Private
	DX003	Dixon Creek 2.86 river miles north of Hwy 152	35.684227	-101.339494	0.60	7.10	8.01	Private
	DX004	Dixon Creek 1.95 river miles north of Hwy 152	35.680161	-101.34921	0.91	8.01	7.10	Public
17045	DX005	Dixon Creek at SH 152, west of RR 2171, East of Borger	35.664585	-101.35132	1.95	9.96	5.15	Public
	DX006	Dixon Creek 0.36 river miles south of Hwy 152	35.661016	-101.355854	0.36	10.32	4.79	Private
	DX007	Dixon Creek 1.81 river miles north of CR 2171	35.643897	-101.349651	1.39	11.71	3.40	Private
	DX008	Dixon Creek 1.23 river miles north of CR 2171	35.637501	-101.351495	0.58	12.29	2.82	Private

¹ Distances were digitally estimated using the measuring tool in ArcGIS 9.3 with the 2010 NAIP 1m DOQQs and the NHD stream layer as reference guides.

Paradise Creek (Segment 0230A) Paradise Creek (Segment 0230A) is just over 45 river miles long, which indicates a goal of 28 sites (3 sites per 5 miles of river) for the RUAA survey. Public access to Paradise Creek is available by several road crossings. Twenty-eight sites are identified for the RUAA field surveys, 18 of which are publically accessible via road crossings and 10 of which are accessible via private property (Table B1.3).

Table B1.3 and a map in Appendix A indicate the RUAA survey stations for Paradise Creek and are labeled based on their location in a downstream to upstream order. The map gives an overview of the entire Paradise Creek watershed and shows locations of the RUAA stations. Of note, both major and minor roads are shown on the map. Many of the minor roads are private roads and are not publically accessible. The RUAA sites include the two existing monitoring stations in TCEQ's SWQMIS along Paradise Creek's mainstem.

The City of Vernon WWTF outfall is located within the Pease River and does not discharge into Paradise Creek. A small WWTF is located south of Vernon at a correctional facility south of FM 433 and east of Center Dr. The facility's WWTF is maintained routinely, but the correctional facility itself is no longer operational. The community of Thalia uses on-site septic systems, and does not discharge effluent into Paradise Creek.

Table B1.3. Paradise Creek (Segment 0230A) RUAA Sites. Sites are listed in downstream to upstream order along the segment.

TCEQ ID	Site ID	Site Description	Latitude	Longitude	Distance from Previous Site (mi) ¹	Distance from Confluence (mi) ¹	Distance from Upper Reach (mi) ¹	Access
0230A AU_03								
10094	PD001	Paradise Creek at US Hwy 287	34.152518	-99.245708	-	0.62	43.02	Public
	PD002	Paradise Creek at State Loop 488, south of road	34.150771	-99.256401	0.70	1.32	42.32	Public
	PD003	Paradise Creek at Summerour Rd, east of road	34.142409	-99.263835	0.76	2.08	41.56	Public
	PD004	Paradise Creek at Eagle St, west of road	34.126706	-99.273206	2.21	4.29	39.35	Public
	PD005	Paradise Creek at US Hwy 183, east of road	34.120926	-99.279594	0.84	5.13	38.51	Public
	PD006	Paradise Creek at CR 128, south of road	34.113162	-99.282745	0.99	6.12	37.52	Public
0230A AU_04								
	PD007	Paradise Creek at old CR 99 S	34.096945	-99.289448	1.46	7.58	36.06	Private
	PD008	Paradise Creek 0.42 river miles northeast of FM 433 bridge	34.082958	-99.297971	1.46	9.04	34.6	Private
17600	PD009	Paradise Creek at FM 433, north of road	34.078991	-99.301707	0.42	9.46	34.18	Public
	PD010	Paradise Creek 0.68 river miles southwest of CR 97 S	34.071150	-99.302150	0.68	10.14	33.5	Private
	PD011	Paradise Creek at CR 134, south of road	34.063181	-99.305328	0.99	11.13	32.51	Public
	PD012	Paradise Creek at old CR 136	34.045800	-99.316480	2.34	13.47	30.17	Private
	PD013	Paradise Creek at FM2585	34.030332	-99.318321	3.01	16.48	27.16	Public
	PD014	Paradise Creek 1.35 river miles southeast of CR 138	34.029279	-99.340239	2.29	18.77	24.87	Private
	PD015	Paradise Creek at CR 138 west of CR	34.026317	-99.355889	1.35	20.12	23.52	Public

TCEQ ID	Site ID	Site Description	Latitude	Longitude	Distance from Previous Site (mi) ¹	Distance from Confluence (mi) ¹	Distance from Upper Reach (mi) ¹	Access
		89, south of road						
	PD016	Paradise Creek 0.16 river miles southwest of CR 138	34.025331	-99.356900	0.50	20.62	23.02	Private
	PD017	Paradise Creek at CR 81, east of road	34.007302	-99.385386	3.61	24.23	19.41	Public
	PD018	Paradise Creek at CR 140, north of road	34.001297	-99.393540	1.12	25.35	18.29	Public
	PD019	Paradise Creek at RR 1207, west of road	33.994768	-99.399824	0.75	26.1	17.54	Public
	PD020	Paradise Creek 1.8 river miles east of CR 138	33.989388	-99.439459	2.43	28.53	15.11	Private
	PD021	Paradise Creek 1.2 river miles east of CR 138	33.989163	-99.449744	0.6	29.13	14.51	Private
	PD022	Paradise Creek at CR 138, north of road	33.992020	-99.471200	1.31	30.44	13.2	Public
	PD023	Paradise Creek 0.11 river miles northwest of CR 138	33.996853	-99.486981	3.1	33.54	10.1	Private
	PD024	Paradise Creek at CR 195, west of road	33.992512	-99.508263	2.23	35.77	7.87	Public
	PD025	Paradise Creek at US Hwy 70 east of Thalia	33.986851	-99.530203	2.01	37.78	5.86	Public
	PD026	Paradise Creek at CR 288, west of road	33.988370	-99.543021	0.96	38.74	4.90	Public
	PD027	Paradise Creek at CR 239, east of road	33.991364	-99.558936	1.41	40.15	3.49	Public
	PD028	Paradise Creek 1.64 river miles west of CR 239	33.98600	-99.572000	1.57	41.72	1.92	Private

¹ Distances were digitally estimated using the measuring tool in ArcGIS 10 with the 2010 NAIP 1m DOQQs and the NHD stream layer as reference guides.

Sweetwater Creek (Segment 0299A) Sweetwater Creek (Segment 0299A) is just under 70 river miles long, which indicates a goal of 42 sites (3 sites per 5 miles of river) for the RUAA survey. There are 33 sites identified for the RUAA field surveys, 10 of which are publically accessible via road crossings, and 23 of which are accessible via private property (Table B1.4).

Public access to Sweetwater Creek is limited to road crossings. No city or public parks are located along the mainstem of Sweetwater Creek.

Table B1.4 and a map in Appendix A indicate the RUAA survey stations for Sweetwater Creek and are labeled based on their location in a downstream to upstream order. The map gives an overview of the entire Sweetwater Creek watershed and shows locations of RUAA stations. Of note, both major and minor roads are shown on the map. Many of the minor roads are private roads and are not publically accessible. The RUAA sites include the two existing monitoring stations in TCEQ's SWQMIS along the mainstem of Sweetwater Creek.

With regard to assessing the impact of permitted discharges on Sweetwater Creek, the City of Wheeler WWTF has a no discharge permit. Effluent is used to irrigate fields north of the City of Wheeler. There are two permitted Confined Animal Feeding Operations (CAFOs) located within Sweetwater Creek watershed.

Table B1.4. Sweetwater Creek (Segment 0299A) RUAA Sites. Sites are listed in downstream to upstream order along the segment.

