Recreational Use-Attainability Analysis for Ash Creek (0809B), Dosier Creek (0809C), and Derrett Creek (0809D) in the Trinity Creek River Basin

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Chapter 1. Introduction

Problem Statement

Ash Creek, Dosier Creek, and Derrett Creek are waterbodies located in primarily urban watersheds within the Trinity River Basin (Table 1.1 and Figure 1.1) and are all unclassified waterbodies. These three waterbodies are listed on the 2022 Texas 303(d) list as impaired for the primary contact recreation due to elevated bacteria concentrations (TCEQ, 2022).

- Ash Creek (0809B) extends from the confluence of Eagle Mountain Lake west to its confluence with Mill Branch Creek. The watershed stretches between Tarrant and Parker Counties and includes the City of Azle. See Chapter 3 for a complete overview of Ash Creek.

- Dosier Creek (0809C) extends from the confluence of Dosier Slough of Eagle Mountain Lake northeast to its confluence with an intermittent stream approximately half a mile to Boat Club Road in Tarrant County. The small watershed partially overlaps with the City of Eagle Mountain. A full description of the watershed is presented in Chapter 4.

- Derrett Creek (0809D) is a perennial stream that begins at the confluence of Derrett Creek Cove off Eagle Mountain Lake to approximately a tenth of a mile northwest where the waterbody meets an unnamed stream. The small watershed partially encompasses the City of Newark. See Chapter 5 for a more in-depth discussion on Derrett Creek.

All three waterbodies have a presumed use of primary contact recreation 1 based on the Texas Surface Water Quality Standards (TSWQS) (TCEQ, 2010). Prior to June 2010 only two categories of recreation use, contact and noncontact, existed in Texas. In June 2010, TCEQ adopted revisions to the TSWQS that expanded the designation of contact recreation into three categories (primary contact recreation, secondary contact recreation 1, and secondary contact recreation 2) based on varying degrees of interaction with the water, while maintaining a fourth category of noncontact recreation. These revisions were codified in the Texas Administrative Code (TAC), Title 30 Chapter 307 and became effective as a state rule on July 22, 2010 (TCEQ, 2010). On February 12, 2014, TCEQ adopted a fourth designation of contact recreation, primary contact recreation 2. As a result of these revisions to the TSWQS, all water bodies listed as impaired based on bacteria for contact recreation are scheduled to undergo a standards review to determine if primary contact recreation 1 is appropriate or if a revision to the use category for recreation should be considered.

Use attainability analyses (UAAs) are studies to evaluate the designated or presumed uses of a water body. To identify and assign attainable uses and criteria to individual water bodies, UAAs evaluate physical, chemical, biological, and economic factors affecting use attainment of a water body (40 Code of Federal Regulations §131.10(g)). A recreational use attainability analysis (RUAA) is a specific type of UAA focused on

determining the appropriate recreational use category of a water body, the findings of which are presented within this report for Ash Creek (0809B), Dosier Creek (0809C), and Derrett Creek (0809D).

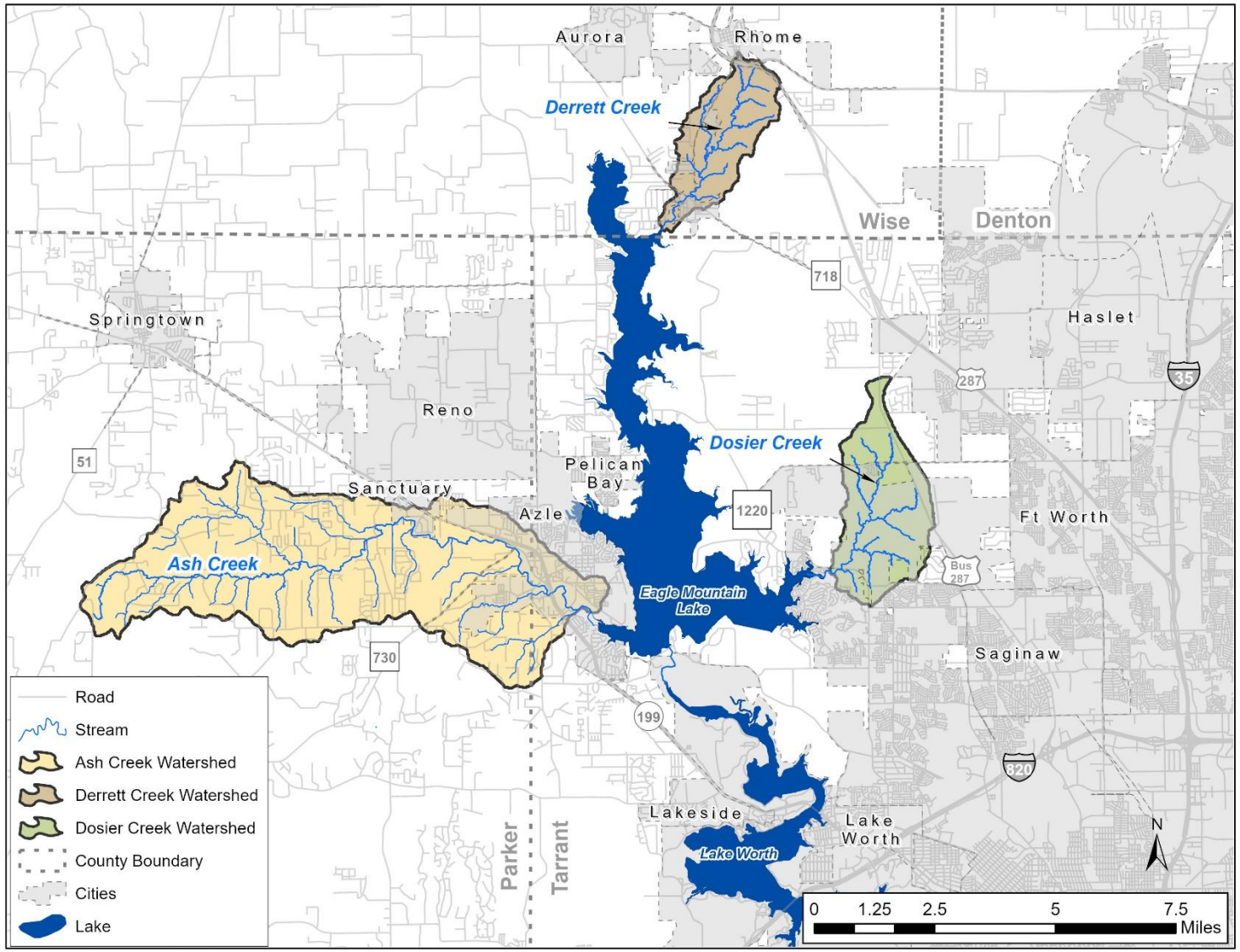

Figure 1.1 Watershed of Ash Creek, Dosier Creek, and Derrett Creeks (0809B, 0809C, and 0809D)

Table 1.1 Waterbodies targeted for RUAAs.

TCEQ ID	Waterbody Name	Waterbody Description	Stream Type	Listed Assessment Miles	Watershed Area (Acres)
0809B	Ash Creek	Intermittent stream with perennial pools from Eagle Mountain Lake in Tarrant County upstream to its confluence with Mill Branch in Parker County	Intermittent with pools	16.75	16,912
0809C	Dosier Creek	Perennial stream from the confluence of Dosier Slough cove upstream to the confluence with an intermittent stream 1 km upstream of Boat Club Road	Perennial	4.8	3,910
0809D	Derrett Creek	Perennial stream from the confluence with Derrett Creek cove to 0.22 km upstream of FM 718 where the waterbody meets an intermittent stream	Perennial	5.6	2,821

Objectives

The objective of this report is to present the findings of a Comprehensive RUAA for Ash, Dosier, and Derrett Creeks following the TCEQ March 2014 Procedures for a Comprehensive RUAA and a Basic RUAA Survey (TCEQ, 2014b). A RUAA consists of three parts: field surveys to document water body characteristics and signs of recreation, interviews with stakeholders regarding past and current use of the water body, and a historical review regarding recreational use of the water body. All components of this RUAA were performed by Texas Institute for Applied Environmental Research (TIAER), which is located on the campus of Tarleton State University in Stephenville, Texas. Field surveys and interviews for the RUAA were conducted under a Texas Commission on Environmental Quality (TCEQ) approved Quality Assurance Plan (QAP; TIAER, 2024).

Stakeholder and Agency Involvement

TCEQ and its collaborating entities maintain an inclusive public participation process. From the inception of this project, the project team sought to ensure that stakeholders were informed and involved. TIAER provided coordination for public participation in this project.

In addition to information and comments from watershed stakeholders, input was also solicited from the Trinity River Authority (TRA), Clean Rivers Program (CRP), Texas Parks and Wildlife Department regional staff, TCEQ regional staff, local Soil and Water Conservation Districts (SWCD), and other local agencies about the need for the RUAA (see Contact Information Form in Appendix D).

A public meeting focusing specifically on the RUAA project for all three watersheds was held at the Azle Memorial Library Community Room located in Azle, Texas on February 28, 2024. At this meeting, input was sought on the proposed sampling sites for the Ash, Dosier, and Derrett Creeks RUAA. While attendees provided information regarding activities that typically occur within the watershed and offered assistance in accessing the stream via privately owned property, overall attendance was low.

In an effort to increase public participation, TIAER and TCEQ hosted a virtual meeting option on March 18, 2024. No watershed stakeholders were present.

A final public meeting occurred on July 8, 2025 at the Azle Memorial Libary to inform stakeholders of the findings of both field surveys. The agenda for this meeting included addressing the next steps of the RUAA, inform stakeholders that the draft RUAA report was open for public review and comment, and solicit feedback. The draft report is available via the project website at https://www.tceq.texas.gov/waterquality/standards/ruaas/trinity-river-basin-recreational-use-attainability-analysis-part-4. Additionally, TIAER provided hard copies if desired by individuals. This meeting yielded 1 attendee.

Watershed stakeholders were invited to attend public meetings through mailed invitations, public announcements (TCEQ website), and individual phone calls.

Information about these RUAA projects and other information can be found on the project's website: https://www.tceq.texas.gov/waterquality/standards/ruaas/trinity-river-basin-recreational-use-attainability-analysis-part-4

Chapter 2. Study Methodology

The process of developing a list of sites to be surveyed for the RUAA began with a reconnaissance of potential locations along each water body. A combination of Geographic Information System (GIS) data, review of historical information, and meetings, phone conversations with local entities and stakeholders were used to determine sites included in the RUAA field surveys.

Watershed Reconnaissance and Site Selection Strategy

Reconnaissance of each watershed was conducted to collect background information before selecting appropriate sites for each RUAA. To the degree possible, site reconnaissance was coordinated with watershed stakeholders in an effort to increase local landowner interest in water quality issues. The March 2014 RUAA procedures (TCEQ, 2014) recommend selecting three sites per every five miles of stream. Based on this recommendation, the preferred number of sites was 13 for Ash Creek, three for Dosier Creek, and five for Derrett Creek.

The following information was compiled using GIS based tools prior to, during, and immediately following the watershed reconnaissance:

- Location of areas along the water body that were accessible to the public and had the highest potential for recreational use, such as road crossings and parks;
- Location of permitted wastewater outfalls and other potential point sources;
- Hydrologic characteristics, such as stream type, streamflow, and hydrologic alterations; and
- Location of city boundaries or other designated population areas.

The site selection process considered locations that were accessible to the public had the highest potential for recreational use, and that were established TCEQ monitoring stations where historical data may have been collected. The site selection process also considered parks and bridge crossings along the waterbodies, as well as access through private lands adjacent to the waterbodies.

Survey Methods

Field Survey Data Collection Activities

As specified in the procedures for a Comprehensive RUAA (TCEQ, 2014), two separate field surveys occurred at each selected survey site during the warm season (air temperature greater than or equal to 70˚F or 21˚C) when recreational activities were most likely to occur (May - September). Ideally, field surveys were to be conducted when stream flow conditions were normal. Rainfall data 30 days prior to each survey were also documented to provide antecedent conditions.

Data collection activities at each RUAA site for both field surveys included the following:

- Measurement of average depth at thalweg (deepest depth),
- Measurement of depths, lengths, and widths of substantial pools,
- Documentation of observational/anecdotal data required on the RUAA field data sheets,
- Photographs of any signs of recreation and
- Photographs of site conditions, including upstream, downstream, and left and right bank photos at the 0-m, 150-m, and 300-m transects.

Average Depth at Thalweg and Substantial Pool Depths

Determination of thalweg and substantial pool depths is applicable to contact recreation use determination for intermittent and perennial freshwaters according to TCEQ (2014). The thalweg is defined as the deepest depth of a transect perpendicular to the stream channel. A substantial pool is defined as a pool greater than 10-m (32.8-ft) in length for the purposes of the RUAA survey (TCEQ, 2014). Substantial pools greater than 1 m are especially important to record during surveys as they are a potential recreation attraction.

As instructed in the RUAA procedures manual (TCEQ, 2014), a 300-m reach at each site was evaluated to determine average thalweg depth. Eleven transects at 30-m intervals were established along the reach. Transects were labeled upstream to downstream with the 300-m transect at the most upstream point of the survey and the 0-m transect being the most downstream. Thalweg was measured at each of the eleven transects. Where significant pools were encountered along the 300-m reach, depths, widths and lengths were measured and recorded. Depths, lengths and widths are presented in meters as per the RUAA procedures (TCEQ, 2014).

Observational / Anecdotal Data

Anecdotal information was recorded during all surveys using the field data sheets from the TCEQ-approved QAP (TIAER, 2024).

Types of observational and anecdotal records included, but were not limited to, the following:

- Channel flow status as indicated by flow severity
- Stream type (e.g., ephemeral, intermittent, etc.)
- Riparian zone characteristics (forest, pasture, eroded banks, etc.)
- Stream accessibility
- Substrate type
- Anecdotal information related to observed human contact activities

Photographs

TIAER staff created photographic records of each site during the site surveys. Photographs were intended to clearly depict the characteristics of the channel and any evidence of observed uses or indications of human use, hydrologic modifications, etc. Photographs were taken specifically at the 0-m, 150-m, and 300-m transects (as described in the Field Data Sheets). Any items of interest, e.g., obstructions, were also

photographed. Photographs were used to document evidence of recreational use (e.g., fishing tackle) and actual recreation. Photographs were also used to document a lack of use (e.g., dry creek beds) or impediments to recreational use. In addition, as part of the overall project, photographs were taken to indicate potential bacteria sources to the water body. All photographs were labeled in a manner that indicated the date, site location, orientation to the stream, and photo's subject. Selected photos representative of each RUAA field site are included with the survey results for each water body in this report.

Chapter 3. Study Area

Climatic Conditions

Due to their close proximity, climatic conditions were the same for all three watersheds. Annual precipitation for the Ash Creek, Dosier Creek, and Derrett Creek watersheds was based on data obtained from the National Oceanic and Atmospheric Administration's website (NOAA, 2015) for Eagle Mountain Lake in Azle, Texas (Station USC00416108). It is important to note that this station is not within either watershed boundaries of the study area. However, it is the nearest station with climate data available for both precipitation and temperature. Normal precipitation (1981-2010) for Station USC00416108 averages 37.78 inches per year with a peak rainfall typically occurring in the months of March – June and September – October (Figure 3.1).

Average maximum temperatures for Station USC00412677 rise above 70˚F beginning in April and ending in November (Figure 3.1). March through October are the months known as generally suitable for assessing recreational use, but only if temperatures reach above 70˚F (TCEQ, 2014b).

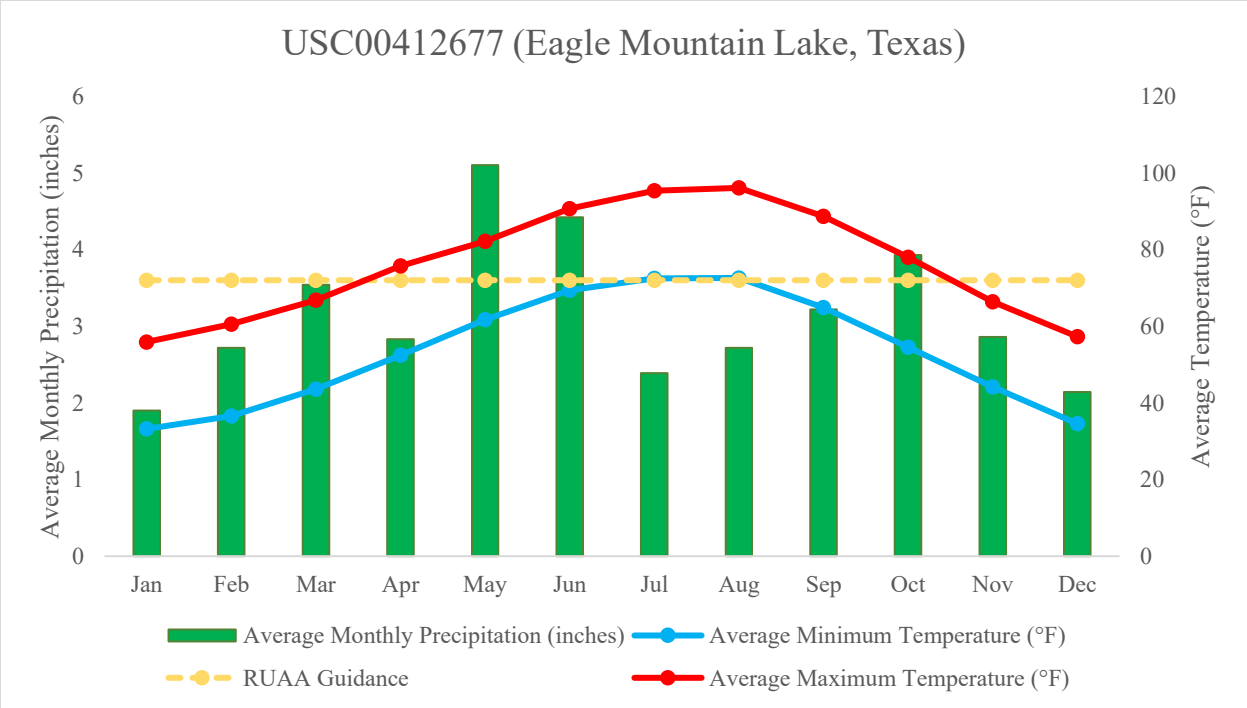

Figure 3.1 Monthly average precipitation for Eagle Mountain Lake, Texas.

