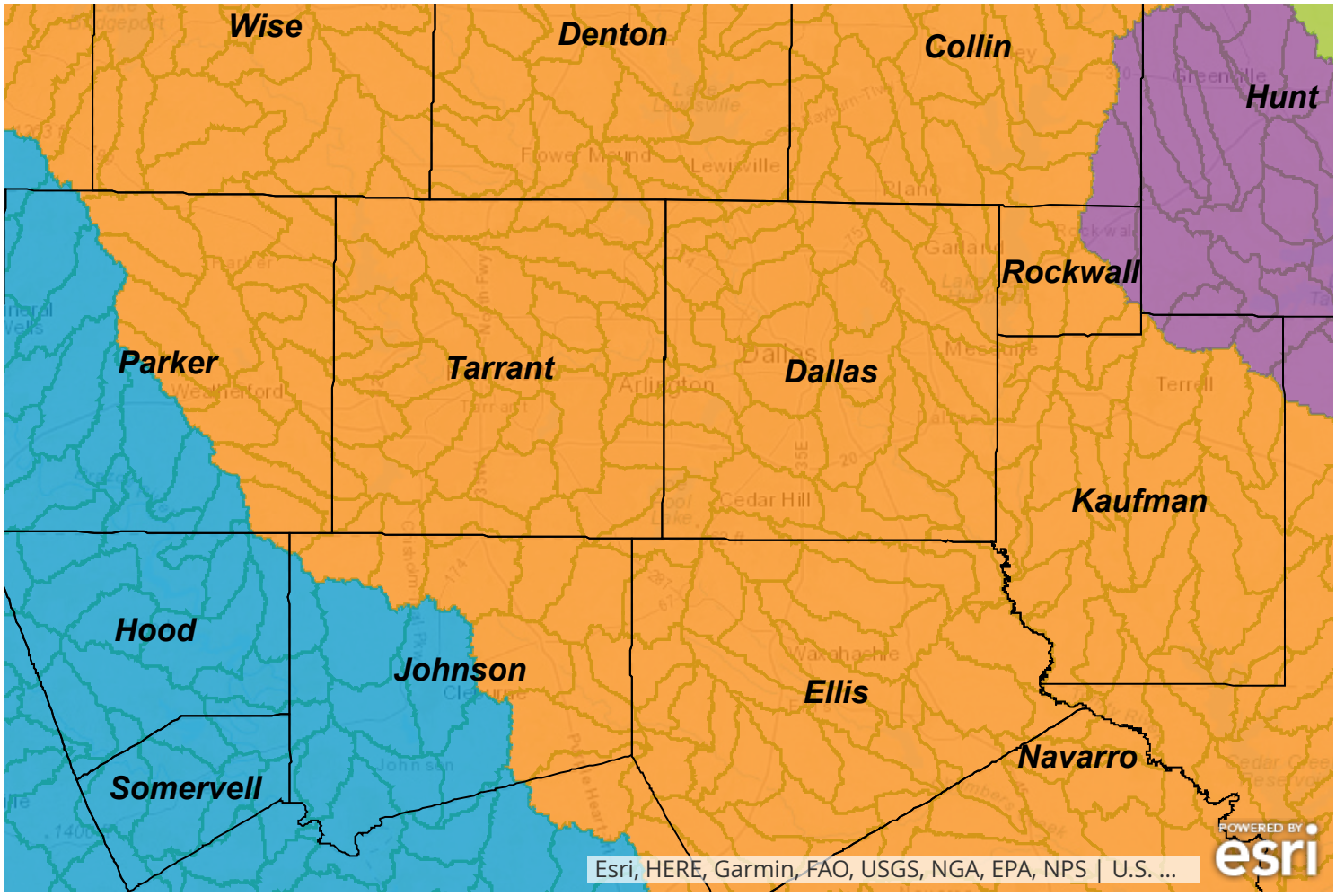
2021 Update to the North Central Texas Water Quality Management Plan

This story was made with Esri's Story Map Journal.
Read the interactive version on the web at https://arcg.is/1PLWbG.