TCEQ ID	Site ID	Site Description	Latitude	Longitude	Distance from Previous Site (mi) ¹	Distance from Confluence (mi) ¹	Distance from Upper Reach (mi) ¹	Access
0299A AU_01								
	SW001	Sweetwater Creek on private property, 452 river mile east of CR 30 east of Wheeler	35.443954	-100.003792	-	0.45	66.85	Private
	SW002	Sweetwater Creek, East of Wheeler, at County Rd 29	35.446533	-100.022742	2.35	2.81	64.49	Public
	SW003	Sweetwater Creek on private property, 0.62 river miles west of CR 29, east of Wheeler	35.441365	-100.028398	0.62	3.43	63.87	Private
	SW004	Sweetwater Creek on private property, 0.46 river miles Northwest of County Rd 28. East of Wheeler	35.450298	-100.046504	2.33	5.75	61.55	Private
	SW005	Sweetwater Creek on private property, 2.94 river miles upstream from CR, northeast of Wheeler	35.458063	-100.071495	2.85	8.60	58.70	Private
	SW006	Sweetwater Creek on private property, 3.3 river miles downstream of confluence with Williams Creek northeast of Wheeler	35.466318	-100.079502	1.41	10.01	57.29	Private
	SW007	Sweetwater Creek on private property, 0.15 river mile west of confluence with Williams Creek. northeast of Wheeler	35.477873	-100.094140	3.46	13.47	53.83	Private
	SW008	Sweetwater Creek on private property, 1.41 river miles east of RR 592, northeast of Wheeler	35.471474	-100.105703	1.63	15.11	52.19	Private
	SW009	Sweetwater Creek at RR 592, northeast of Wheeler, east of road.	35.472910	-100.120793	1.41	16.52	50.78	Public
	SW010	Sweetwater Creek on private property, 0.93 river mile upstream RR 592, northeast of Wheeler, on private property	35.477395	-100.132038	0.93	17.45	49.85	Private
0299A AU_02								
	SW011	Sweetwater Creek on private property, 0.10 river mile downstream of CR 22, northeast of Wheeler, on private property	35.469328	-100.146057	1.87	19.32	47.98	Private

TCEQ ID	Site ID	Site Description	Latitude	Longitude	Distance from Previous Site (mi) ¹	Distance from Confluence (mi) ¹	Distance from Upper Reach (mi) ¹	Access
	SW012	Sweetwater Creek on private property, 0.42 river mile upstream of CR 22, 0.2 river mile downstream from confluence with Coburn Creek, northeast of Wheeler	35.474517	-100.151486	0.53	19.84	47.46	Private
	SW013	Sweetwater Creek, Northeast of Wheeler, on private property, 1.1 river mile upstream from confluence with Coburn Creek.	35.474586	-100.162442	1.04	20.88	46.42	Private
	SW014	Sweetwater Creek on private property, 1.5 river mile downstream from confluence with Goodlin Creek, northeast of Wheeler	35.482457	-100.182238	2.45	23.34	43.97	Private
	SW015	Sweetwater Creek on CR 18, northeast of Wheeler, east of road	35.486929	-100.218843	3.41	26.74	40.56	Public
	SW016	Sweetwater Creek on CR 17, northeast of Wheeler, west of road.	35.485544	-100.236763	1.52	28.26	39.04	Public
	SW017	Sweetwater Creek, on private property, 0.74 river miles west of CR 17, north-northeast of Wheeler near confluence with Jenkins-Jones Creek.	35.489176	-100.247114	0.74	29.00	38.30	Private
	SW018	Sweetwater Creek on private property, 2 river miles east of Hwy 83, north-northeast of Wheeler	35.489027	-100.262778	1.31	30.31	36.99	Private
	SW019	Sweetwater Creek on private property, 0.84 river mile East of Hwy 83, North of Wheeler,	35.496383	-100.272271	0.54	30.85	36.45	Private
10072	SW020	Sweetwater Creek, north of Wheeler, west of Hwy 83.	35.500476	-100.291368	0.84	31.69	35.61	Public
	SW021	Sweetwater Creek on private property, 1 river mile west of confluence with Dubbs Creek and 3 river miles west of Hwy 83, northwest of Wheeler	35.500592	-100.318992	3.06	34.75	32.55	Private
	SW022	Sweetwater Creek on private property, 2.09 river miles East of RR 3182, northwest of Wheeler	35.500728	-100.333801	1.35	36.10	31.20	Private
	SW023	Sweetwater Creek, on private property, 0.57 river mile East of RR 3182, northwest of Wheeler	35.505332	-100.353598	1.52	37.62	29.68	Private

TCEQ ID	Site ID	Site Description	Latitude	Longitude	Distance from Previous Site (mi) ¹	Distance from Confluence (mi) ¹	Distance from Upper Reach (mi) ¹	Access
	SW024	Sweetwater Creek at RR 3182, northwest of Wheeler, west of road.	35.508284	-100.361771	0.57	38.19	29.11	Public
	SW025	Sweetwater Creek on private property, 1.5 river mile West of confluence with Russell Creek and 0.2 river mile East of Adobe Creek, southeast of Mobeetie	35.500166	-100.394938	2.89	41.08	26.22	Private
10074	SW026	Sweetwater Creek at Hwy 152, southeast of Mobeetie, west of road.	35.497465	-100.411569	1.70	42.78	24.52	Public
	SW027	Sweetwater Creek on private property, 0.9 river mile southwest of Hwy 152, south of Mobeetie	35.494157	-100.422387	0.90	43.68	23.62	Private
	SW028	Sweetwater Creek on private property, 1.46 river mile upstream from confluence with Graham Creek, 2.73 river mile upstream from Hwy 152, south of Mobeetie	35.496861	-100.444134	1.83	45.51	21.79	Private
	SW029	Sweetwater Creek on CR F, northeast of Mobeetie, south of road.	35.532031	-100.474459	4.23	49.74	17.56	Public
	SW030	Sweetwater Creek, on CR 2, northeast of Mobeetie, west of road	35.566614	-100.504330	5.48	55.22	12.08	Public
	SW031	Sweetwater Creek on private property, 1.77 river mile East of RR 120 in Gray County Northeast of Mobeetie	35.585865	-100.561449	7.31	62.53	4.77	Private
	SW032	Sweetwater Creek on private property, 0.80 river mile east of RR 120 in Gray County, northeast of Mobeetie	35.585149	-100.571943	0.97	63.50	3.80	Private
	SW033	Sweetwater Creek on Hoffer Rd in Gray County, northeast of Mobeetie, north of road.	35.593337	-100.591795	2.58	66.08	1.22	Public

¹ Distances were digitally estimated using the measuring tool in ArcGIS 9.3 with the 2010 NAIP 1m DOQQs and the NHD stream layer as reference guides.

B2 Sampling Methods

Field Sampling Procedures

The sampling process design will be based on the *Procedures for a Comprehensive Recreational UAA and a Basic UAA Survey* (February 2012). For the RUAA field surveys, information to be collected shall at least satisfy those questions found on the Field Data Sheet from the TCEQ *Procedures for a Comprehensive RUAA and a Basic RUAA Survey* (February 2012) in Appendix B. The RUAA surveys shall be conducted during a normal warm season (air temperature greater than or equal to 70°F) during dry weather flows that are not storm influence and performed during the period when people would be most likely to use the water body for contact recreational purposes (examples: Saturdays & Sundays, holidays, and summer). In Texas, this period is typically May to September.

The RUAA survey field data sheets must be completed for each site. All field data gathered must be recorded in the appropriate locations on the field data sheets. Field data sheets may be recorded in indelible ink (preferred) or pencil with no erasures, modifications, write-overs or multi-line crossouts.

Documentation of Field Sampling Activities

Field sampling activities will be documented on the Field Data Sheets (see Appendix B). For all visits, stream name, site, date, time, and sample name of collector(s) shall be recorded. Values for all required field parameters will be recorded including detailed observational data as required on the RUAA Field Data Sheets. Data may be transferred to electronic Field Data Sheets from the hard copies for storage and improved legibility, but the original maintained.

Recording Data

For the purposes of this section and subsequent sections, all personnel follow the basic rules for recording information as documented below:

1. Legible writing in indelible, waterproof ink with no modifications, write-over's or cross-outs;
2. Changes should be made by crossing out original entries with a single line, entering the changes, and initialing and dating the corrections.
3. Close-outs on incomplete pages with an initialed and dated diagonal line.

Deficiencies, Nonconformances and Corrective Action Related to Sampling Requirements

Deficiencies are defined as unauthorized deviation from procedures documented in the QAPP. Nonconformances are deficiencies which affect quality and render the data unacceptable or indeterminate. Deficiencies related to sampling method requirements include, but are not limited to, such things as sample site adjustments.

Deficiencies are documented in logbooks, field data sheets, etc. by field staff and reported to the TIAER Field Operations Manager who will notify the appropriate TIAER Project Coordinator. The TIAER Project Coordinator in consultation with the TIAER Project QAO and TIAER PM

will determine if the deficiency constitutes a nonconformance. If it is determined the activity or item in question does not affect data quality and therefore is not a valid nonconformance, the deficiency worksheet will be completed accordingly. If it is determined a nonconformance does exist, the TIAER Project QAO in consultation with TIAER PM will determine the disposition of the nonconforming activity or item and necessary corrective action(s); results will be documented by completion of a CAR (Appendix D).

CARs document: root cause(s); programmatic impact(s); specific corrective action(s) to address the deficiency; action(s) to prevent recurrence; individual(s) responsible for each action; the timetable for completion of each action; and, the means by which completion of each corrective action will be documented. CARs will be included with quarterly progress reports. In addition, significant conditions (i.e., situations which, if uncorrected, could have a serious effect on safety or on the validity or integrity of data) will be reported to the TSSWCB immediately both verbally and in writing.

B3 Sample Handling and Custody

Sample Handling

Sample parameters for this project are recorded *in situ*. No physical samples are collected, so this section is not applicable.