Source: NCEI (2025) based on data for 2010-2024.

Watershed Characteristics

The Ash Creek (0809B) watershed spans 16,912 acres (approximately 26.5 square miles) within Tarrant and Parker Counties, situated in the Dallas/Fort Worth Metropolitan area of Texas. Part of the Trinity River Basin, this medium-sized watershed supports a population of 4,468 (USCB, 2020) and largely encompasses the City of Azle (population 14,552) (USCB, 2023).

Dosier Creek's watershed (0809C) covers 3,911 acres (roughly 6.1 square miles) in Tarrant County, also within the Fort Worth metropolitan area and the Trinity River Basin. This smaller watershed has a population of 470 (USCB, 2020) and includes portions of Fort Worth (population 978,468) (USCB, 2023).

Similarly, the Derrett Creek watershed (0809D) lies in Tarrant County within the Fort Worth metropolitan area and the Trinity River Basin. Covering 2,822 acres (approximately 4.4 square miles), it also has a population of 300 (USCB, 2020) and extends into sections of Fort Worth (population 978,468) (USCB, 2023).

Land Use and Land Cover

The land use/land cover for the watershed area was obtained from the National Land Cover Database (NLCD) maintained by the U.S. Geological Survey (USGS, 2019). The land use/land cover categories within the watershed are described as follows from the NLCD legend:

- Grassland/Herbaceous – Areas dominated by graminoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling but can be utilized for grazing.
- Deciduous Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.
- Developed, Open Space – Areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot, single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
- Developed, Low Intensity – Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.
- Developed, Medium Intensity – Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.

- Pasture/Hay – Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.

- Developed High Intensity – Highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.

- Shrub/Scrub – Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions.

- Cultivated Crops – Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.

- Barren Land (Rock/Sand/Clay) – Areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.

- Open Water – Areas of open water, generally with less than 25% cover of vegetation or soil.

- Evergreen Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.

- Mixed Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.

- Woody Wetlands – Areas of forest of shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

Ash Creek

The Ash Creek watershed lies within the Cross Timbers ecoregion as defined in the publication Ecoregions of Texas (Griffith et al., 2007). The dominant land cover within the Ash Creek watershed is Grassland/Herbaceous cover at 54.17% and is present throughout the watershed (Table 3.1 and Figure 3.2). Deciduous Forest is the secondary land cover encompassing 17.19% of the Ash Creek watershed.

Table 3.1 Land use/land cover classes within the Ash Creek watershed.

Source: 2011 National Land Cover Database (USGS, 2016).

Class	Area (acres)	Percent (%)
Grassland/Herbaceous	9,161	54.17%
Deciduous Forest	2,907	17.19%
Developed, Open Space	1,733	10.25%
Developed, Low Intensity	1,280	7.57%
Developed, Medium Intensity	699	4.14%
Pasture/Hay	595	3.52%
Developed, High Intensity	253	1.50%
Shrub/Scrub	148	0.88%
Cultivated Crops	53	0.31%
Barren Land	42	0.25%
Open Water	16	0.09%
Evergreen Forest	15	0.09%
Mixed Forest	7	0.04%
Woody Wetlands	4	0.02%
TOTAL	16,913	100%

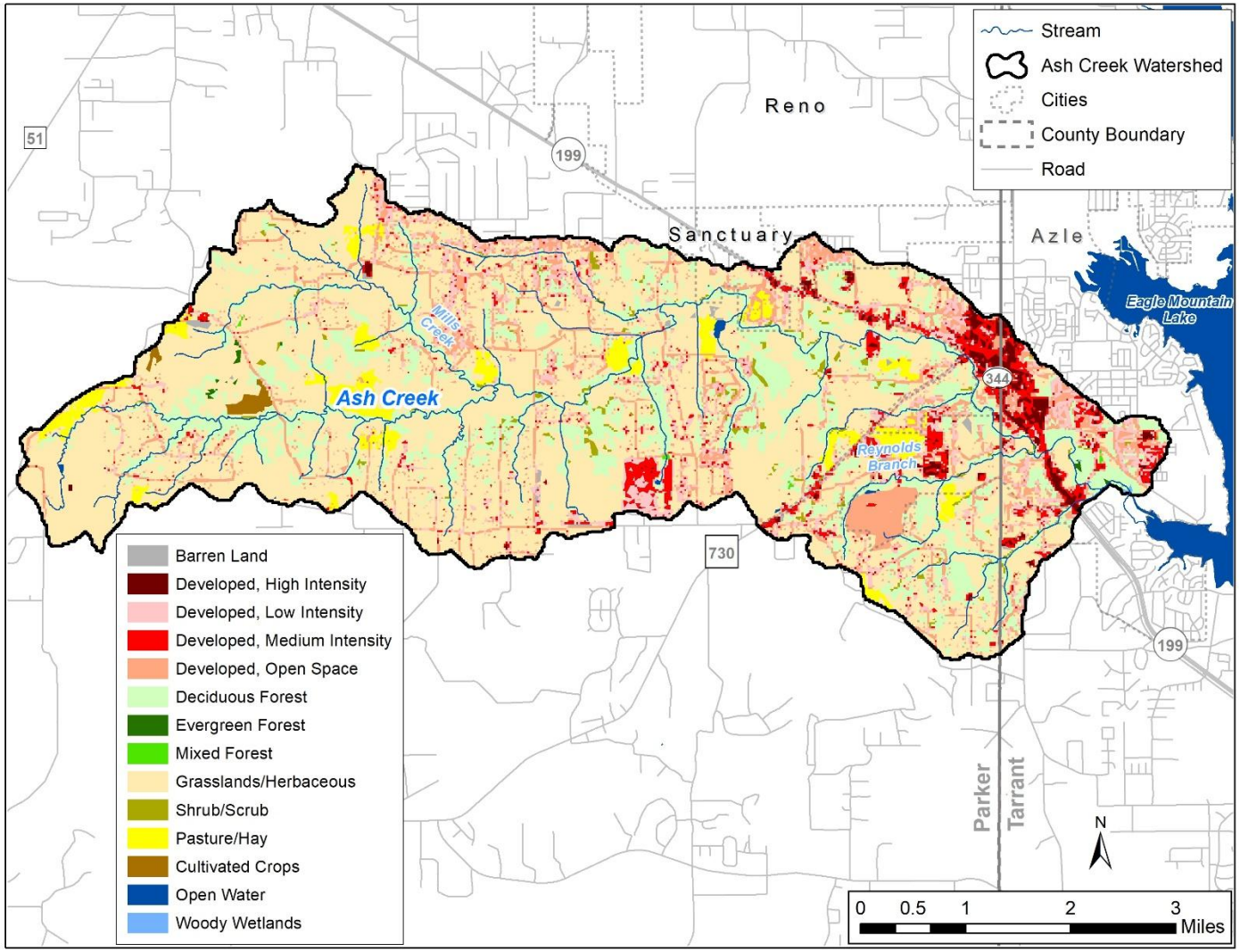

Figure 3.2 Land use and land cover of the Ash Creek watershed.

Source: 2016 National Land Cover Database (USGS, 2017).

Dosier Creek

The Dosier Creek watershed lies within the Cross Timbers ecoregion as defined in the publication Ecoregions of Texas (Griffith et al., 2007). The dominant land cover within the Dosier Creek watershed is Grassland/Herbaceous cover at 61.44% and is present throughout the watershed (Table 3.2 and Figure 3.3). Developed land with medium intensity is the secondary land cover encompassing 15.23% of the Dosier Creek watershed.

Table 3.2 Land use/land cover classes within the Dosier Creek watershed.

Source: 2011 National Land Cover Database (USGS, 2016).

Class	Area (acres)	Percent (%)
Grassland/Herbaceous	2,403	61.44%
Developed, Medium Intensity	596	15.24%
Developed, Low Intensity	319	8.16%
Pasture/Hay	156	3.99%
Deciduous Forest	137	3.50%
Developed, Open Space	129	3.30%
Developed, High Intensity	109	2.79%
Barren Land	34	0.87%
Shrub/Scrub	16	0.41%
Open Water	12	0.31%
Evergreen Forest	15	0.09%
TOTAL	3,911	100%

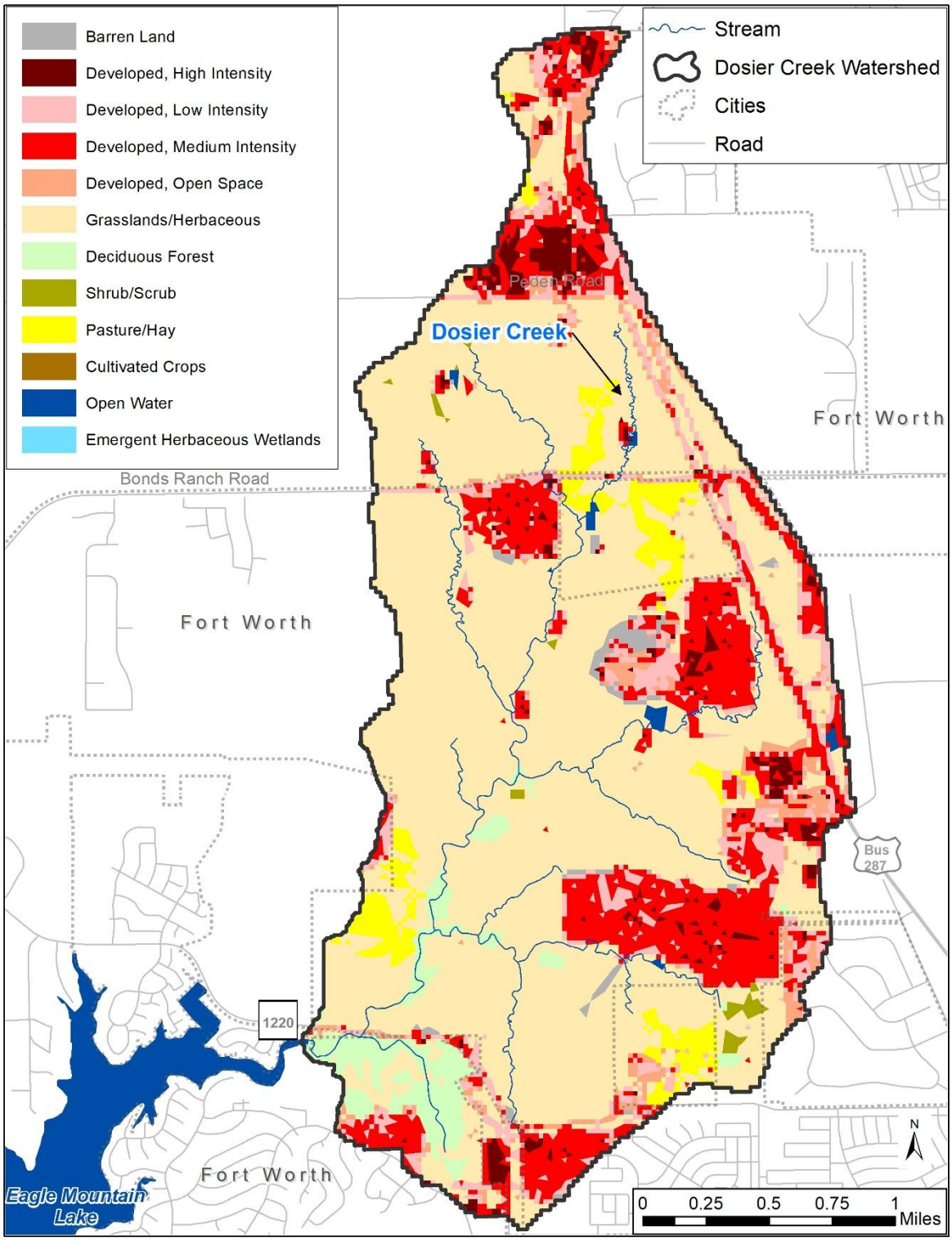

Figure 3.3 Land use and land cover of the Dosier Creek watershed.

Source: 2016 National Land Cover Database (USGS, 2017).

Derrett Creek

The Derrett Creek watershed lies within the Cross Timbers ecoregion as defined in the publication Ecoregions of Texas (Griffith et al., 2007). The dominant land cover within the Derrett Creek watershed is Grassland/Herbaceous cover at 65% and is present throughout the watershed (Table 3.3 and Figure 3.4). Deciduous Forest is the secondary land cover, encompassing 8% of the Derrett Creek watershed.

Table 3.3 Land use/land cover classes within the Derrett Creek watershed.

Source: 2011 National Land Cover Database (USGS, 2016).

Class	Area (acres)	Percent (%)
Grassland/Herbaceous	1,829	65.81%
Deciduous Forest	229	8.11%
Developed, Low Intensity	207	7.34%
Developed, Open Space	179	6.34%
Developed, Medium Intensity	115	4.08%
Barren Land	107	3.79%
Pasture/Hay	84	2.98%
Shrub/Scrub	29	1.03%
Developed, High Intensity	22	0.78%
Open Water	15	0.53%
Woody Wetlands	3	0.1%
Evergreen Forest	2	.07%
Emergent Herbaceous Wetlands	1	0.04%
TOTAL	2,822	100%

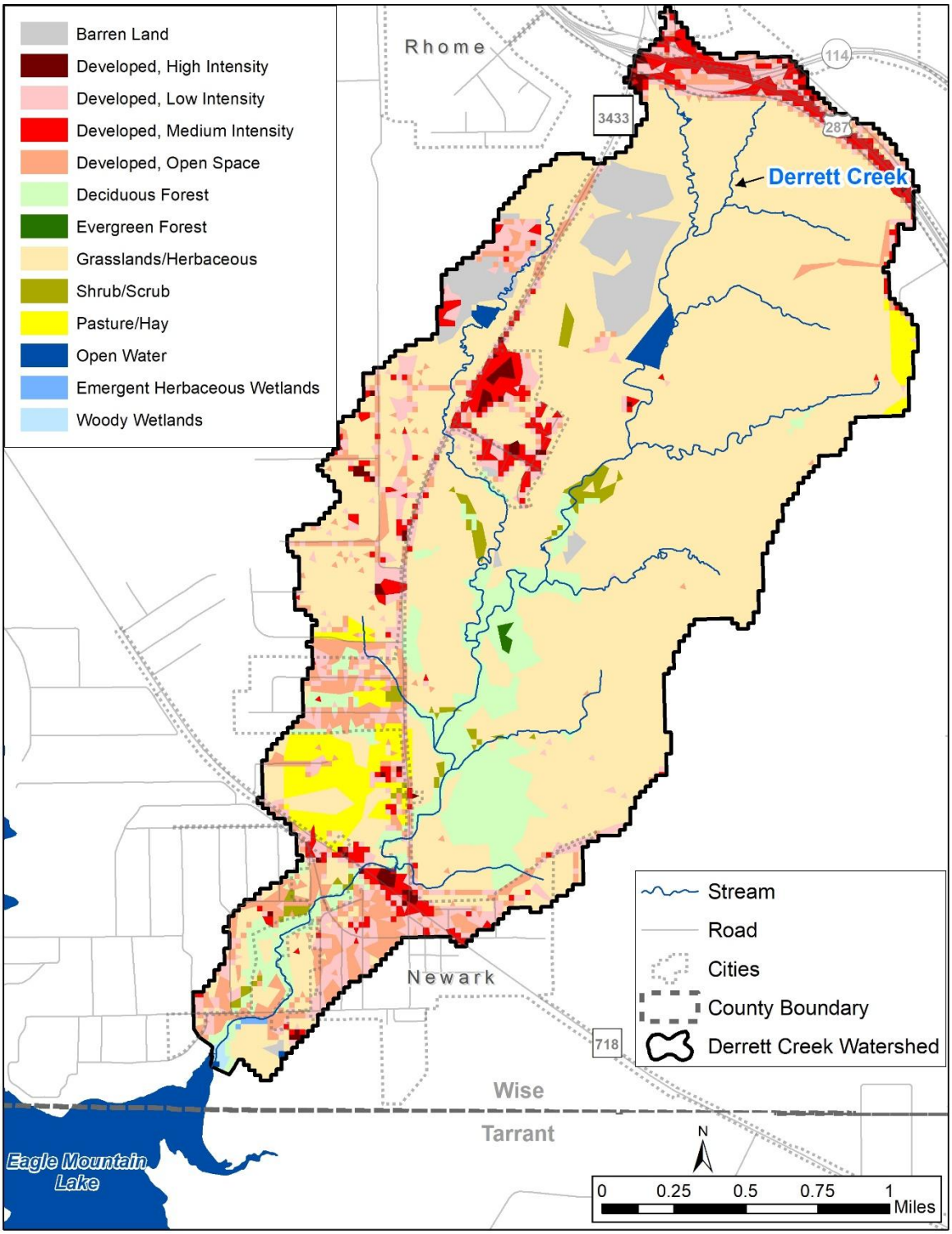

Figure 3.4 Land use and land cover of the Derrett Creek watershed.