NCTCOG Counties

Sub-basins (HUC 4)

- Lower Brazos
- Middle Brazos
- Red-Sulphur
- Sabine
- Trinity

Subwatersheds (HUC 12)

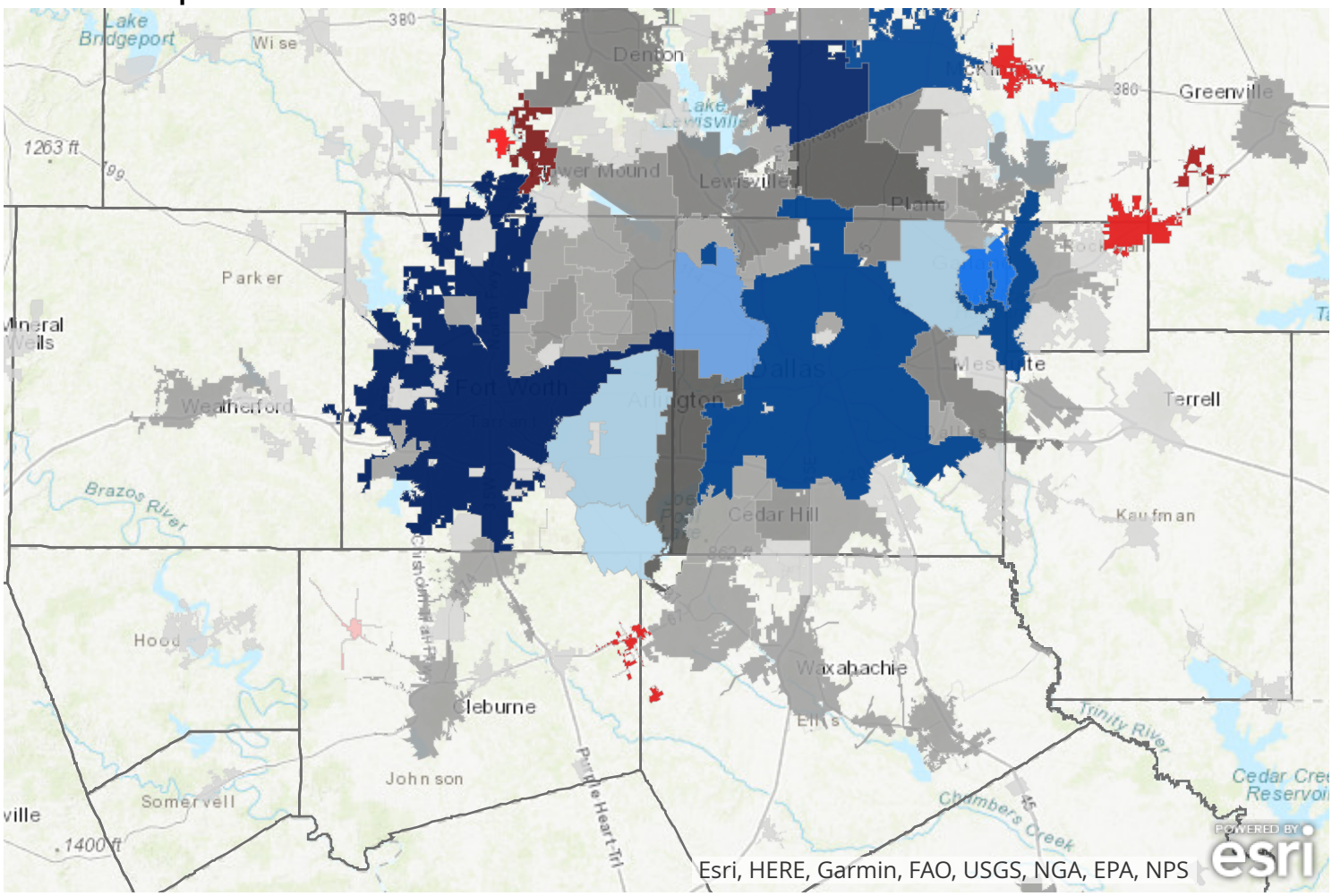
North Central Texas Council of Governments
August 27, 2021

The North Central Texas Council of Governments (NCTCOG), as the designated water quality planning agency for the North Central Texas area, is responsible for developing the regional Water Quality Management Plan (WQMP), and updating it annually.