B4 Analytical Methods

Failures in Measurement Systems and Corrective Actions

Failures in field measurement systems involve, but are not limited to, such things as instrument malfunctions. In many cases, the field technician will be able to correct the problem. If the problem is resolvable by the field technician, then they will document the problem on the field data sheet and complete the measurement. If the problem is not resolvable, then it is conveyed to the TIAER Project QAO through initiation of a CAR. The nature and disposition of the problem is reported to the TIAER PM, who will include this information in the CAR and submit with the QPR which is sent to the TSSWCB PM.

B5 Quality Control

Sample data for this project are recorded *in situ*. No physical samples are collected, so this section is not applicable.

B6 Instrument/Equipment Testing, Inspection and Maintenance

Field equipment is inspected and tested by TIAER upon receipt to assure it is appropriate for use. No specific equipment is required by this project to conduct the RUAA field surveys.

B7 Instrument/Equipment Calibration and Frequency

Sample data collected for this project do not require any instruments or equipment requiring calibration, so this section is not applicable.

B8 Inspection/Acceptance of Supplies and Consumables

All new batches of field supplies are inspected before use to ensure that they are adequate for the intended purpose. Extra supplies, such as camera for taking pictures during the RUAA field surveys, will be kept and made available to the project by the Field Supervisors.

B9 Non-direct Measurements

Information generated from the following tasks, which are included in the overall project contract, may be used to identify sites for RUAA data collection:

- A comprehensive GIS inventory of the study area.
- Reconnaissance trip(s) to assess potential survey sites.
- Public meetings for solicitation of landowner permission for access to survey sites.
- Historical information review of recreational uses of the waterbody since November 1975.

Comprehensive GIS Inventory

As part of the project for site selection and source identification, a comprehensive GIS survey will be compiled for the study area. All data to be used in the GIS survey for this project have been collected in accordance with approved QA measures under the TCEQ, Texas Water Development Board, USDA, and USGS. GIS data to be used include, but are not limited to, SSURGO and CBMS soils data, USGS NLCD and NHD, Census data (2000), Census of Agriculture data from USDA NASS (2007), and the United States Geological Survey (USGS) 30-meter resolution DEM (Table B9.1). Depending on the accessibility to the GIS layers from different data sources, efforts will be made to update the spatial data to the most recently available data. Also, as other relevant data sources become known, they may be added to the GIS Inventory.

As part of the project, TIAER will conduct a historical data review for each waterbody in order to assess and characterize trends and variability specifically of bacteria, but may also include other water quality parameters. The historical data collection activities will focus on ambient water quality data and may include streamflow and water level data, precipitation records, and data from permitted facilities including discharges and effluent quality. Data sources may include the USGS, National Weather Service, Texas Parks and Wildlife Department, Texas Water Development Board, Groundwater Conservation Districts, relevant River Authorities, TCEQ, and the EPA.

As part of the field RUAA surveys, historical weather data, specifically weather day for the 30 days prior to each field RUAA survey, will be obtained from the National Weather Service or other reliable source.

Because most non-direct data are of known and acceptable quality and were collected and analyzed in a manner comparable and consistent with needs for this project, no limitations will be placed on their use, except where known deviations have occurred.

Table B9.1 Non-Direct (Acquired) Data Required for Site Selection and Characterization of each Segment Watershed

Data Type	Data Source	Applicable Date or Other Attributes	Use/Relevance
Aerial photography	USDA Farm Service Agency NAIP	2004-2010	Site Selection and landscape

Data Type	Data Source	Applicable Date or Other Attributes	Use/Relevance
			characteristics
Routine ambient water quality data: primarily bacteria, but also other parameters deemed relevant to a particular segment	TCEQ website in SWQMIS and/or associated River Authority	Full historical data range (1970s – present)	Background information on water quality and trends
DEMs 10-m resolution; GIS data	EPA-BASINS website preferred; webGIS, USGS National Seamless Server and GeoCommunity websites as alternatives. [Large data volume.]	N/A	Delineation of watershed boundaries and boundaries of assessment units
Agricultural census data	USDA NASS website	County level agricultural statistics (2007 data)	Potential sources
Soils data; GIS data (SSURGO)	NRCS website; SSURGO databases [Large data volume]	SSURGO is the most detailed soil maps developed by NRCS	Landscape characteristics
Daily streamflow, if available	USGS web site. [Large data volume.]	Streamflow 1970s to present	Flow characteristics
Municipal & Industrial WWTF permits	TCEQ	TPDES/NPDES permit	Location and type of discharges to each segment
Municipal & Industrial WWTF data (monthly discharged flow and any pertinent quality data associated with discharges)	TCEQ Information Resources Division data and EPA ECHO website (EPA ICIS-NPDES). [Small data volume. DMR provided by permit holders.]	Limited DMR data available from EPA website; more complete records from TCEQ; preferred data range 1970s to present	Flow characteristics and potential sources
Miscellaneous geographic data (roads, streams, boundaries, etc.) [Required for physical presentation of maps in reports, largely	TNRIS; North Carolina State Univ. Libraries geospatial data services website; USGS NHD; U.S. Census Bureau website; Montana State University Geographic Locater website. [Large	N/A	Location of potential recreational areas along each segment (road crossings, parks, etc) and general watershed

Data Type	Data Source	Applicable Date or Other Attributes	Use/Relevance
not needed for modeling.]	data volume.]		characteristics
Precipitation and air temperature data	National Weather Service	Historical for evaluation of normal conditions and for RUAA surveys daily data 30 days prior and during each field survey	Characterization of historical conditions and antecedent and current conditions associated with RUAA field surveys

B10 Data Management

TIAER will collect, store electronically, and make all collected project data available to the TSSWCB PM. TIAER will also be responsible for maintaining backup files to protect the data. Data will be stored, managed and submitted to TSSWCB through the TIAER PM. RUAA data will not go into TCEQ's SWQMIS database. The data will be accompanied by other deliverables, such as a final RUAA report. Deliverables will be submitted to the TSSWCB as described in the contract.

TIAER recordkeeping and document control procedures are contained in the TIAER Standard Operating Procedures (SOPs) for monitoring staff. Original field data sheets are stored in the main office of the TIAER Field Staff.

TIAER will complete Field Data Sheets for the Basic RUAA, Contact Information Forms, and Comprehensive RUAA Interview Forms by hand on hard copies. Information on the forms will be entered into electronic versions at the TIAER office in a directory specifically designated for the project that is backed up incrementally every evening and completely once a week. A TIAER staff member other than the person who electronically entered the data will review at least 10 percent of the survey information in the database against the original hard copies. TIAER staff members will enter data electronically onto the RUAA Summary Sheet into the project directory. Photographs will be taken according to guidelines in the Procedures for a Comprehensive RUAA and a Basic RUAA Survey. The photographs will be taken by an electronic camera and stored in a jpg format in the project directory.

Hardware and Software Requirements

Hardware configurations are sufficient to run Microsoft Access under the Windows Server operating system in a networked environment. Information resources staff is responsible for assuring hardware configurations meet the requirements for running current and future data management/database software as well as providing technical support. Software development and database administration are also the responsibility of the information resources department. Information resources develop applications based on user requests and assure full system compatibility prior to implementation.

C1 Assessments and Response Actions

Table C1.1 Assessments and Response Actions

Assessment Activity	Approximate Schedule	Responsible Party	Scope	Response Requirements
Status Monitoring Oversight, etc.	Continuous	TIAER PM and Coordinators	Monitoring of the project status and records to ensure requirements are being fulfilled.	Report to TSSWCB in QPRs
Monitoring Systems Audit	At least once per life of the project; dates to be determined by TSSWCB	TSSWCB QAO	The assessment will be tailored in accordance with objectives needed to assure compliance with the QAPP. Field measurement; facility review; and data management as they relate to the project	30 days to respond in writing to the TSSWCB to address corrective actions
Monitoring Systems Audit	Based on work plan and/or discretion of TIAER	TIAER Project QAO	The assessment will be tailored in accordance with objectives needed to assure compliance with the QAPP. Field measurement; facility review; and data management as they relate to the project	30 days to respond in writing to the TIAER Project QAO to address corrective actions
Site Visit	At least once per fiscal year; dates to be determined by TSSWCB	TSSWCB PM and Coordinators	Status of activities. Overall compliance with work plan and QAPP	As needed

Corrective Action

The TIAER Project QAO is responsible for implementing and tracking corrective action procedures as a result of audit findings. Records of audit findings and corrective actions are maintained by both the TSSWCB PM and the TIAER Project QAO.

Corrective action documentation will be submitted to the TSSWCB PM with the QPR. If audit findings and corrective actions cannot be resolved, then the authority and responsibility for terminating work is specified in agreements or contracts between participating organizations.

C2 Reports to Management

Reports to TSSWCB Project Management

All reports detailed in this section are contract deliverables that will be transferred from TIAER and to TSSWCB in accordance with contract requirements.

Quarterly Progress Report – Summarizes TIAER activities for each task; reports problems, delays, and corrective actions; and outlines the status of each task’s deliverables.

Technical Report – Summarizes TIAER activities for the entire project period including a description and documentation of major project activities; evaluation of the project results and environmental benefits. Technical Report shall at least include those contents described for a Comprehensive RUAA in the TCEQ *Procedures for a Comprehensive RUAA and a Basic RUAA Survey* (February 2012).