Source: 2016 National Land Cover Database (USGS, 2017).

Indicator Bacteria

Escherichia coli (*E. coli*) bacteria are common inhabitants of the intestines of all warm-blooded animals, including wildlife such as mammals and birds. Potential sources of fecal pollution, as measured by indicator bacteria *E. coli*, can be divided into two primary categories: regulated and unregulated.

Regulated Sources

Pollution sources that are regulated have permits issued by TCEQ under the Texas Pollutant Discharge Elimination System (TPDES) and/or by the US Environmental Protection Agency (USEPA) under the National Pollutant Discharge Elimination System (NPDES) and are generally point sources. Examples of regulated sources include domestic and industrial wastewater treatment facilities (WWTFs); stormwater from industries, construction, and municipal separate storm sewer systems (MS4s) of cities; and concentrated animal feeding operations (CAFOs). These various regulated sources are required to have either an individual permit that is specific for each facility or a general permit for operation.

Wastewater Discharge Facilities

There is one WWTF within the Ash Creek watershed and the WWTF does not discharge directly into Ash Creek. The City of Azle WWTF (WQ0011183003) discharges into Reynolds Branch; thence to Ash Creek. The allowable permitted average daily flow is 1.01 million gallons per day (MGD), nor shall the average discharge during any two-hour period exceed 4,237 gallons per minute (gpm).

There are no WWTFs within the Dosier Creek watershed.

There is one WWTF within the Derrett Creek watershed. The City of Newark WWTF does not discharge directly into Derrett Creek. The WWTF (WQ0011626001) has an allowable permitted average daily flow of 0.15 million gallons per day (MGD).

Regulated Stormwater

The TPDES and the NPDES Municipal Separate Storm Sewer (MS4) Phase I and II rules require municipalities and certain other entities in urban areas to obtain permits for their stormwater systems. Phase I permits are individual permits for large and medium sized communities with populations exceeding 100,000, whereas Phase II permits are for smaller communities that are located within an “Urbanized Area”. An “Urbanized Area” is defined by the U.S. Census Bureau as an area with populations greater than 50,000 and with an overall population density of at least 1,000 people per square mile. Because the population of Cities of Azle and Fort Worth meet this criterion, the municipalities are required to obtain a stormwater permit. However, the City of Newark is not.

Of the City of Azle MS4 permit TXR040110, 17.6% of the Ash Creek watershed resides within the permit boundaries.

Concentrated Animal Feeding Operations

There are currently no permitted CAFOs located within the watersheds of Ash Creek, Dosier Creek, nor Derrett Creek.

Potential Unregulated Sources

Unregulated sources are typically nonpoint sources, meaning the pollution originates from multiple diffuse locations and is usually carried to surface waters by rainfall runoff, and the sources are not regulated by permit under the TPDES and NPDES. Potential unregulated sources include wildlife (mammals and birds), large exotics, unmanaged feral animals (e.g., feral hogs), on-site sewage facilities (OSSFs), pets, and livestock.

Non-Permitted Agricultural Activities and Domesticated Animals

Activities such as livestock grazing close to water bodies and agricultural use of manure such as fertilizer can contribute *E. coli* to nearby water bodies. Livestock statistics were obtained from United States Department of Agriculture (USDA) National Agricultural Statistics Service website (USDA, 2017). While these are county level statistics and thus only a very rough estimate of livestock in the watershed (Table 3.2), these statistics indicate that chickens and cattle and calves (all beef) are the most common livestock found within the watersheds in this project.

Table 3.4 Estimated livestock populations within the Ash Creek, Dosier Creek, and Derrett Creek

Source: USDA, 2017

Watershed	Cattle & Calves (all beef)	Hogs & Pigs	Sheep & Lambs	All Goats	Horses & Ponies	Mules, Burros, and Donkeys	Poultry
Ash Creek	1,047	13	78	489	283	53	579
Dosier Creek	238	2	27	35	46	3	122
Derrett Creek	267	4	14	33	21	5	91

Several agricultural activities that do not require permits can be potential sources of fecal bacteria loading. The number of livestock within the RUAA watersheds was estimated from county-level data obtained from the 2022 Census of Agriculture (USDA NASS, 2024). The county-level data for Parker, Wise, and Tarrant Counties were refined to better reflect actual numbers within the Ash Creek, Dosier Creek, and Derrett Creek watersheds. The refinement was performed by dividing the total area of suitable grazing land within the watershed by the total area of suitable grazing land in Parker, Wise, and Tarrant Counties. This ratio was then applied to the county-level livestock data (Table 3.4). The livestock numbers in Table 3.4 are provided to demonstrate that

livestock are a potential source of bacteria in the RUAA watershed. These livestock numbers are not used to develop an allocation of allowable bacteria loading to livestock.

Domestic pets are another unregulated source of *E. coli* bacteria, particularly dogs, because storm runoff often carries these wastes into streams (USEPA, 2009). A rough estimate of the dog and cat population can be computed assuming there are 0.614 dogs and 0.457 cats per household (AVMA, 2018). According to the 2020 census there are 4,468 households within the Ash Creek watershed, 470 households within the Dosier Creek watershed, and 300 households within the Derrett Creek watershed. Based off this census, it would indicate that there are potentially 2,743 dogs and 2,042 cats residing within the Ash Creek watershed, 289 dogs and 214 cats within the Dosier Creek watershed, and 184 dogs and 137 cats within the Derrett Creek watershed.

Wildlife

Wildlife are naturally attracted to riparian corridors of streams and rivers. With direct access to the stream channel, the deposition of wildlife waste can be a concentrated source of bacteria loading to a water body. Fecal bacteria from wildlife are also deposited onto land surfaces, where it may be washed into nearby streams by rainfall runoff.

Failing On-Site Sewage Facilities

Septic systems or on-site sewage facilities (OSSFs) are often used in rural areas that do not have the ability to connect to a central wastewater collection system. To estimate the number of potential OSSFs in the watershed, 911 address points outside of city boundaries and outside of any area municipal utility districts were used. Results indicate that 100 households in the Ash Creek watershed, 214 in the Dosier Creek watershed, and 267 in the Derrett Creek watershed are outside municipal areas and likely on septic systems.

Historical Information on Recreational Use

A review of historical information was performed regarding recreational water uses for Ash Creek, Dosier Creek, and Derrett Creek. The review considered the time period of November 28, 1975, to the present in accordance with 40 CFR Part 131 (EPA standards regulation). Government offices, libraries, and newspapers were searched and contacted in addition to generic internet searches. The following is a summary of the review and searches.

Ash Creek

Government Sources

City of Azle
City of Azle Homepage[1]
Search retrieved no results.

Tarrant County
Tarrant County Homepage[2]
Search retrieved no results.

Library Sources

Azle Memorial Library
Parker County Library Association
Azle Memorial Library[3]
Phone: (817) 752-2682
Searched online catalog. Search retrieved no results.

Social Media Sources

Azle Memorial Library Facebook
Azle Memorial Facebook[4]
Explored various posts and events (past and future). Search retrieved no results.

Internet Searches

Google
Google.com – Search for Ash Creek[5]
Searched Google by creek name. Search retrieved no results of recreational contact in the stream. Search retrieved information on Ash Creek Park located in Azle, Texas.

Dosier Creek (0809C)

Government Sources

City of Fort Worth
City of Fort Worth Homepage[6]
Search retrieved no results.

Tarrant County
Tarrant County Homepage[7]
Search retrieved no results.

Parker County
Parker County Homepage[8]
Search retrieved no results.

Library Sources

City of Fort Worth Public Library
City of Fort Worth Public Library Homepage[9]
Phone: (817) 392-7323
Searched online catalog. Search retrieved no results.

Social Media Sources

Fort Worth Facebook
Fort Worth Facebook[10]
Explored various posts and events (past and future). Search retrieved no results.

Internet Searches

Google
Google.com – Search for Dosier Creek[11]
Searched Google by creek name. Search retrieved no results of recreational contact.

Derrett Creek (0809D)

Government Sources

City of Newark
City of Newark Homepage[12]
Searched site and retrieved no results.

Wise County
Wise County Homepage[13]
Search retrieved no results.

Library Sources

City of Newark Public Library
City of Newark Public Library Homepage[14]
City of Newark Public Library Homepage[15]
Phone: (682) 946-5006
Searched online catalog. Search retrieved no results.

Social Media Sources

City of Newark Facebook
City of Newark Facebook[16]
Explored various posts and events (past and future). Search retrieved no results.

City of Newark Public Library
Newark Public Library Facebook[17]
Explored various posts and events (past and future). Search retrieved no results.

Internet Searches

Google
Google.com – Search for Derrett Creek[18]
Searched Google by creek name. Search retrieved no results of recreational contact.

Chapter 4. Ash Creek (0809B)

Survey Site Descriptions

Ash Creek is 16.76 river miles long, indicating a goal of 13 sites (3 sites per 5 miles of river) for the RUAA survey. TIAER was able to establish a total of 9 survey sites along Ash Creek (Figure 4.1 and Table 4.1) during site reconnaissance.

Seven sites were publicly accessible at road crossings and did not require landowner permission to access the stream. Landowner permission was required for access to sites AC05 and AC06 and was granted to TIAER personnel during the initial reconnaissance trip for AC05 only. Upon visiting site AC08 during the initial survey, it was determined that these sites were inaccessible due to near vertical banks and overgrown bank vegetation, including poison ivy and poison oak. There was no fencing upstream or downstream of the road crossings. Access to the stream between road crossings was moderately difficult due to steep banks and dense vegetation. The average distance between survey sites was 1.53 river miles with the largest gap being 3.34 river miles between Site AC08 and AC09. Site AC02 is co-located with a TCEQ sampling station. RUAA surveys were performed June 20, 2024, and September 25 and 26, 2024 at all locations. A brief description of each site follows.

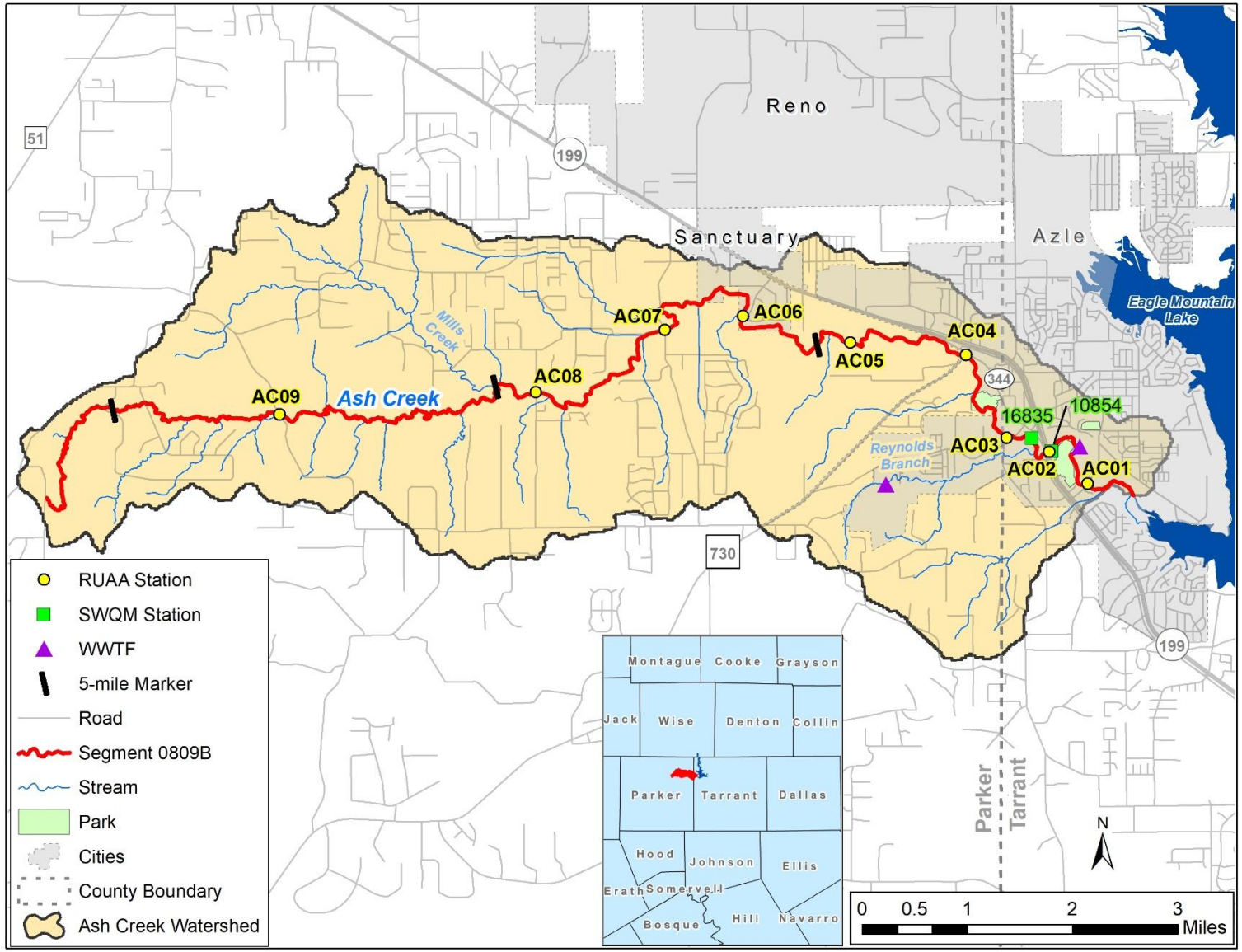

Figure 4.1 Watershed of Ash Creek (0809B)

Table 4.1 Description and location of RUAA field survey sites for Ash Creek, Water Body 0809B

Site ID	TCEQ ID	Site Description	Latitude	Longitude	Access
AC01		Ash Creek at Denver Trail in Ash Creek Park	32.88425	-97.53065	Public
AC02	10854	Ash Creek at Southeast Parkway in Tarrant County with access into Ash Creek Park	32.88701	-97.53844	Public
AC03		Ash Creek at Stewart Street in Parker County	32.88902	-97.5453	Public
AC04		Ash Creek at FM 730 in Parker County	32.90051	-97.55181	Public
AC05		Ash Creek at Orchard Lane in Parker County	32.90242	-97.57064	Private
AC06		Ash Creek at Ash Creek Drive in Parker County	32.90631	-97.58815	Private
AC07		Ash Creek at Newsom Mound Rd in Parker County	32.90452	-97.60096	Public
AC08		Ash Creek at Finney Dr in Parker County	32.89615	-97.62213	Public
AC09		Ash Creek at Veal Station Road in Parker County	32.89359	-97.66412	Public

Site AC01 is the most downstream site located on Ash Creek. This site is located within Ash Creek Park in Tarrant County. Due to brushy, steep, overgrown banks, access to this site was moderately difficult.

Site AC02 is located on Ash Creek about 0.86 miles from site AC01. This site is publicly accessible via the road crossing on Southeast Parkway in Tarrant County with public park access to Ash Creek Park. Due to the very dense vegetation and steep banks, access into the stream was difficult. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Site AC03 is located on Ash Creek about 0.58 miles from site AC02. This site was publicly accessible via the walking trail in Ash Creek Park. Due to the maintained walking trail, access to the stream was moderately easy. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Site AC04 is located on Ash Creek about 1.18 miles from site AC03. This site was publicly accessible at road crossing FM 730 in Parker County. Due to the very dense vegetation and steep banks, access into the stream was difficult. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Site AC05 is located on private property at The Orchard Event Venue & Retreat in Azle, Texas. This site is 1.37 miles from Site AC04 and did require landowner permission to access the stream. Access to the stream was moderately easy, however once in the stream, TIAER personnel encountered thick vegetation along the banks.

Site AC06 is located in Parker County on Ash Creek Drive. Located about 1.46 miles from site AC05, this site was marked inaccessible once visited during the first survey. Private property impeded TIAER personnel access.

Site AC07 is located on Ash Creek at Newsom Mound Rd in Parker County. Located about 1.57 miles from site AC06, this site was moderately difficult to access due to being on a heavily trafficked bridge, steep slopes, and rip rap covered in rebar stairs that lead down the stream under the bridge. Thick vegetation was on either side of the bridge.

Site AC08 is located on Ash Creek at Finney Drive in Parker County about 1.87 miles from AC07. Upon visiting the site during the first surveys, TIAER determined it was inaccessible due to near vertical banks overgrown with thick forest and shrub vegetation.

Site AC09 is located on Ash Creek at Veal Station Road in Parker County. This site is about 3.34 miles from AC08. This site is moderately easy to access. TIAER personnel were able to complete a survey at 6 out of 11 transects; however, a large log jam at the 180-m transect prevented further assessment.