Since developing the first WQMP in 1975, the NCTCOG 16-county region has grown by 5.13 million people. The historical population growth and projected growth has required and will continue to require water resources planning to address water quality, wastewater capacity, and water supply needs. The WQMP provides data and information regarding potential needs and priorities for improving water quality and continuing regional efforts to meet wastewater capacity needs for the expanding population.

The NCTCOG region is composed of over 330 sub-watersheds that include a myriad of diverse land uses working to support the growing population of the NCTCOG region (see map on right). Entities across North Texas work to maintain and improve water resources with the development of management plans to meet future needs.

2021 Population Estimates



Top Ten Cities in Percent Change Population Growth (2020-2021) from Highest to Lowest

- Northlake
- Caddo Mills
- Venus
- Royse City
- Melissa
- Princeton
- Justin
- Anna
- Celina
- Godley

Top Ten Cities in Absolute Population Growth (2020-2021) from Highest to Lowest

- Fort Worth
- Frisco
- McKinney
- Dallas
- Rowlett
- Celina
- Irving
- Garland
- Arlington
- Mansfield

Cities - Shaded by 2021 Population Estimate

NCTCOG Population 2021

- > 500,000 – 1,400,000
- > 200,000 – 500,000
- > 100,000 – 200,000
- > 50,000 – 100,000
- > 20,000 – 50,000
- 0 – 20,000