- Electronic copies of completed interview forms, field data sheets, flow sheets, and RUAA summary sheet;
- Digital photographic record, cataloged for appropriate identification
- Individual Technical Reports summarizing historical information review, field surveys, and user interviews with waterbodies grouped by Basin.

Reports to TIAER Project Management

Progress on project deliverables and any problems or issues concerning project activities are noted in routine staff meetings conducted by the TIAER PM with the Project Coordinators. CARs are the primary mechanism for communicating significant QA issues to management.

D1 Data Review, Verification, and Validation

The TIAER Project Coordinators will review data collected during each RUAA survey for completeness and accuracy as described in Section D2.

D2 Verification and Validation Methods

The TIAER Project Coordinators are responsible for reviewing surveys for completeness and accuracy. At least 10% of survey data in electronic RUAA field data sheets and interview forms should be verified for accuracy against the original handwritten values in field notebooks, field data sheets and interview forms.

D3 Reconciliation with User Requirements

The overall goal of the project is to collect data that provide stakeholders and agencies with sufficient information to determine recreational use status throughout the four watersheds (Dixon Creek, Sweetwater Creek, Buffalo Creek, and Paradise Creek).

Appendix A: Area Location and RUAA Station Maps by Watershed

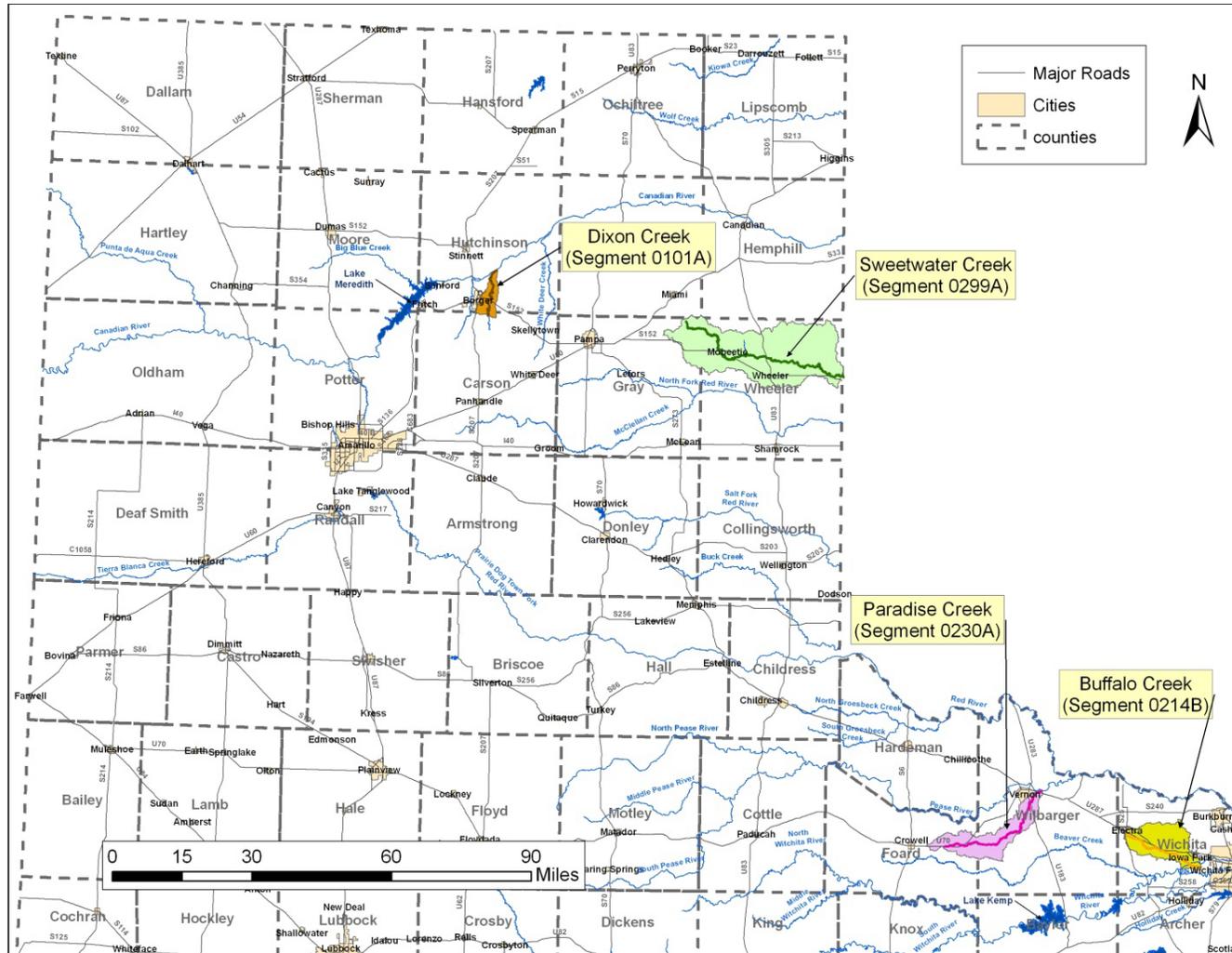


Figure Appendix A-1. Area location map for RUAA watersheds.

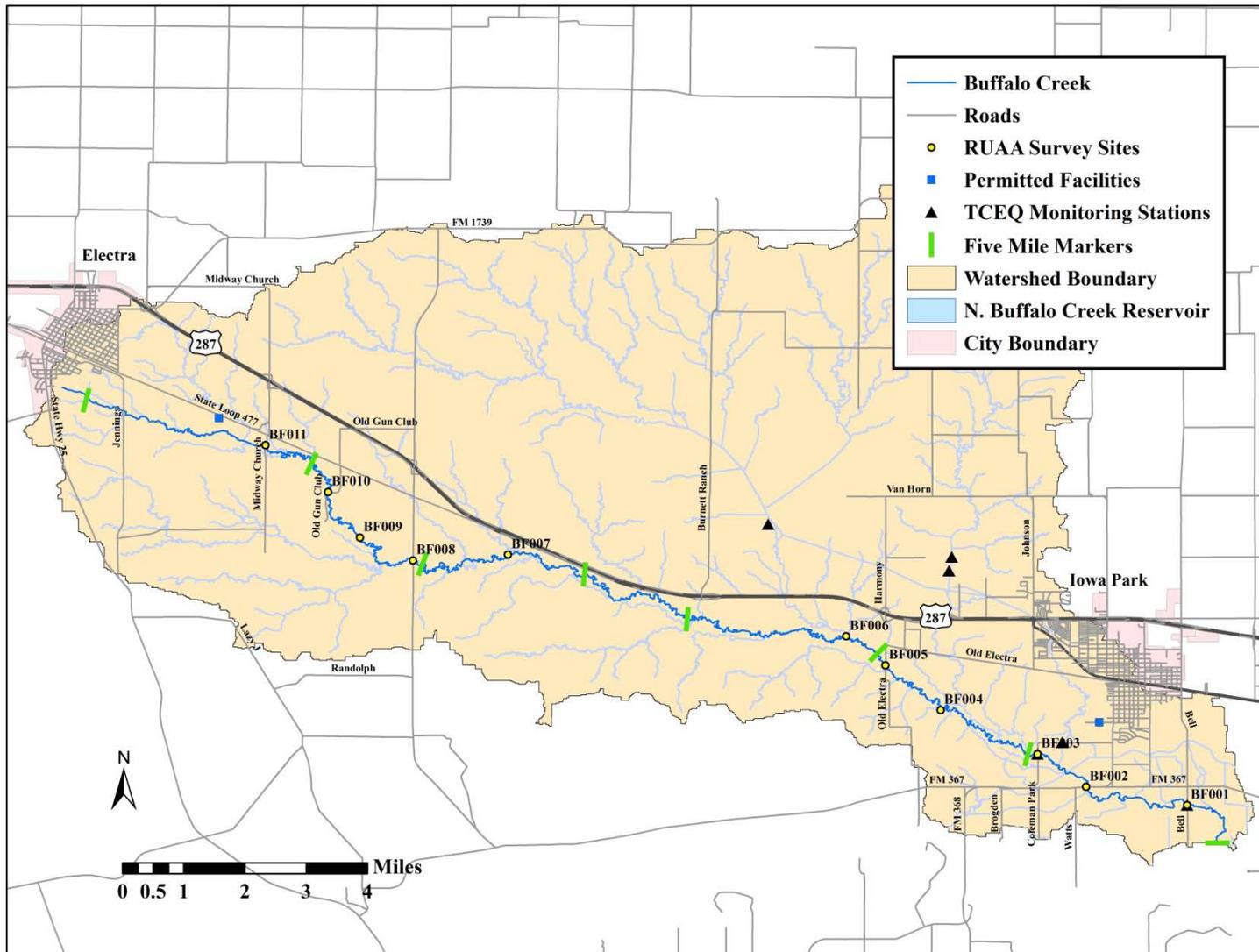


Figure Appendix A-2. RUAA survey sites for Buffalo Creek (Segment 0214B). RUAA sites corresponds to site descriptions in Table B1.1.