Field Survey Results and Discussions

General Description of RUAA Survey Sites and Conditions for Ash Creek 0809B

The Ash Creek RUAA surveys were conducted on June 20 and September 25 and 26, 2024 at 7 sites. The surveys were performed on weekdays, weekends, or holidays at opportune times to observe recreational activities. Air temperatures prior to and during both the first and second surveys were above 21˚C (70˚F), indicated by the RUAA guidelines as warm enough to promote recreational activities (Tables 4.2 and 4.3). In the 30 days prior to the first survey, 1.19 inches of precipitation fell, while 2.08 inches fell 30 days prior to the second survey. These rainfall events did not cause a hindrance to accessing the stream. The Palmer Drought Severity Index (PDSI) indicated moderate moist (index value: +2.00 to +2.99) conditions for Central Texas during June and mid-range conditions (-1.99 to +1.99) for September (TWDB, 2024).

A summary of the RUAA field survey results is presented in the following tables:

- Table 4.4 describes the stream channel and corridor characteristics at each site.
- Table 4.5 notes the average thalweg depth by site during each survey and the access to the stream, whether public or private, and the ease of bank access.

- Tables 4.6 and 4.7 document the maximum, minimum, and average stream widths at each site for each survey and observed flow conditions.
- Tables 4.8 and 4.9 document the length, width, and depth of substantial pools encountered during field surveys.
- Tables 4.10 and 4.11 note stream aesthetics, wildlife observations and tracks, and the presence of garbage by site observed during each survey.

Physical descriptions of each site follow these tables along with selected photos showing notable characteristics of each site. All sites were at public road crossings. Overall thalweg depth averaged >0.39 m for the first survey and >0.28 m for the second survey. Access to the stream varied from moderately easy to moderately difficult at all seven sites due to steep, densely vegetated banks. The dominant substrate was mud/clay and fine sediment. The majority of the stream corridor was forest with several areas lined with shrubs and pasture. The maximum stream width encountered was 28 m at site AC05 during the first survey. Average stream widths ranged from 0 to 6 m at all seven sites with the narrowest width of 0 m at AC05 during the second survey. Flow conditions appeared normal during both surveys. The water was clear in color at all sites during both surveys. The water surface at most sites was clear during both surveys. Evidence of wildlife was rarely observed at sites, most commonly in the form of raccoon and hog tracks. Trash was rarely observed at most survey sites and when observed was typically plastics, aluminum cans, and bottles at road crossings under the bridge. No evidence of recreation was observed at any of the seven survey sites.

Table 4.2 Rainfall records with maximum and minimum temperature for Fort Worth, Texas 30 days prior to the first RUAA survey initiated on June 20, 2024

Survey dates are highlighted in gray. Weather Data from Weather Underground; station Fort Worth Meacham INTL Airport Station. (Weather Underground, 2024)

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
May 19	0	89	71
May 20	0	88	71
May 21	0	88	74
May 22	0	84	71
May 23	0.14	89	69
May 24	0.03	90	72
May 25	0	91	70
May 26	0	96	75
May 27	0	95	71
May 28	0.04	84	63
May 29	0.91	85	68
May 30	0	75	65
May 31	0	82	64
June 1	0	80	67

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
June 2	0	87	67
June 3	0	84	68
June 4	0	91	75
June 5	0.05	90	67
June 6	0	94	68
June 7	0	93	72
June 8	0	94	76
June 9	0	92	72
June 10	0	83	73
June 11	0	79	72
June 12	0.02	89	72
June 13	0	92	71
June 14	0	94	72
June 15	0	91	73
June 16	0	91	73
June 17	0	93	76
June 18	0	91	74
June 19	0	88	73
June 20	0	90	77

Table 4.3 Rainfall records with maximum and minimum temperature for Fort Worth, Texas 30 days prior to the second RUAA survey initiated on September 25 and September 26, 2024

Survey dates are highlighted in gray. Weather Data from Weather Underground; station Fort Worth Meacham INTL Airport Station. (Weather Underground, 2024)

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
August 25	0	98	78
August 26	0	97	77
August 27	0	95	75
August 28	0.63	94	74
August 29	0	94	75
August 30	0	91	74
August 31	0	93	76
September 1	0	93	76
September 2	0	88	75
September 3	0.71	81	-
September 4	0	76	69

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
September 5	0.1	90	71
September 6	0	91	70
September 7	0.43	85	67
September 8	0	82	62
September 9	0	84	58
September 10	0	87	59
September 11	0	82	71
September 12	0	87	68
September 13	0	93	65
September 14	0	94	76
September 15	0	93	74
September 16	0	90	72
September 17	0	90	71
September 18	0	94	73
September 19	0	96	76
September 20	0	97	76
September 21	0	94	76
September 22	0	92	74
September 23	0	77	68
September 24	0.21	89	68
September 25	0	83	67
September 26	0	84	60

Table 4.4 Stream channel and corridor appearance for each site sampled along Ash Creek (0809B)

Site Number	Stream Channel Appearance	Dominant Substrate	Corridor Appearance	Riparian Size	Public Park	Landscape Surroundings
AC01	Natural	Mud/Clay/Silt	Forest	Normal	Yes	Forest
AC02	Natural	Mud/Clay/Silt	Forest	Normal	Yes	Forest
AC03	Natural	Mud/Clay/Silt	Forest	Normal	Yes	Forest
AC04	Natural	Mud/Clay	Forest	Normal	No	Shrub
AC05	Natural	Mud/Clay/Silt	Shrub	Normal	No	Shrub
AC06	-	-	-	-	-	-
AC07	Natural	Silt	Forest	Normal	No	Forest
AC08	-	-	-	-	-	-
AC09	Natural	Mud/Clay	Forest	Normal	No	Forest/Shrub

Table 4.5 Thalweg depth, stream flow type, and site accessibility during the two surveys of Ash Creek (0809B)

Stream flow type represents observed stream characteristics on the date of the survey. Under general access, * indicates that the site was publicly accessible at a road crossing, but that further access was limited by fencing of private property. For Bank Access, E = Easy, ME = Moderately Easy, MD = Moderately Difficult, D = Difficult.

Site	Reach Length (m)	# of Transects	# of Recreational Areas at Site	Avg. Site Thalweg Depth (m) for Trip 1	Avg. Site Thalweg Depth (m) for Trip 2	Stream Flow Type Survey 1	Stream Flow Type Survey 2	General Access	Bank Access
AC01	300	11	0	>0.75	0.46	Intermittent w/perennial pools	Intermittent w/perennial pools	Public	MD
AC02	300	11	0	0.43	0.28	Intermittent w/perennial pools	Intermittent w/perennial pools	Public	ME

Site	Reach Length (m)	# of Transects	# of Recreational Areas at Site	Avg. Site Thalweg Depth (m) for Trip 1	Avg. Site Thalweg Depth (m) for Trip 2	Stream Flow Type Survey 1	Stream Flow Type Survey 2	General Access	Bank Access
AC03	300	11	0	0.21	0.24	Intermittent w/perennial pools	Intermittent w/perennial pools	Public	ME
AC04	300	11	0	0.38	0.31	Intermittent w/perennial pools	Intermittent w/perennial pools	Public	E
AC05	300	11	0	>0.31	>0.17	Intermittent w/perennial pools	Intermittent w/perennial pools	Private	ME
AC06	-	-	-	-	-	-	-	-	-
AC07	300	11	0	0.32	0.24	Intermittent w/perennial pools	Intermittent w/perennial pools	Public	MD/D
AC08	-	-	-	-	-	-	-	-	-
AC09	150	6	0	0.22	0.23	Intermittent w/perennial pools	Intermittent w/perennial pools	Public	ME

Table 4.6 Description of surveyed stream sites along Ash Creek during the first survey performed on June 20, 2024

Site Number	Maximum Width (m)	Minimum Width (m)	Typical Average Width (m)	Observed Flow
AC01	8	4	6	Normal
AC02	10	.44	2.5	Normal
AC03	8	2.1	3.5	Normal
AC04	11	2	3.3	Normal
AC05	28	0.5	2.2	Normal
AC06	-	-	-	-
AC07	8	1.3	1.4	Normal
AC08	-	-	-	-
AC09	2.3	0.6	2	Normal

Table 4.7 Description of surveyed stream sites along Ash Creek during the second survey performed on September 25 and September 26, 2024

Site Number	Maximum Width (m)	Minimum Width (m)	Typical Average Width (m)	Observed Flow
AC01	8	7	5	Normal
AC02	10	1.5	2.5	Normal
AC03	6	1.8	2.1	Normal
AC04	10.5	1.8	5	Normal
AC05	12	0	0	Normal
AC06	-	-	-	-
AC07	6	0.8	1.1	Normal
AC08	-	-	-	-
AC09	3	0.4	2	Normal

Table 4.8 Description of pools encountered along Ash Creek during the first survey performed on June 20, 2024

Site Number	Pool Length (m)	Pool Width (m)	Pool Depth (m)
AC01			
AC02			
AC03			
AC04			
AC05	31	28	>1.5
AC06			
AC07			
AC08			
AC09			

Table 4.9 Description of pools encountered along Ash Creek during the second survey performed on September 25 and September 26, 2024

Site Number	Pool Length (m)	Pool Width (m)	Pool Depth (m)
AC01			
AC02	13	10	0.9
AC03	10	10	0.65
AC04			
AC05	Pool 1: 13 Pool 2: 10	Pool 1: 12 Pool 2: 5	Pool 1: >1.5 Pool 2: 0.35
AC06			
AC07			
AC08			
AC09			

Table 4.10 Stream aesthetics along Ash Creek during the first survey performed June 20, 2024

From Field Data Sheet – Section F: A = absent, R = rare, C = common, Ab = abundant, N = none, NW = no water, SP = slight presence, MP = moderate presence, LP = large presence.

Site	Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependent Birds	Mammals	Evidence of wildlife	Large Garbage in Channel	Small garbage in Channel	Bank Garbage
AC01	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	Tracks/Fecal Droppings	N	N	R
AC02	R	C	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	Tracks/Fecal Droppings	N	N	C
AC03	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	Tracks	N	N	C
AC04	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	None	N	N	R
AC05	R	A	N	Clear	Fine Sediments/Mud/Clay	Clear	SP	N	N	Tracks/Fecal Droppings	N	N	N
AC06	-	-	-	-	-	-	-	-	-	-	-	-	-
AC07	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	None	N	N	C
AC08	-	-	-	-	-	-	-	-	-	-	-	-	-
AC09	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	SP	N	N	None	N	N	R

Table 4.11 Stream aesthetics along Ash Creek during the second survey performed September 25 and September 26, 2024

From Field Data Sheet – Section F: A = absent, R = rare, C = common, Ab = abundant, N = none, NW = no water, SP = slight presence, MP = moderate presence, LP = large presence. NA indicates not applicable because conditions were dry.

Site	Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependent Birds	Mammals	Evidence of Wildlife	Large Garbage in Channel	Small Garbage in Channel	Bank Garbage
AC01	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	Tracks	N	N	C
AC02	R	C	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	Tracks/Fecal Droppings	N	N	N
AC03	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	Tracks/Fecal Droppings	N	N	N
AC04	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	Tracks	N	N	C
AC05	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	SP	Tracks/Fecal Droppings	N	N	N
AC06	-	-	-	-	-	-	-	-	-	-	-	-	-
AC07	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	SP	N	N	None	N	N	C
AC08	-	-	-	-	-	-	-	-	-	-	-	-	-
AC09	A	A	N	Clear	Fine Sediments/Mud/Clay	Clear	N	N	N	None	N	N	N

Physical Description of AC01

Ash Creek site AC01 was visited on June 25 and September 25, 2024. This site was located at the bridge crossing on Denver Trail within Ash Creek Park in Tarrant County. This site was publicly accessible at the bridge crossing.

The creek at this site passes through a forest riparian zone that led directly up to the creek. Banks were slippery and with thick vegetation making access to the stream moderately difficult for TIAER field personnel. The general appearance of the creek at this location is shown in Figures 4.2 and 4.3.

Figure 4.2 Photograph of Ash Creek Site AC01 taken on June 20, 2024. The upstream view of the 0-m transect.

Site AC01 was wadeable with average thalweg ranging from >0.75 m to 0.46 m between surveys. Figure 4.2 illustrates the typical observed width of the creek at this site, approximately 6 m. Widths ranged from 4.0 m to 8.0 m during the two surveys (Tables 4.6 and 4.7).

The stream flow type was observed as intermittent with perennial pools at the time of both surveys (Table 4.5). Aquatic vegetation and algae cover were absent at this site for each survey. The deepest thalweg depth measured during the first survey at the 180-m and 210-m transects was >1.2 m and the shallowest was 0.16 m at the 300-m transect during the second survey. No pools were observed during either survey at this site (Tables 4.8 and 4.9).

Figure 4.3 Photograph of Ash Creek Site AC01 taken on September 26, 2024. The downstream view of the 300-m transect

No water dependent birds or reptiles were observed during either survey (Tables 4.10 and 4.11). Raccoon tracks were noted during both surveys while deer tracks were observed during the second survey. No large garbage was present during either survey, but typical household garbage (plastics, glass, cans) was observed under the bridge at the road crossing. All-terrain vehicle (ATV) tracks were also observed during the first survey.

Physical Description of AC02

Ash Creek at Site AC02 was visited on June 25 and September 25, 2024. This site was located at the Southeast Parkway bridge crossing in Tarrant County with public access into Ash Creek Park. The stream at this site was only publicly accessible at the bridge crossing and access was moderately easy.

The riparian zone at Site AC02 was forest with thick vegetation on both the right and left banks (Table 4.4). Banks were vegetated with larger trees and a larger shaded understory (Figures 4.4 and 4.5) throughout this site. The stream was wadeable during both surveys with average thalweg depths ranging from 0.43 m to 0.28 m. The stream was designated as intermittent with perennial pools during both surveys (Table 4.5). Channel widths ranged from 10 m to 0.44 m throughout the reach during both surveys with an average width of 2.5 m (Tables 4.6 and 4.7). One substantial pool was observed only during the second survey, measuring 13 meters in length by 10 meters in width and 0.9 meters depth (Table 4.9).

Figure 4.4 Photograph of Ash Creek Site AC02 taken on June 20, 2024. Photograph shows the downstream view of the 0-m transect.

Figure 4.5 Photograph of Ash Creek at Site AC02 taken on September 25, 2024. Photograph at the 300-m transect facing downstream.

No water dependent birds were observed at this site during either survey (Tables 4.10 and 4.11). Bird droppings were observed in addition to canine and hog and racoon tracks. No other evidence of wildlife was observed in either survey. Aquatic vegetation was rare, and algae were common during both surveys. No odor was detected, water color and surface was clear during both surveys. Typical garbage such as a trash bag and a glass jar were seen under the bridge during both surveys with no evidence of human recreation or large garbage observed during either survey.

Physical Description of AC03

Ash Creek at Site AC03 was visited on June 25 and September 25, 2024. This site was accessed via a walking trail in Ash Creek Park off of Stewart Street in Parker County. Access to the stream was moderately easy due to a small path leading from the park's walking trail to the stream. The stream at this site was publicly accessible throughout the entire reach. The riparian area was forest and shrubs with thick vegetation and slippery slopes on both the right and left banks (Table 4.4).

Figure 4.6 Photograph of Ash Creek Site AC03 taken on June 20, 2024, the downstream view of the 300-m transect.

Site AC03 was wadeable throughout the stream with thalwegs ranging from 0.21 m to 0.24 m between both surveys (Table 4.5). The stream flow type was characterized as intermittent with perennial pools for this reach. The average stream width during the first survey was 3.5 m and 2.1 m during the second survey. Maximum and minimum stream widths of 8 m and 2.1 m during the first survey and 6 m and 1.8 m during the second survey (Tables 4.6 and 4.7). One substantial pool was observed only during the second survey, measuring 10 meters in length by 10 meters in width and 0.65 meters depth (Table 4.9).

Banks were vegetated with larger trees and a larger shaded understory (Figures 4.6 and 4.7) throughout this site. Aquatic vegetation and algae cover were both absent during both surveys. The water was clear in color with no surface scum observed during the either survey.

Figure 4.7 Photograph of Ash Creek Site AC03 taken on September 25, 2024, the upstream view of the 0-m transect.

The only evidence of wildlife observed was canine fecal droppings and tracks. A baseball cap and shotgun shells were observed during the first survey. No other large garbage was encountered, but some small garbage, in the channel and along the banks, was observed in the form of plastic bottles observed during both surveys (Tables 4.10 and 4.11). Additional evidence of human presence included some writing in the sand along the bank at the 0-m transect.

Physical Description of AC04

Ash Creek site AC04 was visited on June 25 and September 26, 2024. This site was located at the bridge crossing on FM 730 in Parker County. This site was publicly accessible at the bridge crossing and due to gently sloped banks, it was relatively easily accessible.

The creek at this site passes through an overgrown shrubbery riparian zone that led directly up to the creek. The general appearance of the creek at this location is shown in Figures 4.8 and 4.9.

Figure 4.8 Photograph of Ash Creek Site AC04 taken on June 20, 2024. The upstream view of the 0-m transect.