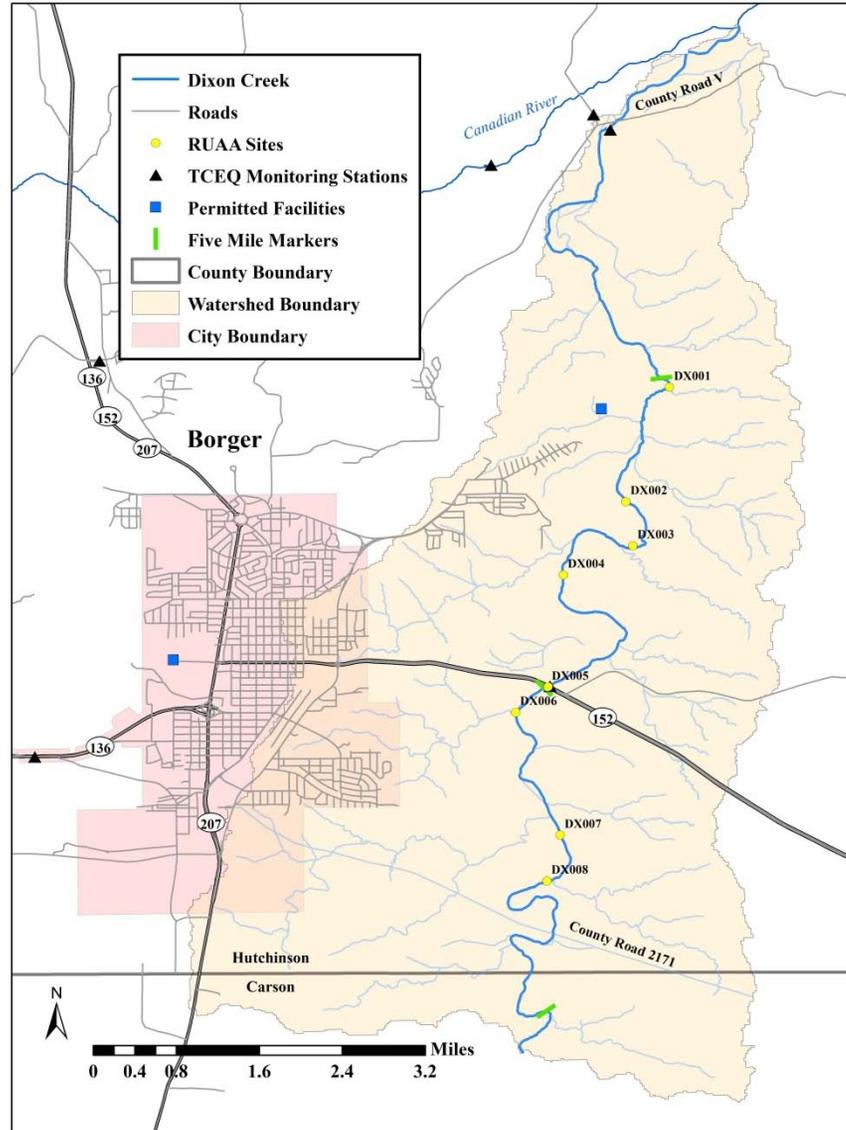


Figure Appendix A-3. RUAA survey sites for Dixon Creek (Segment 0101A). RUAA sites corresponds to site descriptions in Table B1.2.

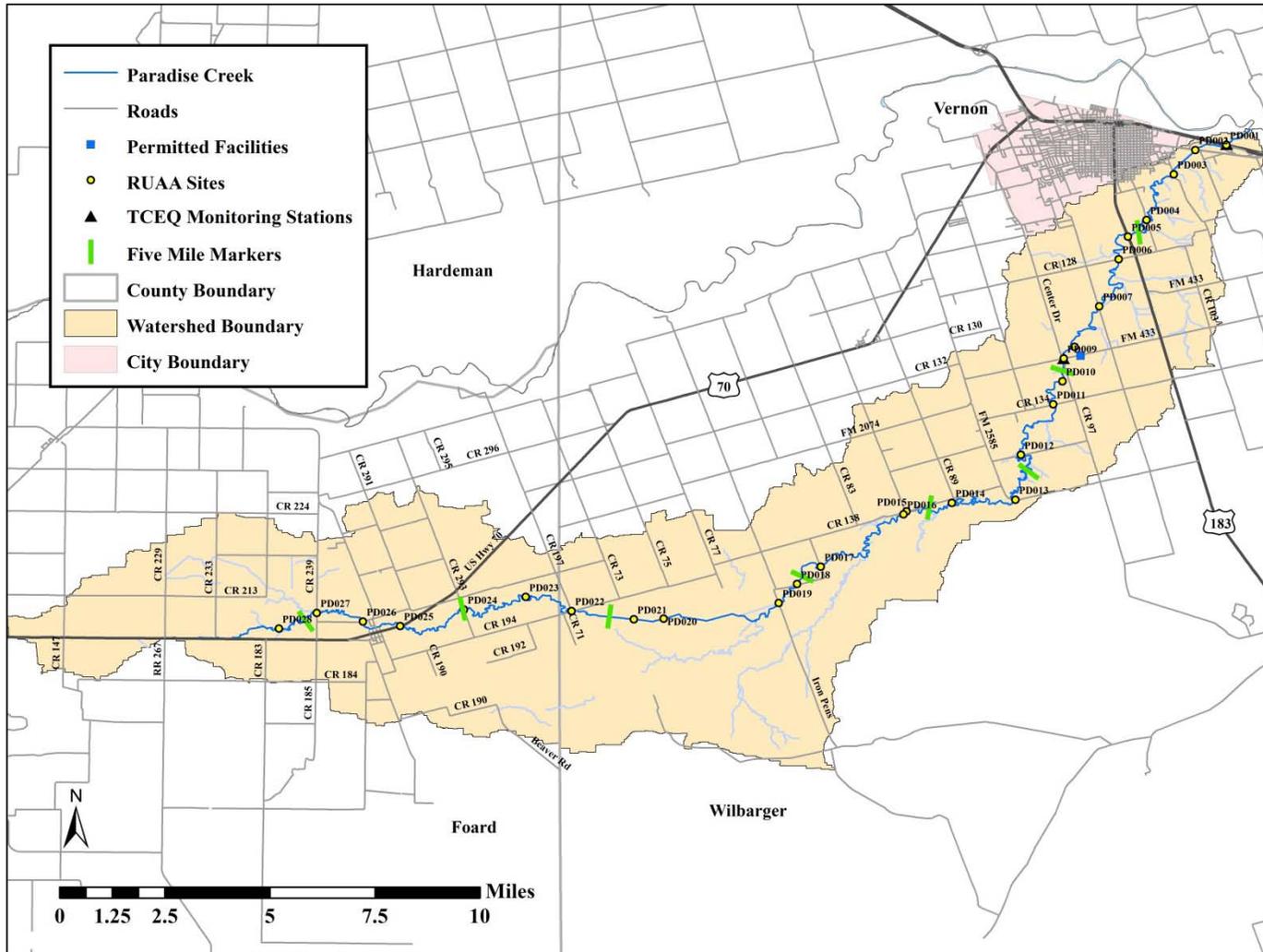


Figure Appendix A-4. RUAA survey sites for Paradise Creek (Segment 0230A_0203). RUAA sites corresponds to site descriptions in Table B1.3.