Site AC04 was wadeable with average thalweg ranging from 0.38 m to 0.31 m between surveys. Figure 4.2 illustrates the typical observed width of the creek at this site, approximately 3.3m during the first survey and 5 m during the second survey. Widths ranged from 1.8 m to 11.0 m during the two surveys (Tables 4.6 and 4.7)

The stream flow type was observed as intermittent with perennial pools at the time of both surveys (Table 4.5). Aquatic vegetation and algae cover were absent at this site for each survey. The deepest thalweg depth measured during the first survey at the 90-m transects was 0.82 m and the shallowest was 0 m at the 270-m and 300-m transects during the second survey. No pools were observed during either survey at this site (Tables 4.8 and 4.9).

Figure 4.9 Photograph of Ash Creek Site AC04 taken on September 26, 2024. The downstream view of the 150-m transect

Channel obstructions at this site included log jams and tree branches (as seen in Figure 4.9.). No water dependent birds or reptiles or evidence of wildlife were observed during the first survey, but racoon and dog footprints were observed during the second survey (Tables 4.10 and 4.11). Human footprints were also observed at the bridge during the second survey. No large garbage was present during either survey, but typical household garbage (plastics, glass, cans) was observed under the bridge at the road crossing during both surveys.

Physical Description of AC05

Ash Creek at Site AC05 was visited on June 25 and September 26, 2024. This site was located on private property at the Orchard Event Venue and Retreat in Azle, Texas. TIAER field personnel was granted access to this site during the initial reconnaissance.

While the riparian zone at site AC05 was thick shrubbery vegetation on both the right and left banks (Table 4.4), the banks were gently sloped making it moderately easy to access the stream. The stream was wadeable during both surveys with average thalweg depths ranging from >0.31 m to >0.17 m. During the first survey thalweg depth was greater than 1.2 m at the 300-m transect and >1.5 m at the 150-m transect during the second survey. The stream was designated as intermittent with perennial pools during both surveys (Table 4.5). Channel widths ranged from 0 m to 28 m throughout the reach during both surveys with a typical observed width of 2.2 m during the first survey and 0 m during the second survey (Tables 4.6 and 4.7). One substantial pool

was observed during the first survey, measuring 31 meters in length by 28 meters in width and >1.5 meters depth (Figure 4.10 and Table 4.8). Two substantial pools were observed during the second survey. The first measuring 13 meters in length by 12 meters in width and >1.5 meters in depth, the second measures 10 meters in length by 5 meters in width and 0.35 meters in depth (Table 4.9).

Figure 4.10 Photograph of Ash Creek Site AC05 taken on June 20, 2024. Photograph shows the upstream view of the 300-m transect.

Figure 4.11 Photograph of Ash Creek at Site AC05 taken on September 26, 2024. Photograph at the 0-m transect facing upstream.

No water-dependent birds were observed at this site during either survey (Tables 4.10 and 4.11). Bird, canine, and cow droppings were observed in addition to canine and cow tracks. Deer were present upon TIAER field personnel's arrival at the site during the second survey. Aquatic vegetation and algae were absent during both surveys. No odor was detected, water color and surface were clear during both surveys. Typical household garbage such as a chip bag was seen along the bank during the first survey with no evidence of human recreation or large garbage observed during either survey.

Physical Description of AC06

Ash Creek at Site AC06 was visited on June 25 and September 26, 2024, but no surveys were performed on either date. Upon arrival to perform the survey TIAER was denied access to Ash Creek at this location by the landowner. Figure 4.12 shows private property access.

Figure 4.12 Photograph of Ash Creek Site AC06 taken on June 20, 2024, driveway into private property access.

Physical Description of AC07

Ash Creek site AC07 was visited on June 25 and September 26, 2024. This site was located at the bridge crossing on Newsom Mound Road in Parker County. This site was publicly accessible at the bridge crossing; however, due to overgrown, steep, near vertical banks with broken rebar covering riprap, it was moderately difficult to access the stream at this site.

The creek at this site passes through a forest riparian zone that leads directly up to the creek. The general appearance of the creek at this location is shown in Figures 4.13 and 4.14.

Figure 4.13 Photograph of Ash Creek Site AC07 taken on June 20, 2024. The upstream view of the 0-m transect.

Site AC07 was wadeable with average thalweg ranging from 0.32 m to 0.24 m between surveys. Figure 4.2 illustrates the typical observed width of the creek at this site, approximately 1.4 m during the first survey and 1.1 m during the second survey. Widths ranged from 0.8 m to 8.0 m during the two surveys (Tables 4.6 and 4.7).

The stream flow type was observed as intermittent with perennial pools at the time of both surveys (Table 4.5). Aquatic vegetation and algae cover were absent at this site for each survey. The deepest thalweg depth for this site was measured during the first survey at the 120-m transects was 0.62 m and the shallowest was 0.11 m at the 180-m transect during the second survey. No pools were observed during either survey at this site (Tables 4.8 and 4.9).

Figure 4.14 Photograph of Ash Creek Site AC07 taken on September 26, 2024. The downstream view of the 300-m transect

No water dependent birds or reptiles or animal or human tracks were observed during either survey (Tables 4.10 and 4.11). Evidence of nutria was present due to the presence of chew marks on logs. No large garbage was present during either survey, but typical household garbage (plastics, glass, cans) and a few clothing items was observed under the bridge at the road crossing.

Physical Description of AC08

Ash Creek at Site AC08 was visited on June 25 and September 26, 2024; however, no surveys were conducted. The site is publicly accessible at the bridge crossing of Ash Creek and Finney Drive in Parker County. Due to hazardous conditions, including steep, near-vertical banks (Figure 4.16), large tree roots, and an abundance of poison ivy and oak (Figure 4.15), TIAER field personnel deemed access to the stream too dangerous and difficult. No human recreation was observed.

Figure 4.15 Photograph of Ash Creek Site AC08 taken on June 20, 2024. Photograph shows the downstream view of Ash Creek at Finney Drive in Parker County.

Figure 4.16 Photograph of Ash Creek at Site AC08 taken on September 26, 2024. Photograph at the stream transect with Finney Drive showing no access to the stream.

Physical Description of AC09

Ash Creek at Site AC09 was visited on June 25 and September 26, 2024. This site was accessed via the bridge crossing on Veal Station Road in Parker County. Access to the stream was moderately easy. The riparian area was forest and shrub with thick vegetation and slippery slopes on both the right and left banks (Figure 4.17 and Table 4.4).

Figure 4.17 Photograph of Ash Creek Site AC09 taken on June 20, 2024, the right bank view of the 0-m transect. TIAER personnel in the photo.

The stream was wadeable during both surveys, however due to a large logjam just after the 150-m transect, TIAER personnel were unable to complete the full 300 m reach at this site. Thalwegs ranged from 0.06 m to 0.63 m between both surveys (Table 4.5). The stream flow type was characterized as intermittent with perennial pools for this reach. The average stream width during the first survey was 2 m during both surveys with maximum and minimum stream widths of first survey being 0.6 m and 2.3 m and second survey measured at 3 m and 0.4 m (Tables 4.6 and 4.7). No substantial pools were observed during either survey (Tables 4.8 and 4.9).

The stream banks were densely vegetated at AC09, and aquatic vegetation and algae cover were both absent during both surveys (Figure 4.19). The water was clear in color with no surface scum observed during the either survey.

Figure 4.18 Photograph of Ash Creek Site AC09 taken on September 26, 2024, the upstream view of the 150-m transect.

Only turtles were observed at this site, but no other wildlife evidence. While no large garbage was encountered, small debris, primarily plastic bottles, was noted in the channel and along the banks during both surveys (Table 4.10 and 4.11). Additional signs of human presence included graffiti under the bridge at the 0-m transect.

Observations and Interviews

Activities Observed

During each RUAA survey, field personnel visited sites during times of day and on days when recreational activities were most likely to be observed. Of the nine sites, seven were at public road crossings. No form of recreation was directly observed by TIAER staff during either of the two surveys.

Activities Interviewed

A total of seven interviews were collected from stakeholders and landowners along Ash Creek and within the watershed.

Three interviews were familiar with Ash Creek, but had not used Ash Creek for personal recreation with two citing the reason as being “too dirty.” One of these interviewees had known Ash Creek for over 20 years and reported having observed fishing activities in the stream and has heard of children wading around AC06 location. Additionally, two interviews noted the presence of a small homeless population residing near and bathing in the stream between sites AC03 and AC06. (Table 4.12).

Two interviewees noted they had used Ash Creek personally for recreation primarily swam in the stream. One stated that they and their children typically swam and waded in a pooled section on their private property (AC06) during the summer, though drought conditions had prevented them from swimming in recent years. The other interviewee, familiar with Ash Creek for over 40 years, shared that their children used to swim and wade in Ash Creek behind their private property (downstream of AC03). They also noted that beavers had once built a small dam that created a pool behind their property, though it no longer exists. Both of these interviewees also indicated they have seen people fishing in Ash Creek in Ash Creek Park.

Three interviews had no recreation to report of any type (personal use, observed use, and/or heard of use).

Activities listed in Table 4.12 indicate the number of times personal use, observed use, and/or heard of use was documented from interviews for a given location or in general along the assessment unit.

Table 4.12 Summary of recreation reported for Ash Creek. Number of recreational activity accounts reported represented as personal use, witnessed/observed, heard of, respectively.

Site	Swimming	Adult Wading	Children Wading	Hunt	Fish	Boat, Canoe, Kayak	Bathing
AC01							
AC02							
AC03					0,3,0		0,2,1
AC04							
AC05							
AC06	1,0,0		1,0,1				
AC07							
AC08							
AC09							
General AU	1*,0,0		1*,0,0				
Totals	2,0,0	NA	2,0,1	NA	0,3,0	NA	0,2,1

*between AC03 and AC01

Summary

RUAA surveys were conducted at three sites along Ash Creek on June 20 and September 25 and 26, 2024. Temperatures were above 21ºC (70ºF) during the 30 days before each survey (Tables 4.2 and 4.3). Water existed and flowed in Ash Creek during

both surveys. Stream flow was considered normal during both surveys based on information provided by local residents. The Palmer Drought Severity Index (PDSI) indicated moderate moist conditions in June 2024 and mid-range conditions in September 2024 (TWDB, 2024).

No recreational activities were observed by TIAER field staff during either survey. Roughly 71% of the watershed through which Ash Creek falls into two types of land use. Grassland/herbaceous land accounts for the majority at roughly 54%, while Deciduous Forest represents 17% of the watershed. While some sites had easy access, steep and slippery banks and overgrown banks with thick vegetation were present at many of the sites, making access to the water for recreation difficult at those locations.

Two interviews indicated they and their children have swum and waded in the stream, and two interviews stated they have seen and heard of a small homeless population residing near and bathing in Ash Creek. General public access to the stream is available at the 3 sites accessible from the park trail. However, public access was limited at two sites, primarily to the rights-of-way immediately surrounding the public bridge crossings or areas immediately up and downstream of culvert crossings. Three sites were accessible to the public via the Ash Creek Park and trail system.

Recreational activities observed and reported in interviews are summarized in Figure 4.14. Overall, RUAA findings are summarized in the form below.

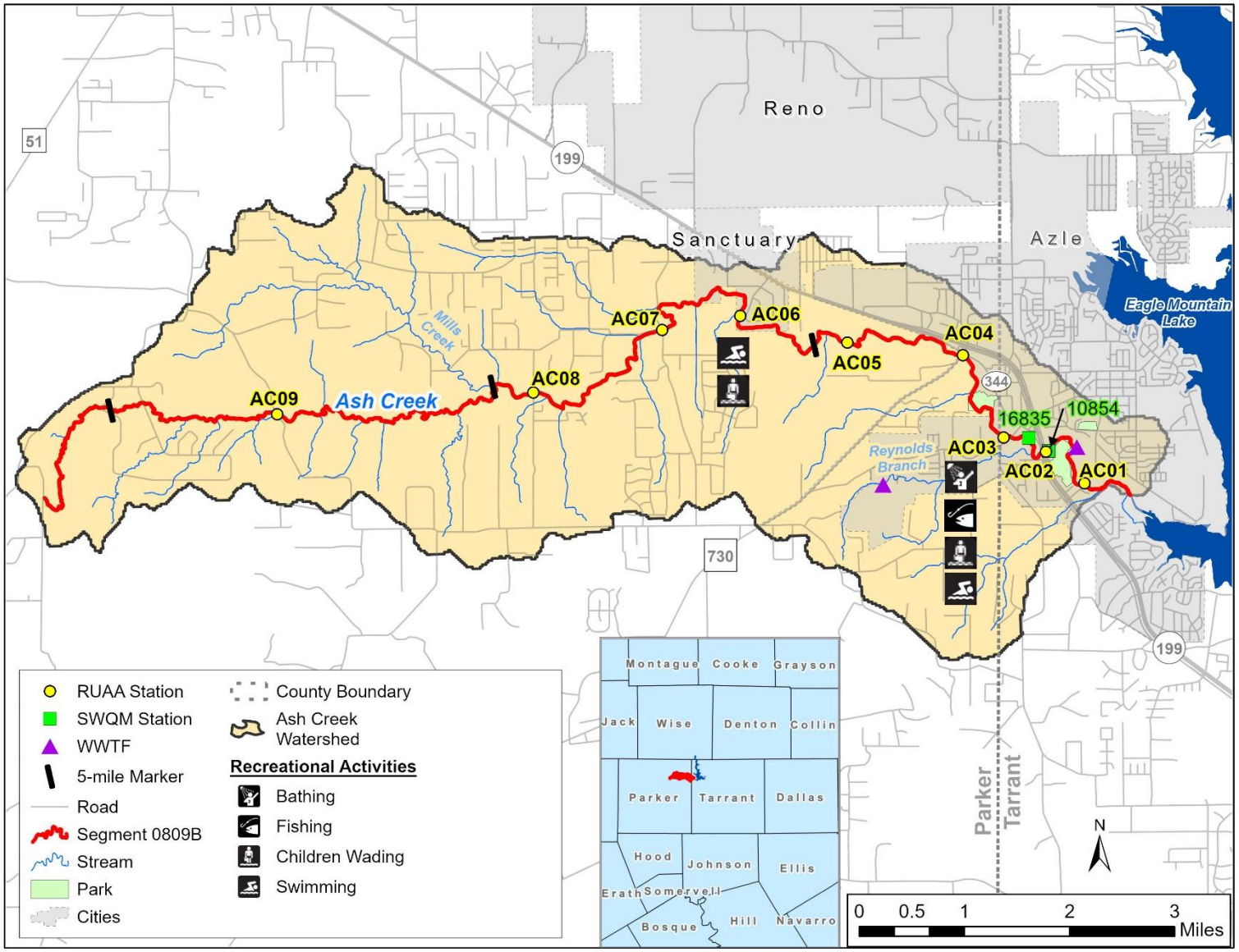

Figure 4.14 Summary of observed and interviewed human activities on Ash Creek

Chapter 5. Dosier Creek (0809C)

Survey Site Descriptions

Dosier Creek is 4.8 miles long, indicating a goal of three sites (3 sites per 5 miles of river) for the RUAA survey. TIAER was able to establish a total of one survey site along Dosier Creek (Figure 5.1 and Table 5.1). This site was located at a public road crossing. Our team was unable to obtain additional sites on this stream due to the presence of a pipeline easement that runs through the area. The easement is located on private property, and any attempt to cross or enter it without explicit permission would constitute trespassing. Several attempts were made to contact the pipeline company to request access; however, all efforts were unsuccessful, and permission to reach the stream was not granted.

Site DSC01 was a public site and did not require landowner permission to access the stream. There was no fencing upstream or downstream of the crossing, however private property existed beyond the stream banks. Access to the stream between road crossings was moderately easy due to shorter vegetation with steep banks and bank debris. Site DSC01 is co-located with a TCEQ sampling station. RUAA surveys were performed on June 20, 2024, and September 25, 2024. A brief description of the site is below.