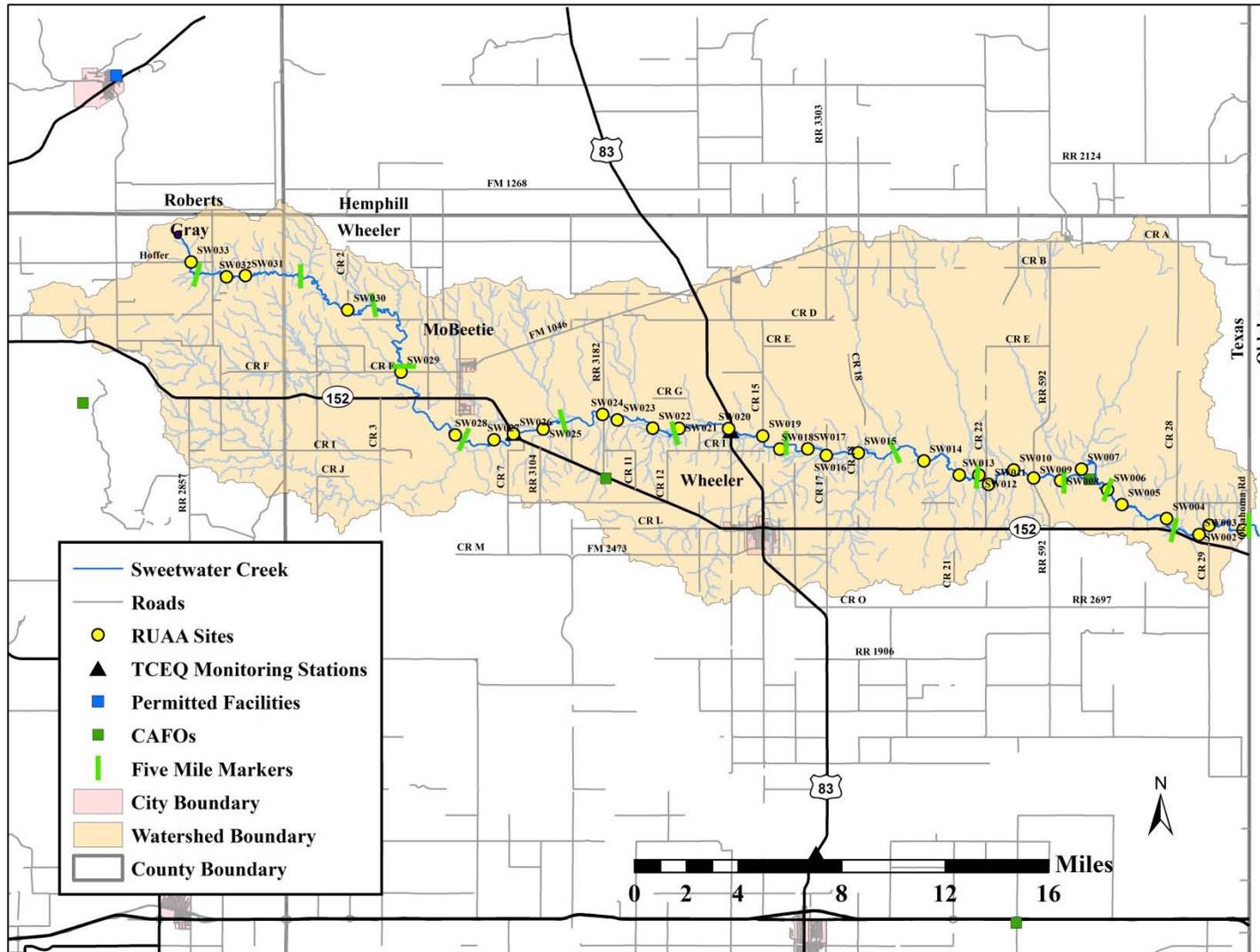


Figure Appendix A-5. RUAA survey sites for Sweetwater Creek (Segment 0299A_01). RUAA sites corresponds to site descriptions in Table B1.4.

Appendix B: RUAA Field Data Sheets

Field Data Sheets –RUA Survey

Stream Name _____
Date: _____

Site: _____
Time: _____

B. Primary Contact Water Recreation Evaluation:

- Primary contact recreation definition: Activities that are presumed to involve a significant risk of ingestion of water (e.g. wading by children, swimming, water skiing, diving, tubing, surfing, and the following whitewater activities: kayaking, canoeing, and rafting).

1. Were water recreation activities that involve a significant risk of ingestion (full body immersion) observed at this site?

Yes No primary contact recreation activities were observed

a. Check the following boxes of primary contact recreation activities observed at the time of the sampling event at the site (Attach photos of the activities or lack of activities).

- Wading-Children Tubing
 Wading-Adults Surfing
 Swimming Whitewater-kayaking, canoeing, rafting
 Water skiing Other: _____
 Diving frequent public swimming-created by publicly owned land or commercial operations

b. Check the number of individuals observed at the site: None 1-10 11-20 20-50 greater than 50

c. Check the following that apply regarding the individuals proximity to the water body.

- Water in mouth or nose of the individual Primary touch: Individual's body (or portion) immersed in water
 Secondary touch: fishing, pets and related contact with water Individual is in a boat touching water
 Individual is on shore near water within 8 meters (25ft) of water Individual is well away from water between 8 and 30 meters (100 ft) Not applicable

2. If primary contact recreation activities are not observed, describe the physical characteristics of the water body that may hinder the frequency of primary contact (depth, etc.) (Attach photos, etc. for documentation).

3. Describe if there is public access (e.g. parks, roads, etc.) (Attach photos, maps, etc. for documentation).

4. Is an area with primary contact recreation activities or a bathing beach (e.g. state/local parks with swimming, etc.) located near (e.g. within 5 miles upstream and downstream) this site?

C. Secondary Contact Water Recreation Evaluation:

- Secondary contact recreation 1: Activities that commonly occur but have limited body contact incidental to shoreline activity (e.g. fishing, canoeing, kayaking, rafting and motor boating). These activities are presumed to pose a less significant risk of water ingestion than primary contact recreation but more than secondary contact recreation 2.

- Secondary contact recreation 2: Activities with limited body contact incidental to shoreline activity (e.g. fishing, canoeing, kayaking, rafting and motor boating) that are presumed to pose a less significant risk of water ingestion than secondary contact recreation 1. These activities occur less frequently than secondary contact recreation 1 due to physical characteristics of the water body or limited public access.

Field Data Sheets –RUAA Survey

Stream Name: _____ Site: _____
Date: _____ Time: _____

1. Were water recreation activities observed at the site, but the nature of the recreation does not involve a significant risk of ingestion (e.g. secondary contact recreation activities)? Yes No secondary contact recreation activities were observed

a. Check the following boxes of secondary contact recreation activities that were observed at the time of the sampling event at the site (Attach photos of activities or lack of activities).

- Fishing
- Boating-commercial, recreational
- Non-whitewater-kayaking, rafting, canoeing
- No secondary contact recreation activities were observed
- Other secondary contact activities: _____

b. Check the number of individuals observed at the site.

- None 1-10 11-20 20-50 greater than 50

c. Check the following that apply regarding the individuals proximity to the water body.

- Secondary touch: fishing, pets and related contact with water In a boat touching water
- Body on shore near water within 8 meters (25ft) of water Body well away from water between 8 and 30 meters (100 ft)

2. If secondary contact recreation activities are not observed, describe the physical characteristics of the water body that may hinder the frequency of secondary contact (Attach photos, etc. for documentation).

3. If secondary contact recreation activities are observed, how often do water recreational activities occur that do not involve a significant risk of water ingestion? frequently infrequently

Please describe how often the activities occur? Unknown Never Daily Monthly Yearly

4. If infrequently, what is the reason? physical characteristics of the water body limited public access other

If other, list reasons: _____

5. Describe the physical characteristics of the water body that hinders the frequency of secondary contact recreation (depth, etc.) (Attach photos or depth measurements, etc. for documentation).

6. Describe why there is limited public access (e.g. lack of roads, river or stream banks overgrown, etc.) (Attach photos, maps, etc. for documentation).

D. Noncontact Recreation Evaluation

Noncontact recreation applies to water bodies where recreation activities do not involve a significant risk of water ingestion (e.g. activities with limited body contact incidental to shoreline activity, including birding, hiking, and biking), and where primary and secondary contact recreation uses do not occur because of unsafe conditions, such as barge traffic.

1. Provide site-specific information and documentation (including photographs) regarding unsafe conditions, recreation activities, and presence or absence of water recreation activities.

Field Data Sheets –RUAA Survey

Stream Name _____ Site: _____
 Date: _____ Time: _____

E. Stream Channel and Substantial Pools Measurements

Please check the following which best describes the river or stream (A non-wadeable stream is one that is too deep to wade. Dry streams are considered wadeable.): Wadeable Non-wadeable

1. Wadeable Streams

Determine whether or not the average depth at the thalweg is greater than 0.5 meters and if there are substantial pools with a depth of 1 meter or greater. Walk an approximately 300 meter reach (total) at the site and take the following measurements within the 300 meter reach. Measurements should be taken during dry weather flows (sustained or typical dry, warm-weather flows between rainfall events, excluding unusual antecedent conditions of drought or wet weather

Also, take photos facing upstream, downstream, left bank, and right bank at the 30 meters, 150 meters, and 300 meters.

Photos #s (30 meters) Upstream _____ Downstream _____ Left Bank _____ Right Bank _____

Photos #s (150 meters) Upstream _____ Downstream _____ Left Bank _____ Right Bank _____

Photos #s (300 meters) Upstream _____ Downstream _____ Left Bank _____ Right Bank _____

a) Substantial pools - Measure the length of each pool within the 300 meter reach (if > 10 pools only measure 10 pools). Also measure the width (at the widest point) and deepest depth of each pool. A substantial pool is considered a pool greater than 10 meters in length for the purposes of a RUAA Survey. Report measurements to 2 significant figures. If depths are too deep to measure then report >1.5 meters.

	Length (meters)	Width (meters)	Depth (meters)
Pool 1			
Pool 2			
Pool 3			
Pool 4			
Pool 5			
Pool 6			
Pool 7			
Pool 8			
Pool 9			
Pool 10			

b) Average depth at the thalweg –Take depth measurements every 30 meters within the 300 meter reach to calculate an average depth at the thalweg (at least 11 measurements needed). Report measurements to 2 significant figures. If depths are too deep at a particular transect to measure then report >1.5 meters. Use 1.5 when calculating the mean.