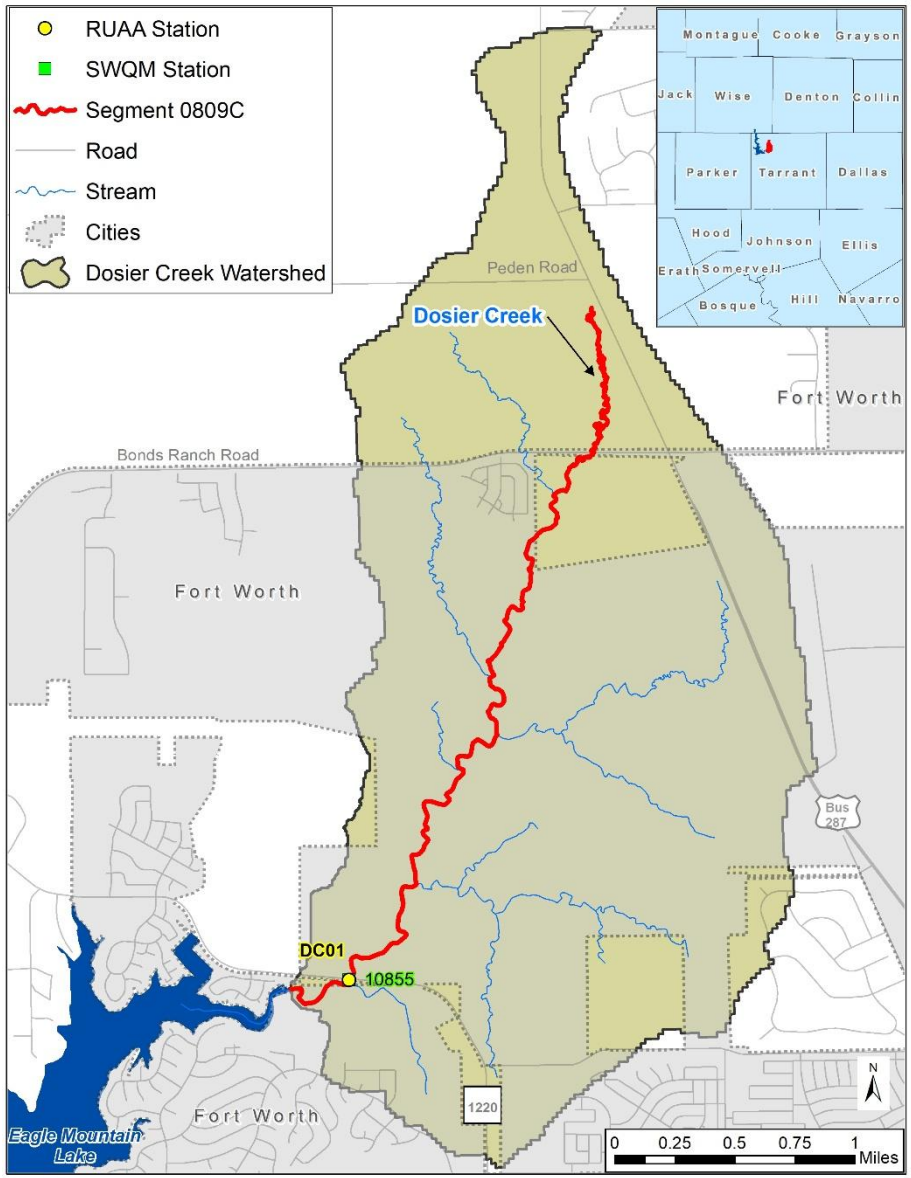

Figure 5.1 Watershed of Dosier Creek (0809C)

Table 5.1 Description and location of RUAA field survey sites for Dosier Creek, Water Body 0809C

Site ID	TCEQ ID	Site Description	Latitude	Longitude	Access
DSC01		Dosier Creek at Boat Club Road in Tarrant County	32.89315	-97.43756	Public

Site DSC01 is the furthest downstream road crossing in the Dosier Creek watershed. Public access is limited to the bridge, allowing surveys to be conducted without requiring landowner permission to enter the stream. However, the area beyond the bridge is private property, and TIAER personnel did not have authorization to proceed beyond the stream banks. While access from the bridge was relatively easy, dense, overgrown vegetation would have made entry beyond the crossing difficult.

Field Survey Results and Discussions

General Description of RUAA Survey Sites and Conditions for Dosier Creek 0809C

The Dosier Creek RUAA surveys were conducted on June 20 and September 25, 2024, at one site. The surveys were performed on weekdays, weekends, or holidays at opportune times to observe recreational activities. Air temperatures prior to and during both the first and second surveys were above 21˚C (70˚F), indicated by the RUAA guidelines as warm enough to promote recreational activities (Tables 4.2 and 4.3). In the 30 days prior to the first survey, 1.19 inches of precipitation fell, while 2.08 inches fell 30 days prior to the second survey. These rainfall events did not cause a hindrance to accessing the stream. The Palmer Drought Severity Index (PDSI) indicated moderate moist (index value: +2.00 to +2.99) conditions for Central Texas during June and mid-range conditions (-1.99 to +1.99) for September (TWDB, 2024).

A summary of the RUAA field survey results is presented in the following tables:

- Table 5.4 describes the stream channel and corridor characteristics at the site.
- Table 5.5 notes the average thalweg depth by site during each survey and the access to the stream, whether public or private, and the ease of bank access.
- Tables 5.6 and 5.7 document the maximum, minimum, and average stream widths at the site for each survey and observed flow conditions.
- Tables 5.8 and 5.9 note stream aesthetics, wildlife observations and tracks, and the presence of garbage by site observed during each survey.

Physical descriptions of each site follow these tables along with selected photos showing notable characteristics of each site.

Table 5.2 Rainfall records with maximum and minimum temperature for Fort Worth, Texas 30 days prior to the first RUAA survey initiated on June 20, 2024

Survey dates are highlighted in gray. Weather Data from Weather Underground; station Fort Worth Meacham INTL Airport Station. (Weather Underground, 2024)

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
May 19	0	89	71
May 20	0	88	71
May 21	0	88	74
May 22	0	84	71
May 23	0.14	89	69
May 24	0.03	90	72
May 25	0	91	70
May 26	0	96	75
May 27	0	95	71
May 28	0.04	84	63
May 29	0.91	85	68
May 30	0	75	65
May 31	0	82	64
June 1	0	80	67
June 2	0	87	67
June 3	0	84	68
June 4	0	91	75
June 5	0.05	90	67
June 6	0	94	68
June 7	0	93	72
June 8	0	94	76
June 9	0	92	72
June 10	0	83	73
June 11	0	79	72
June 12	0.02	89	72
June 13	0	92	71
June 14	0	94	72
June 15	0	91	73
June 16	0	91	73
June 17	0	93	76
June 18	0	91	74
June 19	0	88	73
June 20	0	90	77

Table 5.3 Rainfall records with maximum and minimum temperature for Fort Worth, Texas 30 days prior to the second RUAA survey initiated on September 26, 2024

Survey dates are highlighted in gray. Weather Data from Weather Underground; station Fort Worth Meacham INTL Airport Station. (Weather Underground, 2024)

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
August 25	0	98	78
August 26	0	97	77
August 27	0	95	75
August 28	0.63	94	74
August 29	0	94	75
August 30	0	91	74
August 31	0	93	76
September 1	0	93	76
September 2	0	88	75
September 3	0.71	81	-
September 4	0	76	69
September 5	0.1	90	71
September 6	0	91	70
September 7	0.43	85	67
September 8	0	82	62
September 9	0	84	58
September 10	0	87	59
September 11	0	82	71
September 12	0	87	68
September 13	0	93	65
September 14	0	94	76
September 15	0	93	74
September 16	0	90	72
September 17	0	90	71
September 18	0	94	73
September 19	0	96	76
September 20	0	97	76
September 21	0	94	76
September 22	0	92	74
September 23	0	77	68
September 24	0.21	89	68
September 25	0	83	67
September 26	0	84	60

Table 5.4 Stream channel and corridor appearance for each site sampled along Dosier Creek (0809C)

Site Number	Stream Channel Appearance	Dominant Substrate	Corridor Appearance	Riparian Size	Public Park	Landscape Surroundings
DSC01	Natural	Cobble/Silt	Forest	Normal	No	Forest

Table 5.5 Thalweg depth, stream flow type, and site accessibility during the two surveys of Dosier Creek (0809C)

Stream flow type represents observed stream characteristics on the date of the survey. Under general access, * indicates that the site was publicly accessible at a road crossing, but that further access was limited by fencing of private property. For Bank Access, E = Easy, ME = Moderately Easy, MD = Moderately Difficult, D = Difficult.

Site	Reach Length (m)	# of Transects	# of Recreational Areas at Site	Avg. Site Thalweg Depth (m) for Trip 1	Avg. Site Thalweg Depth (m) for Trip 2	Stream Flow Type Survey 1	Stream Flow Type Survey 2	General Access	Bank Access
DSC01	300	11	0	0.35	0.43	Perennial	Perennial	Public*	ME

Table 5.6 Description of surveyed stream sites along Dosier Creek during the first survey performed on June 20, 2024

Site Number	Maximum Width (m)	Minimum Width (m)	Typical Average Width (m)	Observed Flow
DSC01	8.6	1.5	3.5	Normal

Table 5.7 Description of surveyed stream sites along Dosier Creek during the second survey performed on September 25, 2022

Site Number	Maximum Width (m)	Minimum Width (m)	Typical Average Width (m)	Observed Flow
DSC01	8	0.3	6.0	Normal

Table 5.8 Stream aesthetics along Dosier Creek during the first survey performed June 20, 2024

From Field Data Sheet – Section F: A = absent, R = rare, C = common, Ab = abundant, N = none, NW = no water, SP = slight presence, MP = moderate presence, LP = large presence.

Site	Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependent Birds	Mammals	Evidence of wildlife	Large Garbage in Channel	Small garbage in Channel	Bank Garbage
DSC01	R	A	N	Clear	Fine Sediment	C	N	N	N	Tracks	N	N	C

Table 5.9 Stream aesthetics along Dosier Creek during the second survey performed September 25, 2024

From Field Data Sheet – Section F: A = absent, R = rare, C = common, Ab = abundant, N = none, NW = no water, SP = slight presence, MP = moderate presence, LP = large presence. NA indicates not applicable because conditions were dry.

Site	Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependent Birds	Mammals	Evidence of Wildlife	Large Garbage in Channel	Small Garbage in Channel	Bank Garbage
DSC01	R	A	N	Clear	Fine Sediment	C	N	N	N	Tracks	N	N	C

Physical Description of DSC01

Dosier Creek site DSC01 was visited on June 20 and September 25, 2024. This site was located at Boat Clubb Road in Parker County, a public road crossing. Public access to the stream at this site was restricted at the bridge crossing due to temporary construction fencing and private property up to the stream banks.

The general appearance of the creek at this location is shown in Figures 5.2 and 5.3. Access to the stream was moderately easy due to steep, but thinner bank vegetation at the bridge crossing. The dominant substrate was cobble and silt, and the majority of the stream corridor was forest. The silt substrate caused TIAER field personnel to sink into the bottom, making it difficult to travel in the channel.

Figure 5.2 Photograph of Dosier Creek Site DSC01 taken on June 20, 2024. The upstream view of the 150-m transect. TIAER personnel in the photo.

This site was wadable with an overall thalweg depth-averaged 0.35 m for the first survey and 0.43 m for the second survey. Thalweg depths ranged from 0.05 m to 0.61 m during the first survey and ranged from 0.03 m to 0.7 m during the second survey. No pools were observed during either survey at this site.

Stream flow appeared to be perennial at the time of both surveys (Table 5.5). The maximum stream width encountered was 8.6 m during the first survey (Tables 5.6 and 5.7). The typical stream width during the 300 m stretch was 3.5 m during the first

survey and 6 m during the second survey. Flow conditions appeared normal during both surveys.

The water was clear in color and on the surface during both surveys. Aquatic vegetation was present but rare, while algae cover was absent at this site for each survey. Evidence of wildlife was rarely observed in the form of raccoon tracks. No water-dependent birds or reptiles were observed during either survey (Tables 5.8 and 5.9).

Trash was only observed at the 150 m transect located at the bridge crossing. No evidence of recreation was observed during either survey, however, signs of human presence included graffiti under the bridge at the 150-m transect and ATV tracks.

Figure 5.3 Photograph of Dosier Creek Site DSC01 taken on September 25, 2024. The upstream view of the 300-m transect

Observations and Interviews

Activities Observed

During each RUAA survey, field personnel visited site DSC01 during times of day and on days when recreational activities were most likely to be observed. This site was located at a public road crossing; however, general public access to the stream beyond the respective road crossings is prohibited due to fencing marking private property. No form of recreation was directly observed by TIAER staff during either of the two surveys.

Activities Interviewed

No interviews were collected from landowners or stakeholders along Dosier Creek.

Because the stream lies directly adjacent to the pipeline easement, there were no private resident landowners available to contact for interviews.

Activities listed in Table 5.10 indicate the number of times personal use, observed use, and/or heard of use was documented from interviews for a given location or in general along the assessment unit. Blank cells in Table 5.10 indicate no interviewed feedback for that location.

Table 5.10 Summary of recreational activities noted in interviews for Dosier Creek

Site Name	Number of Interviews	Swimming	Adult Wading	Children Wading	Hunt	Fish	Boat, Canoe, Kayak
DSC01							
General AU							
Totals							

Summary

RUAA surveys were conducted at one site along Dosier Creek on June 20 and September 25, 2024. Temperatures were above 21ºC (70ºF) during the 30 days prior to each survey (Tables 5.2 and 5.3). Water existed and flowed in Dosier Creek during both surveys. Stream flow was considered normal during both surveys. The Palmer Drought Severity Index (PDSI) indicated moderate moist conditions in June 2042 and mid-range conditions in September 2024 (TWDB, 2024).

No recreational activities were observed by TIAER field staff during either survey. Roughly 76% of the watershed through which Dosier Creek falls into two types of land use. Grassland/Herbaceous land accounts for the majority at roughly 61%, while developed land with medium intensity is 15% of the watershed. Steep and slippery banks with vegetation were present at the site, indicating hazardous access for recreation.

No interviews were collected from landowners or stakeholders along Dosier Creek.

Recreational activities observed and reported in interviews are summarized in Figure 5.13. The overall RUAA findings are summarized in the form below.

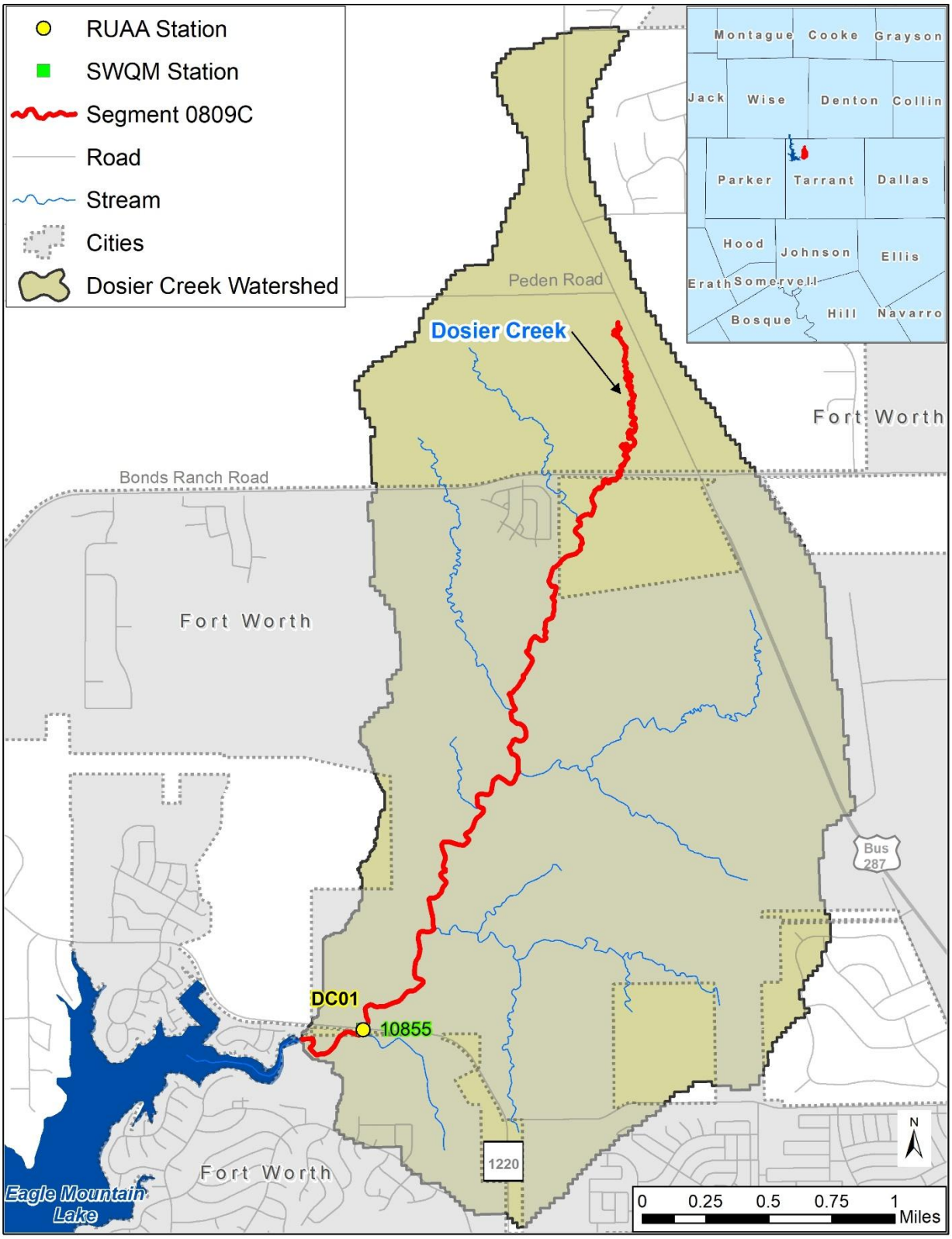

Figure 5.13 Summary of observed and interviewed human activities on Dosier Creek

Chapter 6. Derrett Creek (0809D)

Survey Site Descriptions

Derrett Creek is 9 river miles long, indicating a goal of 5 sites (3 sites per 5 miles of river) for the RUAA survey. TIAER was able to establish a total of 3 survey sites along Derrett Creek (Figure 6.1 and Table 6.1). All 3 sites were located at public road crossings.