Distance	Depth (meters)
0 meters	
30 meters	
60 meters	
90 meters	
120 meters	
150 meters	
180 meters	
210 meters	
240 meters	
270 meters	
300 meters	
Average	

Field Data Sheets –RUAA Survey

Stream Name _____ Site: _____
 Date: _____ Time: _____

c) Stream width - Measure (1) the width at one point which represents the typical average width of the 300 meter reach; (2) the width at the narrowest point of the stream within the 300 meter reach; and (3) the width at the widest point of the stream within the 300 meter reach. Report measurements to 2 significant figures.

Measurement Type	Width (meters)
Typical Average Width of 300 meter reach	
Width at narrowest point of the stream within 300 meter reach	
Width at the widest point of the stream within 300 meter reach	

2. Non-wadeable Streams

If accessible, take 11 width measurements which represent typical widths of the 300 meter reach. If the water is too deep the entire 300 meter reach then record the estimated average width of the water body. Report measurements to 2 significant figures.

Also, take photos facing upstream, downstream, left bank, and right bank at .

Photos #s (30 meters) Upstream ___ Downstream ___ Left Bank ___ Right Bank ___

Photos #s (150 meters) Upstream ___ Downstream ___ Left Bank ___ Right Bank ___

Photos #s (300 meters) Upstream ___ Downstream ___ Left Bank ___ Right Bank ___

# Measurements	Width (meters)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

Field Data Sheets –RUAA Survey

Stream Name _____ Site: _____
 Date: _____ Time: _____

F. Additional RUAA Information. *Summarize your observations for the entire 300 meter reach.*

1. Check the following activities observed over the site reach.

- | | |
|---|---|
| <input type="checkbox"/> Drinking or water in mouth | <input type="checkbox"/> Playing on shoreline |
| <input type="checkbox"/> Bathing | <input type="checkbox"/> Picnicking |
| <input type="checkbox"/> Walking | <input type="checkbox"/> Motorcycle/ATV |
| <input type="checkbox"/> Jogging/running | <input type="checkbox"/> Hunting/Trapping |
| <input type="checkbox"/> Bicycling | <input type="checkbox"/> Wildlife watching |
| <input type="checkbox"/> Standing | <input type="checkbox"/> None |
| <input type="checkbox"/> Sitting | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Lying down/sleeping | |

2. Are there permanent or long-term hydrologic modifications that are constructed and operated in a way that affects the recreational uses? Yes No (If yes, please provide supporting documentation and photos.)

Comments: _____

3. Check any channel obstructions that apply (Attach photos).

- | | | | | |
|---------------------------------------|---|---|--------------------------------------|--|
| <input type="checkbox"/> Culverts | <input type="checkbox"/> Fences | <input type="checkbox"/> Log jams | <input type="checkbox"/> Rip rap | <input type="checkbox"/> Water control structure |
| <input type="checkbox"/> Barbed wire | <input type="checkbox"/> Dams | <input type="checkbox"/> Thick vegetation | <input type="checkbox"/> Low bridges | <input type="checkbox"/> None |
| <input type="checkbox"/> Utility pipe | <input type="checkbox"/> Other (specify): _____ | | | |

4. Check all surrounding conditions that promote recreational activities (Attach photos of evidence or unusual items of interest).

- | | | | |
|--|---|---|--|
| <input type="checkbox"/> Campgrounds | <input type="checkbox"/> Stairs/walkway | <input type="checkbox"/> Roads (paved/unpaved) | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Playgrounds | <input type="checkbox"/> Boating access (ramps) | <input type="checkbox"/> Populated area | <input type="checkbox"/> None of the Above |
| <input type="checkbox"/> Rural area | <input type="checkbox"/> Beach | <input type="checkbox"/> Docks or rafts | |
| <input type="checkbox"/> Residential | <input type="checkbox"/> Bridge crossing | <input type="checkbox"/> Commercial outfitter | |
| <input type="checkbox"/> National forests | <input type="checkbox"/> Commercial boating | <input type="checkbox"/> Trails/paths (hiking/biking) | |
| <input type="checkbox"/> Urban/suburban location | <input type="checkbox"/> Nearby school | <input type="checkbox"/> Power Line Corridor | |
| <input type="checkbox"/> Golf Course | <input type="checkbox"/> Paved parking lot | <input type="checkbox"/> Parks (national/city/county/state) | |
| <input type="checkbox"/> Sports Field | <input type="checkbox"/> Unimproved parking lot | <input type="checkbox"/> Public Property | |

Comments: _____

5. Check all surrounding conditions that impede recreational activities (Attach photos of evidence or unusual items of interest).

- | | |
|---|---|
| <input type="checkbox"/> Private Property | <input type="checkbox"/> Fence |
| <input type="checkbox"/> No trespass sign | <input type="checkbox"/> Barge/ship traffic |
| <input type="checkbox"/> Wildlife | <input type="checkbox"/> Industrial |
| <input type="checkbox"/> Steep slopes | <input type="checkbox"/> None of the Above |
| <input type="checkbox"/> No public access | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> No roads | |

Comments: _____

6. Check any indications of human use (Attach photos).

- | | | | |
|--|---|---|--|
| <input type="checkbox"/> Roads | <input type="checkbox"/> RV/ATV Tracks | <input type="checkbox"/> NPDES Discharge | <input type="checkbox"/> Organized event |
| <input type="checkbox"/> Rope swings | <input type="checkbox"/> Camping Sites | <input type="checkbox"/> Gates on corridor | <input type="checkbox"/> No Human Presence |
| <input type="checkbox"/> Dock/platform | <input type="checkbox"/> Fire pit/ring | <input type="checkbox"/> Children's toys | |
| <input type="checkbox"/> Foot paths/prints | <input type="checkbox"/> Fishing Tackle | <input type="checkbox"/> Remnants of kids' play | |
| <input type="checkbox"/> Other: _____ | | | |

Comments: _____

Field Data Sheets –RUAA Survey

Stream Name _____ Site: _____
Date: _____ Time: _____

7. Please list any additional items that may impede recreation, such as excessive aquatic vegetation or algae, excessive debris, garbage, snakes, alligators, abundant wildlife, etc.? (Attach photos).

8. Please list any evidence of sustained aquatic habitat such as clam shells, aquatic or marsh vegetation, turtle shells, etc. (Attach photos)

9. Is the site located in a wildlife preserve with large wildlife (i.e waterfowl) population? Yes No

10.. Please document any other relevant information regarding recreational activities and the water body in general (for example, area outside of the stream reach evaluated).

<u>Severity Value</u>	<u>Description</u>
<input type="checkbox"/> 1 No Flow	When a flow severity of 1 is recorded for a sampling visit, record a flow value of 0 ft/s (using parameter code 00061) for that sampling visit. A flow severity of 1 describes situations where the stream has water visible in isolated pools. There should be no obvious shallow subsurface flow in sand or gravel beds between isolated pools. "No flow" not only applies to streams with pools but also to long reaches of streams that have water from bank to bank but no detectable flow.
<input type="checkbox"/> 2 Low Flow	When streamflow is considered low, record a flow-severity value of 2 for the visit, along with the corresponding flow measurement (parameter code 00061). In streams too shallow for a flow measurement where water movement is detected, record a value of < 0.10 ft/s. <i>Note:</i> Use a stick or other light object to verify the direction of water movement. Make sure the movement is downstream and not the effect of wind. What is low for one stream could be high for another.
<input type="checkbox"/> 3 Normal Flow	When streamflow is considered normal, record a flow severity value of 3 for the visit, along with the corresponding flow measurement (parameter code 00061). "Normal" is highly dependent on the stream. Like low flow, what is normal for one could be high or low for another.
<input type="checkbox"/> 4 Flood Flow	Flow-severity values for high and flood flows have long been established by the EPA and are not sequential. Flood flow is reported as a flow severity of 4. Flood flows are those which leave the confines of the normal stream channel and move out onto the floodplain (either side of the stream).
<input type="checkbox"/> 5 High Flow	High flows are reported as a flow severity of 5. High flow would be characterized by flows that leave the normal stream channel but stay within the stream banks.
<input type="checkbox"/> 6 Dry	When the stream is dry, record a flow-severity value of 6 for the sampling visit. In this case the flow (parameter code 00061) is not reported. This will indicate that the stream is completely dry with no visible pools.

Appendix C: Contact Information and RUAA Interview Forms

Contact Information Form

(This form must be completed prior to conducting a Basic RUAA Survey and/or Comprehensive RUAA.)

The TCEQ Water Quality Standards Group will not consider or review a RUAA unless the appropriate entities listed below have been notified prior to the beginning of a RUAA. A RUAA should not be conducted until you have received a Notice to Proceed from the TCEQ Water Quality Standards Group.

River or stream name: _____

Required Local Contacts:

Ask the contacts if a recreational use-attainability analysis is appropriate for the river or stream and check Yes or No below. Document the name of the person contacted and the date they were notified about the proposed RUAA project.