All 3 sites allowed for public access. There was no fencing upstream or downstream of the crossings. Access to the stream between road crossings ranged from easy to moderately difficult due to steep banks and dense vegetation. The average distance between survey sites was 0.25 river miles with the largest gap being 0.59 river miles between Site DRC01 and DRC02. Site DRC02 is co-located with TCEQ sampling station 10858. RUAA surveys were performed on June 20 and September 25, 2024, at all locations. Landowner permission was not required to access sites at any location. A brief description of each site follows.

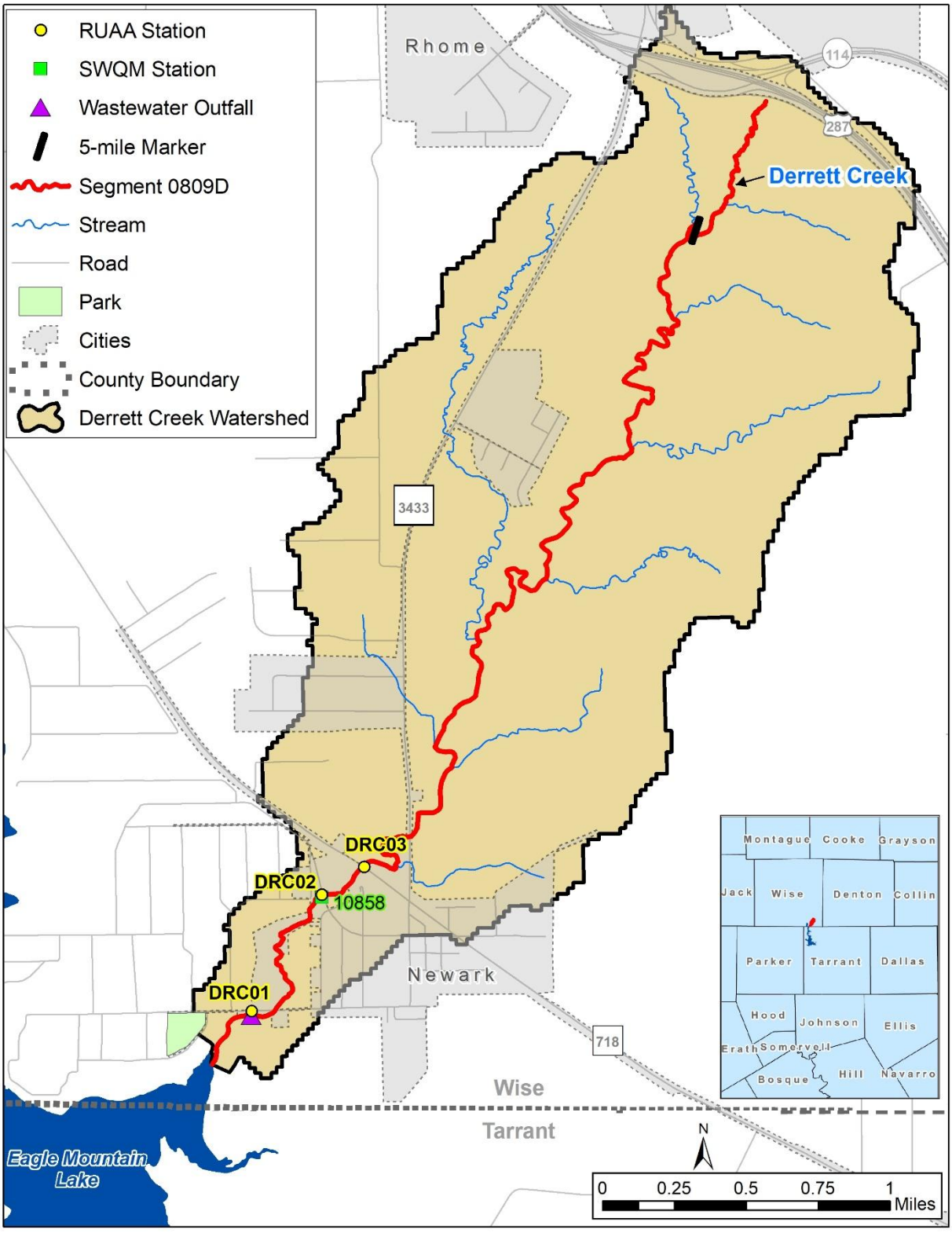

Figure 6.1 Watershed of Derrett Creek (0809D)

Table 6.1 Description and location of RUAA field survey sites for Derrett Creek, Water Body 0809D

Site ID	TCEQ ID	Site Description	Latitude	Longitude	Access
DRC01		Derrett Creek at Rogers Road in Tarrant County	32.99819	-97.49528	Public
DRC02	10858	Derrett Creek at Central Avenue in Tarrant County	33.00403	-97.49099	Public
DRC03		Derrett Creek at FM 718 in Tarrant County	33.00539	-97.48844	Public

Site DRC01 is the most downstream site just off of Eagle Mountain Lake located at Rogers Road. This site is located in a neighborhood and was publicly accessible from the road, thus, access to complete the surveys did not require landowner permission to enter the stream. There was no bridge crossing at this site. TIAER personnel did not need permission to walk beyond the stream banks. Due to maintained banks at the 0-m transect and the site being located in a neighborhood, access to this site was moderately dangerous due to the road traffic.

Site DRC02 is located about 0.59 miles from site DRC01. This site is publicly accessible via the road crossing on Central Avenue in Tarrant County. Due to short vegetation at the bridge crossing, access into the stream was moderately easy. However, banks beyond the bridge crossing were filled with overgrown vegetation and steep, rocky banks. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Site DRC03 is located about 0.15 miles from site DRC02. This site was publicly accessible via the road crossing on FM 718. Due to very dense vegetation and rocky, steep banks, access into the stream was moderately difficult. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Field Survey Results and Discussions

General Description of RUAA Survey Sites and Conditions for Derrett Creek 0809D

The Derrett Creek RUAA surveys were conducted on June 20 and September 25, 2024, at all 3 sites. The surveys were performed on weekdays, weekends, or holidays at opportune times to observe recreational activities. Air temperatures prior to and during both the first and second surveys were above 21˚C (70˚F), indicated by the RUAA guidelines as warm enough to promote recreational activities (Tables 4.2 and 4.3). In the 30 days prior to the first survey, 1.01 inches of precipitation fell, while 5.63 inches fell 30 days prior to the second survey. These rainfall events did not cause a hindrance to accessing the stream. The Palmer Drought Severity Index (PDSI) indicated

moderate moist (index value: +2.00 to +2.99) conditions for Central Texas during August and mid-range conditions (-1.99 to +1.99) for September (TWDB, 2024).

A summary of the RUAA field survey results is presented in the following tables:

- Table 6.4 describes the stream channel and corridor characteristics at each site.
- Table 6.5 notes the average thalweg depth by site during each survey and the access to the stream, whether public or private, and the ease of bank access.
- Tables 6.6 and 6.7 document the maximum, minimum, and average stream widths at each site for each survey and observed flow conditions.
- Tables 6.8 and 6.9 note stream aesthetics, wildlife observations and tracks, and the presence of garbage by site observed during each survey.

Physical descriptions of each site follow these tables along with selected photos showing notable characteristics of each site. All sites were at public road crossings. Overall thalweg depth averaged >0.67 m for the first survey and >0.21 m for the second survey. Access to the stream ranged from easy to moderately difficult between all three sites due to steep, densely vegetated banks. The dominant substrate was silt, gravel, and mud/clay. The majority of the stream corridor was shrub with several areas lined with forestry shrubs. The maximum stream width encountered was 7 m at site DRC01 during the first and second surveys. Typical stream widths ranged from 0 m to 7 m at all three sites with the narrowest width of 0 m at DRC03 during the second survey. Flow conditions appeared normal during both surveys. The water was brown in color at sites DRC02 and DRC03 during both surveys, except site DRC01, during the first survey, where it appeared to be clear. The water surface at most sites was clear during the first survey but had foam or scum apparent at sites DRC02 and DRC03 during the second survey. Evidence of wildlife was rarely observed at sites, most commonly in the form of raccoon and hog tracks. Trash was rarely observed at most survey sites and when observed was typically plastics, aluminum cans, and bottles. No evidence of recreation was observed at any of the three survey sites.

Table 6.2 Rainfall records with maximum and minimum temperature for Fort Worth, Texas 30 days prior to the first RUAA survey initiated on June 20, 2024

Survey dates are highlighted in gray. Weather Data from Weather Underground; station Fort Worth Meacham INTL Airport Station. (Weather Underground, 2024)

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
May 19	0	89	71
May 20	0	88	71
May 21	0	88	74
May 22	0	84	71
May 23	0.14	89	69
May 24	0.03	90	72
May 25	0	91	70
May 26	0	96	75

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
May 27	0	95	71
May 28	0.04	84	63
May 29	0.91	85	68
May 30	0	75	65
May 31	0	82	64
June 1	0	80	67
June 2	0	87	67
June 3	0	84	68
June 4	0	91	75
June 5	0.05	90	67
June 6	0	94	68
June 7	0	93	72
June 8	0	94	76
June 9	0	92	72
June 10	0	83	73
June 11	0	79	72
June 12	0.02	89	72
June 13	0	92	71
June 14	0	94	72
June 15	0	91	73
June 16	0	91	73
June 17	0	93	76
June 18	0	91	74
June 19	0	88	73
June 20	0	90	77

Table 6.3 Rainfall records with maximum and minimum temperature for Fort Worth, Texas 30 days prior to the first RUAA survey initiated on September 25, 2024

Survey dates are highlighted in gray. Weather Data from Weather Underground; station Fort Worth Meacham INTL Airport Station. (Weather Underground, 2024)

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
August 25	0	98	78
August 26	0	97	77
August 27	0	95	75
August 28	0.63	94	74
August 29	0	94	75
August 30	0	91	74
August 31	0	93	76

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
September 1	0	93	76
September 2	0	88	75
September 3	0.71	81	-
September 4	0	76	69
September 5	0.1	90	71
September 6	0	91	70
September 7	0.43	85	67
September 8	0	82	62
September 9	0	84	58
September 10	0	87	59
September 11	0	82	71
September 12	0	87	68
September 13	0	93	65
September 14	0	94	76
September 15	0	93	74
September 16	0	90	72
September 17	0	90	71
September 18	0	94	73
September 19	0	96	76
September 20	0	97	76
September 21	0	94	76
September 22	0	92	74
September 23	0	77	68
September 24	0.21	89	68
September 25	0	83	67
September 26	0	84	60
August 25	0	98	78
August 26	0	97	77

Table 6.4 Stream channel and corridor appearance for each site sampled along Derrett Creek (0809D)

Site Number	Stream Channel Appearance	Dominant Substrate	Corridor Appearance	Riparian Size	Public Park	Landscape Surroundings
DRC01	Natural	Silt	Shrub	Normal	No	Shrub
DRC02	Natural	Gravel	Forest/Shrub	Normal	No	Forest/Shrub
DRC03	Natural	Mud/Clay/Gravel	Forest/Shrub	Normal	No	Forest/Shrub

Table 6.5 Thalweg depth, stream flow type, and site accessibility during the two surveys of Derrett Creek (0809D)

Stream flow type represents observed stream characteristics on the date of the survey. Under general access, * indicates that the site was publicly accessible at a road crossing, but that further access was limited by fencing of private property for Bank Access, E = Easy, ME = Moderately Easy, MD = Moderately Difficult, D = Difficult.

Site	Reach Length (m)	# of Transects	# of Recreational Areas at Site	Avg. Site Thalweg Depth (m) for Trip 1	Avg. Site Thalweg Depth (m) for Trip 2	Stream Flow Type Survey 1	Stream Flow Type Survey 2	General Access	Bank Access
DRC01	300	11	0	>1.5	>1.5	Perennial	Perennial	Public	E
DRC02	300	11	0	0.24	0.11	Perennial	Perennial	Public	ME
DRC03	300	11	0	0.26	0.01	Perennial	Perennial	Public	MD

Table 6.6 Description of surveyed stream sites along Derrett Creek during the first survey performed on June 20, 2024

Site Number	Maximum Width (m)	Minimum Width (m)	Typical Average Width (m)	Observed Flow
DRC01	12	6	7	Normal
DRC02	6	0.34	2.2	Normal
DRC03	3.5	1.4	2	Normal

Table 6.7 Description of surveyed stream sites along Derrett Creek during the second survey performed on September 25, 2024

Site Number	Maximum Width (m)	Minimum Width (m)	Typical Average Width (m)	Observed Flow
DRC01	7	7	7	Normal
DRC02	3.6	0	2.2	Normal
DRC03	0.7	0	0	Normal

Table 6.8 Stream aesthetics along Derrett Creek during the first survey performed June 20, 2024

From Field Data Sheet – Section F: A = absent, R = rare, C = common, Ab = abundant, N = none, NW = no water, SP = slight presence, MP = moderate presence, LP = large presence.

Site	Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependent Birds	Mammals	Evidence of wildlife	Large Garbage in Channel	Small garbage in Channel	Bank Garbage
DRC01	A	A	N	Clear	Sludge/Fine Sediment	Clear	SP	N	N	None	N	C	N
DRC02	A	A	R	Brown	Fine Sediment	Clear	N	N	N	Feather	R	N	R
DRC03	A	A	R	Brown	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	N	N	R

Table 6.9 Stream aesthetics along Derrett Creek during the second survey performed September 25, 2024

From Field Data Sheet – Section F: A = absent, R = rare, C = common, Ab = abundant, N = none, NW = no water, SP = slight presence, MP = moderate presence, LP = large presence. NA indicates not applicable because conditions were dry.

Site	Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependent Birds	Mammals	Evidence of Wildlife	Large Garbage in Channel	Small Garbage in Channel	Bank Garbage
DRC01	A	A	N	Clear	Sludge/Fine Sediments	Clear	R	N	N	None	N	C	N
DRC02	A	A	R	Brown	Fine Sediment	Clear	N	N	N	Feather	R	N	R
DRC03	A	A	R	Brown	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	N	N	R

Physical Description of DRC01

Derrett Creek site DRC01 was visited on June 20 and September 25, 2024. Located on Rogers Road in a small neighborhood in Tarrant County, this site was not wadable for TIAER personnel due to thalweg depths exceeding 1.5 m.

Public access to the stream was available along the entire 300 m survey reach. The stream flows through a shrub-dominated riparian zone that extends directly to the water's edge. The banks had easy access, but were steep and slippery immediately next to water's edge within the channel with water reaching the bank, making it unfeasible for TIAER personnel to walk in the stream.

The general appearance of the creek at this location is shown in Figures 6.2 and 6.3.

Figure 6.2 Photograph of Derrett Creek at Site DRC01 taken on June 20, 2024. The upstream view of the 0-m transect.

Site DRC01 was not wadeable with average thalweg being >1.5 m during both surveys. Figure 4.2 illustrates the typical observed width of the creek at this site, approximately 7 m. Widths ranged from 6.0 m to 12.0 m during the first survey (Tables 6.6 and 6.7).

The stream flow type was observed as perennial at the time of both surveys (Table 6.5). Aquatic vegetation and algae cover were absent at this site for each survey. No pools were observed during either survey at this site.

Figure 6.3 Photograph of Derrett Creek Site DRC01 taken on September 25, 2024. The upstream view of the 300-m transect

No water-dependent birds were observed during either survey (Tables 6.8 and 6.9). However, a turtle was observed during the first survey, and trout jug lines were observed during both surveys.

At the 0-m transect, a small brush pile with trash was observed on the bank, seemingly used by local neighbors for brush clearing and burning. During the first survey, remnants of a small campfire were also noted on the bank. Additionally, at the 90-m transect, a ladder extended from private property beyond the bank into the stream (Figure 6.3).

Physical Description of DRC02

Derrett Creek at Site DRC02 was visited on June 20 and September 25, 2024. This site was located at the Central Avenue bridge crossing in Tarrant County. Access to this site was moderately easy but did include steep banks with rocks and thick vegetation leading down to the water.

The riparian zone at Site DRC02 was shrub and forest with thick vegetation on both the right and left banks (Table 6.4). Banks were vegetated with larger tree roots and overgrown branches that hung over the banks into the stream (Figures 6.4 and 6.5) throughout this site. The stream was wadeable during both surveys with average thalweg depths ranging from 0.11 m to 0.24 m. The stream was designated as

perennial during both surveys (Table 6.5). Channel widths ranged from 0 m to 6 m throughout the reach during both surveys, with a typical observed width of 2.2 m (Tables 6.6 and 6.7).

Figure 6.4 Photograph of Derrett Creek Site DRC02 taken on June 20, 2024. Photograph shows the upstream view of the 300-m transect.

Figure 6.5 Photograph of Derrett Creek at Site DRC02 taken on September 25, 2024. Photograph at the 0-m transect facing the left bank.

No water-dependent birds were observed at this site during either survey (Tables 6.8 and 6.9). Bird feathers were observed in addition to raccoon and deer tracks. No other evidence of wildlife was observed in either survey. Aquatic vegetation and algae were absent during both surveys. Odor was only noticed at the bridge during both surveys and the water color was brown during both surveys. The surface was clear during each survey. Typical garbage such as a trash bag and a glass jar were seen under the bridge during the first survey, while a large flat screen TV was present at the time of the second survey. Additionally, a human footprint was observed in the mud, graffiti was noticed during the first survey. During the second survey, a ladder and rope were discovered at the 0-m transect on the left bank (Figure 6.5).