Clean Rivers Program Partner Yes No Date Notified: _____
(River Authority and other local partners) Name: _____

Texas Parks and Wildlife Department region staff Yes No Date Notified: _____
Name: _____

TCEQ region staff Yes No Date Notified: _____
Name: _____

Texas State Soil and Water Conservation Board Yes No Date Notified: _____
Statewide Resource Management Group Name: _____
srm-team@tsswcb.state.tx.us

Suggested Additional Local Contacts:

If contacted, ask the contacts if a recreational use-attainability analysis is appropriate for the river or stream and check Yes or No below. If contacted, include information regarding notification date and person contacted on a separate page and attach it to this form.

- | | | | | |
|--|------------------------------|-----------------------------|---|---|
| Local Parks and Recreation Departments | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| Municipal Government/Jurisdiction | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| County Government/Jurisdiction | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| Local Recreation Groups | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| Conservation Groups | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| Local Soil and Water Conservation Districts | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| Texas AgriLife Extension Service
(local County Extension Agent) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| USDA Natural Resources Conservation Service
(local field staff) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| Watershed Groups | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| Long-term Landowners/Adjacent Landowners | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |
| Texas Stream Team (formerly Texas Watch) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Entity Not Contacted | <input type="checkbox"/> Entity Not in Project Area |

- Canoe Clubs Yes No Entity Not Contacted Entity Not in Project Area
- City Commissioners Office Yes No Entity Not Contacted Entity Not in Project Area
- Real estate agents Yes No Entity Not Contacted Entity Not in Project Area
- Local non-profits Yes No Entity Not Contacted Entity Not in Project Area
- City/county offices Yes No Entity Not Contacted Entity Not in Project Area
(Engineer, Health, Law Enforcement)
- Flood control districts Yes No Entity Not Contacted Entity Not in Project Area
- Councils of Governments Yes No Entity Not Contacted Entity Not in Project Area
- Texas Parks and Wildlife Department Game Warden Yes No Entity Not Contacted Entity Not in Project Area
- Other: _____ Yes No Entity Not Contacted Entity Not in Project Area

Draft Definitions (2010 TSWQS Revision)

- Primary contact recreation: Water recreation activities, such as wading by children, swimming, water skiing, diving, tubing, surfing, and whitewater kayaking, canoeing, and rafting, involving a significant risk of ingestion of water.
- Secondary contact recreation 1: Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion and that commonly occur.
- Secondary contact recreation 2: Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion but that occur less frequently than for secondary contact recreation 1 due to (1) physical characteristics of the waterbody and/or (2) limited public access.
- Noncontact recreation: Activities, such as ship and barge traffic, birding, and using hike and bike trails near a waterbody, not involving a significant risk of water ingestion, and where primary and secondary contact recreation should not occur because of unsafe conditions.

Information from Local Contacts:

1. If any entity answered no, please list the reason(s) why:

2. Did the local entities confirm that primary contact recreation activities frequently occur?

Yes No

Please describe how often the activities occur? Unknown Never Daily Monthly Yearly

If no, explain: _____

3. Did the local entities confirm that secondary contact recreation 1 activities frequently occur?

Yes No

Please describe how often the activities occur? Unknown Never Daily Monthly Yearly

If no, explain: _____

4. Did the local entities confirm that secondary contact recreation 2 activities frequently occur?

Yes No

Please describe how often the activities occur? Unknown Never Daily Monthly

Yearly

If no, explain: _____

5. Did the local entities confirm that noncontact recreation activities frequently occur? Yes

No

Please describe how often the activities occur? Unknown Never Daily Monthly

Yearly

If no, explain: _____

6. Do the local entities know if this waterbody provides substantial flow to a waterbody with primary contact recreation activities (e.g., swimming in a state/local park) or a bathing beach that is located immediately downstream? Yes No Unknown

If yes, have the local entities provide the name of the waterbody and a description of the location of the primary contact recreation uses or bathing beach.

Notify TCEQ Water Quality Standards Group (required):

Send an e-mail notification to the TCEQ Water Quality Standards Group at standards@tceq.state.tx.us.

Notified: Yes No

Date Notified by e-mail: _____

Date TCEQ WQS e-mail Response Received: _____

WQS Group Contact Person Providing Response: _____

Did the WQS Group provide a Notice to Proceed with the RUAA? Yes No

Additional Local Contacts Made:

Name: _____

Entity: _____

Date Notified: _____

Name: _____

Entity: _____

Date Notified: _____

Name: _____

Entity: _____
Date Notified: _____

Name: _____
Entity: _____
Date Notified: _____

Name: _____
Entity: _____
Date Notified: _____

Name: _____
Entity: _____
Date Notified: _____

Name: _____
Entity: _____
Date Notified: _____

Name: _____
Entity: _____
Date Notified: _____

Name: _____
Entity: _____

RUA Interview Form

Stream Name: _____ Segment #: _____ Site: _____

Interviewer's Name: _____

Date & Time (include AM or PM): _____

Interviewed: In person By phone By mail By e-mail

No interviews were conducted

If no interviews were conducted, please provide an explanation:

*Are you willing to respond to a short survey about this stream? Yes No

Interviewee selected because (e.g., resource manager, Gov. official, conservationist, property owner, local resident, standing by stream, etc.)

Questions:

1. Are you familiar with this stream? Yes No If yes, how many years? _____
If yes, proceed to #2. If no, stop here and do not conduct an interview.

2. What location(s) along the stream are you familiar with:

3. Have the interviewer characterize the stream flow. Since the interviewer may not be familiar with TCEQ's definitions or distinction between the different water bodies, please refer to the definitions listed below when asking this question.

Ephemeral: A stream which flows only during or immediately after a rainfall event

Intermittent: A stream which has a period of zero flow for at least one week during most years. (Channel contains flowing water for only a portion of the year and surface water may be absent at times.)

Intermittent w/ perennial pools: An intermittent stream which maintains persistent pools even when flow in the stream is less than 0.1 cubic feet per second. (When not flowing, the water may remain in isolated pools.)

Perennial: A stream which flows continuously throughout the year.

4. Have you or your family personally used the stream for recreation? Yes No
If yes, proceed to #6. If no, proceed to #5.

5(a). List reasons stream not used. _____

5(b). Proceed to #7.

RUAA Interview Form

Stream Name: _____ Segment #: _____ Site: _____

- 6.) a) How do you use the stream? Swimming Wading-Children
 Water Skiing Wind surfing Tubing Wading-Adults
 Hunting Kayaking Rafting Trapping SCUBA diving
 Snorkeling Fishing Boating Canoeing Skin Diving

b) When did these uses occur (e.g. year(s); season) and how often (times/year)?

c) What location did these uses occur (get specific location and mark on a map)?

7. Have you observed others using this stream for recreation? Yes No
If yes, proceed to #8. If no, proceed to #9.

8. a) What kinds of uses have you witnessed? Swimming Wading-Children
 Water Skiing Wind surfing Tubing Wading-Adults
 Hunting Kayaking Rafting Trapping SCUBA diving
 Snorkeling Fishing Boating Canoeing Skin Diving

b) When did these uses occur (e.g. year(s); season) and how often (times/year)?

c) What location did these uses occur (get specific location and mark on a map)?

9. Have you heard about anyone using this stream for recreation? Yes No
If yes, proceed to #10. If no, conclude the interview.

10. a) What kind of uses have you heard about? Swimming Wading-Children
 Water Skiing Wind surfing Tubing Wading-Adults
 Hunting Kayaking Rafting Trapping SCUBA diving
 Snorkeling Fishing Boating Canoeing Skin Diving

b) When did these uses occur (e.g. year(s); season) and how often (times/year)?

c) What location did these uses occur (get specific location and mark on a map)?

11. Can you recommend someone else we could contact that knows the stream? Yes No
If yes, list person's contact information: _____

12. Additional comments (from the interviewee or interviewer):

Appendix D: Corrective Action Report Form

Corrective Action Report

SOP-Q-105
CAR #: 08-003

Report Initiation Date _____ Report By: _____ Procedure or QC Typ _____

Deviation: _____

Analyte: _____

Affected Sample #s: _____

Sampling Station: _____

Project(s): _____

Attached Documentation:

- COC
- FDS
- FlowLink
- Flow8
- GM
- Log Book
- QC Sheet
- Memo
- Other

Details of the problem, nonconformance or out-of-control situation:

Possible Causes:

Corrective Actions Taken:

Corrective Actions Suggested:

CAR routed to: _____ Date: _____

Supervisor: Tier 1 (does not affect final data integrity) Tier 2 (data accepted but flag required) Tier 3 (possibly affects final data integrity)

Corrective actions taken for specific incident: _____

Corrective actions taken to prevent recurrences: _____

Corrective actions to be taken: _____

Responsible Party: _____ Proposed completion date: _____

Effect on data quality: _____

Responsible Supervisor: _____ Date: _____

Concurrence:

Program/Project Manager: _____ Date: _____
(Tier 3 CARs only)

Quality Assurance Officer: _____ Date: _____