Physical Description of DRC03

Derrett Creek at Site DRC03 was visited on June 20 and September 25, 2024. This site was accessed via a bridge crossing at FM 718 in Tarrant County. Access to the stream was at the road crossing off a busy farm-to-market road in a commercial area. The stream at this site was only publicly accessible at the bridge crossing due to fenced private property up to the stream banks. The riparian area was shrub and forest with thick vegetation and slippery slopes on both the right and left banks (Table 6.4). Access to the stream was moderately easy at the road crossing but would have been difficult beyond the bridge.

Site DRC03 was wadeable throughout the stream with thalweg averages measuring 0.26 m for the first survey and 0.013 m for the second survey (Table 6.5). The stream flow type was characterized as perennial for this reach. The average stream width was 2.0 m for the first survey and 0 m for the second. First survey had a maximum width of 3.5 m and minimum stream width of 1.4 m, and the second survey had a maximum width of 0.7 m and a minimum of 0 m (Tables 4.6 and 4.7).

The stream banks were densely vegetated at DRC03. Aquatic vegetation and algae cover were absent during both surveys. The water was brown with no surface scum during both surveys.

Figure 6.6 Photograph of Derrett Creek Site DRC03 taken on June 20, 2024, the upstream view of the 0-m transect.

The only evidence of wildlife observed was raccoon tracks during both surveys. Tadpoles and minnows were observed during the first survey. No large garbage was encountered, but some small garbage, at the bridge crossing, was observed in the form of plastic bottles and a volleyball observed (Tables 6.8 and 6.9).

Observations and Interviews

Activities Observed

During each RUAA survey, field personnel visited sites during times of day and on days when recreational activities were most likely to be observed. All three sites were at public road crossings. No form of recreation was directly observed by TIAER staff during either of the two surveys.

Activities Interviewed

A total of four interviews were collected from landowners along Derrett Creek.

All four interviews stated they had not personally used, observed others using, or heard of others using Derrett Creek for any form of primary contact recreation. Three interviews had no recreation to report, while one interviewee reported having seen people fishing at site DRC01. This is supported by TIAER field personnel, who encountered trout lines during surveys at the same location.

One interview stated they had been familiar with Derrett Creek for approximately two years, while the other two reported familiarity with the stream for over six years. Of those who said they had not personally recreated in Derrett Creek; one cited the reason as being "gross water" (Table 6.10). Additionally, one interviewee noted witnessing individuals building a campfire and drinking beer next to Derrett Creek at site DRC01.

One interview had no recreation to report of any type (personal use, observed use, and/or heard of use).

Activities listed in Table 6.10 indicate the number of times personal use, observed use, and/or heard of use was documented from interviews for a given location or in general along the assessment unit.

Table 6.10 Summary of recreation reported for Derrett Creek. Number of recreational activity accounts reported represented as personal use, witnessed/observed, heard of, respectfully.

Site Name	Swimming	Adult Wading	Children Wading	Hunt	Fish	Boat, Canoe, Kayak	Bathing
DRC01					0,1,0		
DRC02							
DRC03							
General AU							
Totals	NA	NA	NA	NA	0,1,0	NA	NA

Summary

RUAA surveys were conducted at three sites along Derrett Creek on June 20 and September 25, 2024. Temperatures were above 21ºC (70ºF) during the 30 days prior to each survey (Tables 4.2 and 4.3). Water existed and flowed in Derrett Creek during both surveys. Stream flow was considered normal during both surveys based on information provided by local residents. The Palmer Drought Severity Index (PDSI) indicated moderate moist conditions in June 2022 and mid-range conditions in September 2024 (TWDB, 2024).

No recreational activities were observed by TIAER field staff during either survey. Roughly 73% of the watershed through which Derrett Creek falls into two types of land use. Grassland/herbaceous land accounts for the majority at roughly 65%, while deciduous forest represents 8% of the watershed. While steep, slippery, or heavily vegetated banks were present at all three surveyed sites – posing hazards for recreational use – two locations, including site DRC01, were noted to have relatively easy bank access, which may facilitate secondary contact recreation activities such as fishing or gathering near the creek.

No interviews indicated any instances of primary contact recreational activity within Derrett Creek. However, fishing was observed by interviewees and supported by physical evidence at site DRC01. General public access to the stream is limited at all three sites, primarily restricted to the right-of-way surrounding public bridge crossings or the areas immediately upstream and down stream of culvert crossings.

Recreational activities observed and reported in interviews are summarized in Figure 6.13. Overall RUAA findings are summarized in the form below.

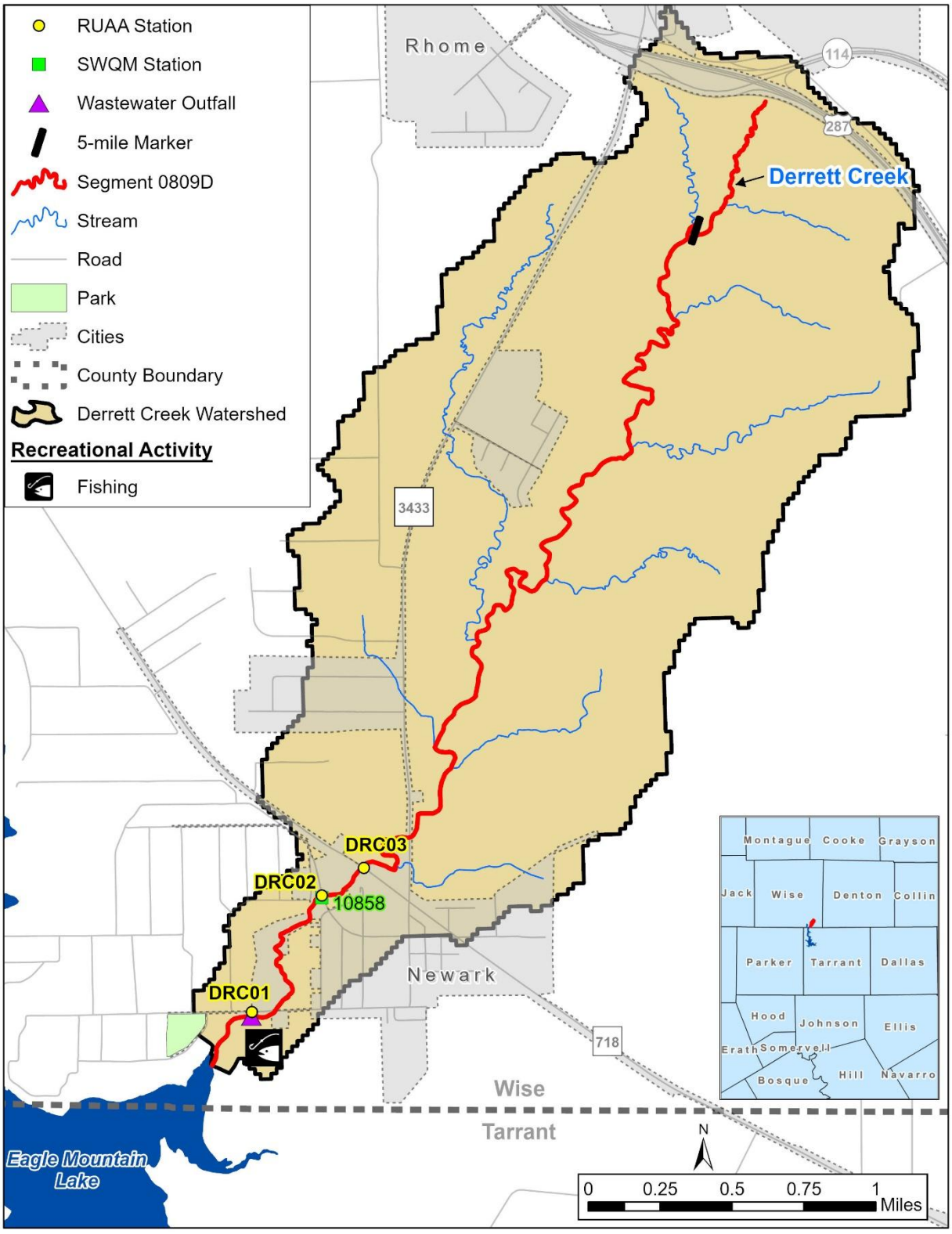

Figure 6.13 Summary of observed and interviewed human activities on Derrett Creek

RUAA Summary

(Not part of the Field Data Sheet)

This form should be filled out after RUAA data collection is completed. Use the Contact Information Form, Field Data Sheets from all sites, Historical Information Review, and other relevant information to answer the following questions on the water body.

Name of water body: Ash Creek
Segment No. of Nearest Downstream Segment No.: 0809B
Classified?: No
Counties: Parker and Tarrant Counties

1. Observations on Use
    a. Do primary contact recreation activities occur on the water body?
    ☒frequently ☐seldom ☐not observed or reported ☐unknown
    b. Do secondary contact recreation 1 activities occur on the water body?
    ☒frequently ☐seldom ☐not observed or reported ☐unknown
    c. Do secondary contact recreation 2 activities occur on the water body?
    ☐frequently ☐seldom ☒not observed or reported ☐unknown
    d. Do noncontact recreation activities occur on the water body?
    ☐frequently ☐seldom ☒not observed or reported ☐unknown

2. Physical Characteristics of Water Body
    a. What is the average thalweg depth? >0.33 meters
    b. Are there substantial pools deeper than 1 meter? ☒Yes ☐No
    c. What is the general level of public access?
    ☒easy ☐moderate ☐very limited

3. Hydrological Conditions of site visits (Based on Palmer Drought Severity Index)
    ☐Mild-Extreme Drought
    ☐Incipient dry spell
    ☒Near Normal
    ☐Incipient wet spell
    ☐Mild-Extreme Wet

RUAA Summary

(Not part of the Field Data Sheet)

This form should be filled out after RUAA data collection is completed. Use the Contact Information Form, Field Data Sheets from all sites, Historical Information Review, and other relevant information to answer the following questions on the water body.

Name of water body: Dosier Creek
Segment No. of Nearest Downstream Segment No.: 0809C
Classified?: No
Counties: Tarrant County

1. Observations on Use
   a. Do primary contact recreation activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown
   b. Do secondary contact recreation 1 activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown
   c. Do secondary contact recreation 2 activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown
   d. Do noncontact recreation activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown

2. Physical Characteristics of Water Body
   a. What is the average thalweg depth? 0.39 meters
   b. Are there substantial pools deeper than 1 meter? ☐Yes ☒No
   c. What is the general level of public access?
   ☐easy ☐moderate ☒very limited

3. Hydrological Conditions of site visits (Based on Palmer Drought Severity Index)
   ☐Mild-Extreme Drought
   ☐Incipient dry spell
   ☒Near Normal
   ☐Incipient wet spell
   ☐Mild-Extreme Wet

RUAA Summary

(Not part of the Field Data Sheet)

This form should be filled out after RUAA data collection is completed. Use the Contact Information Form, Field Data Sheets from all sites, Historical Information Review, and other relevant information to answer the following questions on the water body.

Name of water body: Derrett Creek
Segment No. of Nearest Downstream Segment No.: 0809D
Classified?: No
Counties: Wise County

1. Observations on Use
   a. Do primary contact recreation activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown
   b. Do secondary contact recreation 1 activities occur on the water body?
   ☐frequently ☒seldom ☐not observed or reported ☐unknown
   c. Do secondary contact recreation 2 activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown
   d. Do noncontact recreation activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown

2. Physical Characteristics of Water Body
   a. What is the average thalweg depth? >0.44 meters
   b. Are there substantial pools deeper than 1 meter? ☐Yes ☒No
   c. What is the general level of public access?
   ☐easy ☒moderate ☐very limited

3. Hydrological Conditions of site visits (Based on Palmer Drought Severity Index)
   ☐Mild-Extreme Drought
   ☐Incipient dry spell
   ☒Near Normal
   ☐Incipient wet spell
   ☐Mild-Extreme Wet

References

AVMA, American Veterinary Medical Association. 2018. U.S. Pet Ownership Statistics. Online at: https://www.avma.org/KB/Resources/Statistics/Pages/Market-research-statistics-US-pet-ownership.aspx (link verified March 23, 2025).

Griffith, G., S. Bryce, J. Omernik, and A. Rogers. 2007. Ecoregions of Texas. Project report to the Texas Commission on Environmental Quality, Austin, Texas (AS-199, 12/07).

NOAA, National Oceanic and Atmospheric Administration. 2015. National Climatic Data Center, Available at https://www.ncdc.noaa.gov/cdo-web/ (link verified March 23, 2025)

TCEQ, Texas Commission on Environmental Quality. 2020a. 2018 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d), approved December 23, 2019. Available at https://wayback.archive-it.org/414/20200907230611/https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/20txir/2020_303d.pdf (link verified March 23, 2025).

TCEQ, Texas Commission on Environmental Quality. 2014b. Recreational Use-Attainability Analyses (RUAAs) - Procedures for a Comprehensive RUAA and a Basic RUAA Survey. (March 2014). Available on-line at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.tceq.texas.gov/downloads/water-quality/standards/ruaa/recreational-uaa-procedures-2014.pdf (link verified March 23, 2025).

TCEQ, Texas Commission on Environmental Quality. 2010. 2010 Texas Surface Water Quality Standards. Available at http://www.tceq.texas.gov/waterquality/standards/2010standards.html (link verified March 23, 2023).

TIAER, Texas Institute for Applied Environmental Research. 2022. Recreational Use Attainability Analysis for Ash Creek (0809B), Dosier Creek (0809C), and Derrett Creek (0809D), TCEQ Contract Number: 582-24-50160, Quality Assurance Plan. Prepared by TIAER, Tarleton State University, Stephenville, TX.

TWDB. Texas Water Development Board. 2022. Palmer Hydrological Drought Index (Monthly). Available at https://www.ncei.noaa.gov/access/monitoring/historical-palmers/maps/psi/202206-202209 (link verified March 23, 2023).

USCB, United States Census Bureau. 2020. Census 2020 Data, Washington D.C. Census Block Data available at http://www.census.gov/geo/maps-data/data/tiger-data.html with demographic data available at https://datacommons.org/tools/timeline#place=geoId%2F4836104&statsVar=Count_Person (links verified March 23, 2025).

USDA, U.S. Department of Agriculture. 2019. Census of Agriculture 2017 CDQT data set. Retrieved November 4, 2020 from https://www.nass.usda.gov/AgCensus/ (link verified March 23, 2025).

USEPA, U.S. Environmental Protection Agency. 2009. In: Drinking Water Contaminants. Available online at http://water.epa.gov/drink/contaminants/ (link verified March 23, 2025).

USGS, United States Geological Survey. 2016 Multi-Resolution Land Characterization (MRLC) Consortium, 2019National Land Cover Database (NLCD). Available at http://www.mrlc.gov/index.php (link verified March 23, 2025).

Weather Underground. The Weather Company, LLC. 2022. Precipitation and temperature history for weather station USC00412677 Eagle Mountain Lake, Texas. Available at: https://www.wunderground.com/weather/us/tx/fort-worth/KTXFORTW1824 (link verified March 23, 2025)

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[1] https://www.cityofazle.org/
[2] https://www.tarrantcountytx.gov/en.html
[3] https://catalog.mypcla.com/polaris/
[4] https://www.facebook.com/azlelibrary
[5]https://www.google.com/search?q=ash+creek+azle%2C+texas&rlz=1C1RXQR_enUS954US954&oq=ash+creek&gs_lcrp=EgZjaHJvbWUqCAgAEEUYJxg7MggIABBFGCcYOzIMCAEQLhhDGIAEGIoFMggIAhBFGCcYOzISCAMQLhgUGK8BGMcBGIcCGIAEMgcIBBAAGIAEMgYIBRBFGDwyBggGEEUYPDIGCAcQRRg80gEIMTQ2MmowajeoAgCwAgA&sourceid=chrome&ie=UTF-8
[6] https://www.fortworthtexas.gov/Home
[7] https://www.tarrantcountytx.gov/en.html
[8] https://www.parkercountytx.gov/
[9] https://fwpl.polarislibrary.com/Polaris/
[10] https://www.facebook.com/CityOfFortWorth
[11]https://www.google.com/search?q=dosier+creek+in+tarrant+county&rlz=1C1RXQR_enUS954US954&oq=dosier+creek+in+tarrant+county&gs_lcrp=EgZjaHJvbWUyBggAEEUYQDIJCAEQIRgKGKABMgkIAhAhGAoYoAEyCQgDECEYChigATIJCAQQIRgKGKABMgcIBRAhGKsC0gEJMTEzMjdqMGo0qAIAsAIB&sourceid=chrome&ie=UTF-8
[12] https://newarktexas.com/home
[13] https://www.co.wise.tx.us/
[14] https://newarktexas.com/library
[15] https://newarktexaspubliclibrary.weebly.com/
[16] https://www.facebook.com/profile.php?id=100063469235652
[17] https://www.facebook.com/newarktexaspubliclibrary/
[18]https://www.google.com/search?q=derrett+Creek&rlz=1C1RXQR_enUS954US954&oq=derrett+Creek&gs_lcrp=EgZjaHJvbWUyBggAEEUYQDIHCAEQIRigATIHCAIQIRigATIHCAMQIRigATIHCAQQIRigATIHCAUQIRigAdIBCDU3NTFqMGo0qAIAsAIB&sourceid=chrome&ie=UTF-8