NCTCOG Counties

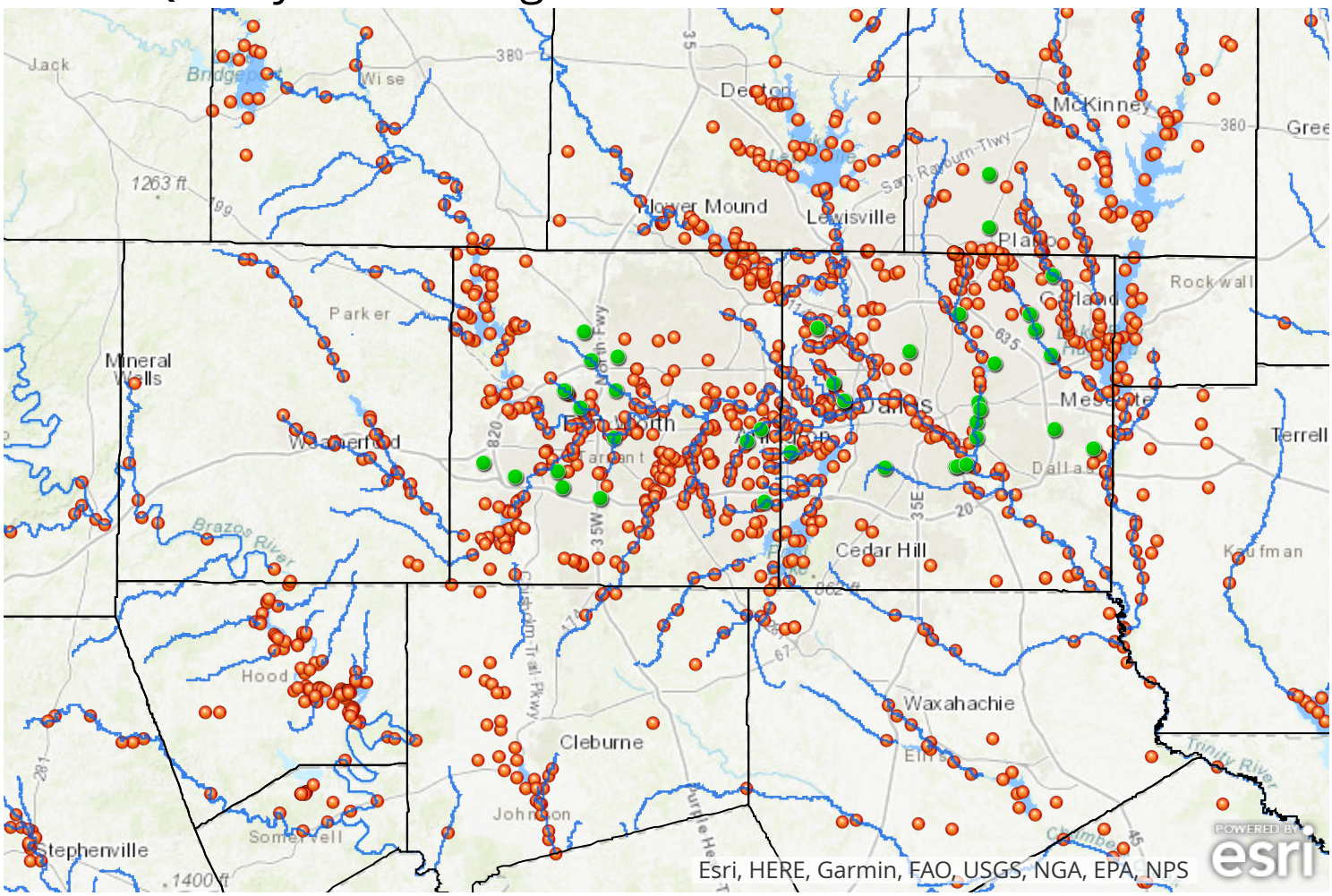
The 16-county NCTCOG region continues to experience population growth. The figure **here** shows the high levels of population growth in the Dallas-Fort Worth region from 2010 to 2021. Forecasts project this trend will continue through 2045. The continual growth in the region is an important factor to consider for agencies tasked with maintaining or improving water quality, providing adequate capacity for wastewater treatment, and ensuring sufficient drinking water supplies.

Several methods of growth analysis are used to establish existing and projected growth trends in the North Central Texas region. NCTCOG produces annual population estimates and, in 2017, population and employment projections for 2045 for the 12-county Metropolitan Planning Area (MPA), which can be found **here**. The projected population data provides a uniform base for infrastructure planning and resource allocation in the MPA. The Texas Water Development Board (TWDB) also produces population projections, which NCTCOG uses to measure population.

The NCTCOG region experiences considerable annual population change. Analyses of where existing growth is occurring within the region is important to understand growth patterns and assist with future planning needs. To assist with this effort, a list of NCTCOG city population estimates for 2010 - 2021 can be found **here**. Additionally, the map on the right shows the top ten cities with the highest percent growth (in red) and largest absolute growth (in blue). Percent change in population shows the relative change in size of a population from 2020 to 2021 and tends to be highlighted in smaller cities. Absolute growth indicates the actual number of people the population increased by from 2020 to 2021 and tends to be highlighted in larger cities. The absolute growth and percent change values for the top ten cities can be seen in a tabular format **here**.

The map also shows that the four core counties - Collin, Dallas, Denton, and Tarrant Counties - are experiencing a significant population growth compared to the rest of the NCTCOG region. These counties are responsible for an estimated 85 percent of the population in 2021 and will continue to increase in population through 2045, according to the NCTCOG 2045 population projections. Actual values can be found in the table **here**.

Water Quality Monitoring



NCTCOG Counties

NCTCOG Regional Stormwater Monitoring Sites

TCEQ Surface Water Quality Monitoring Sites

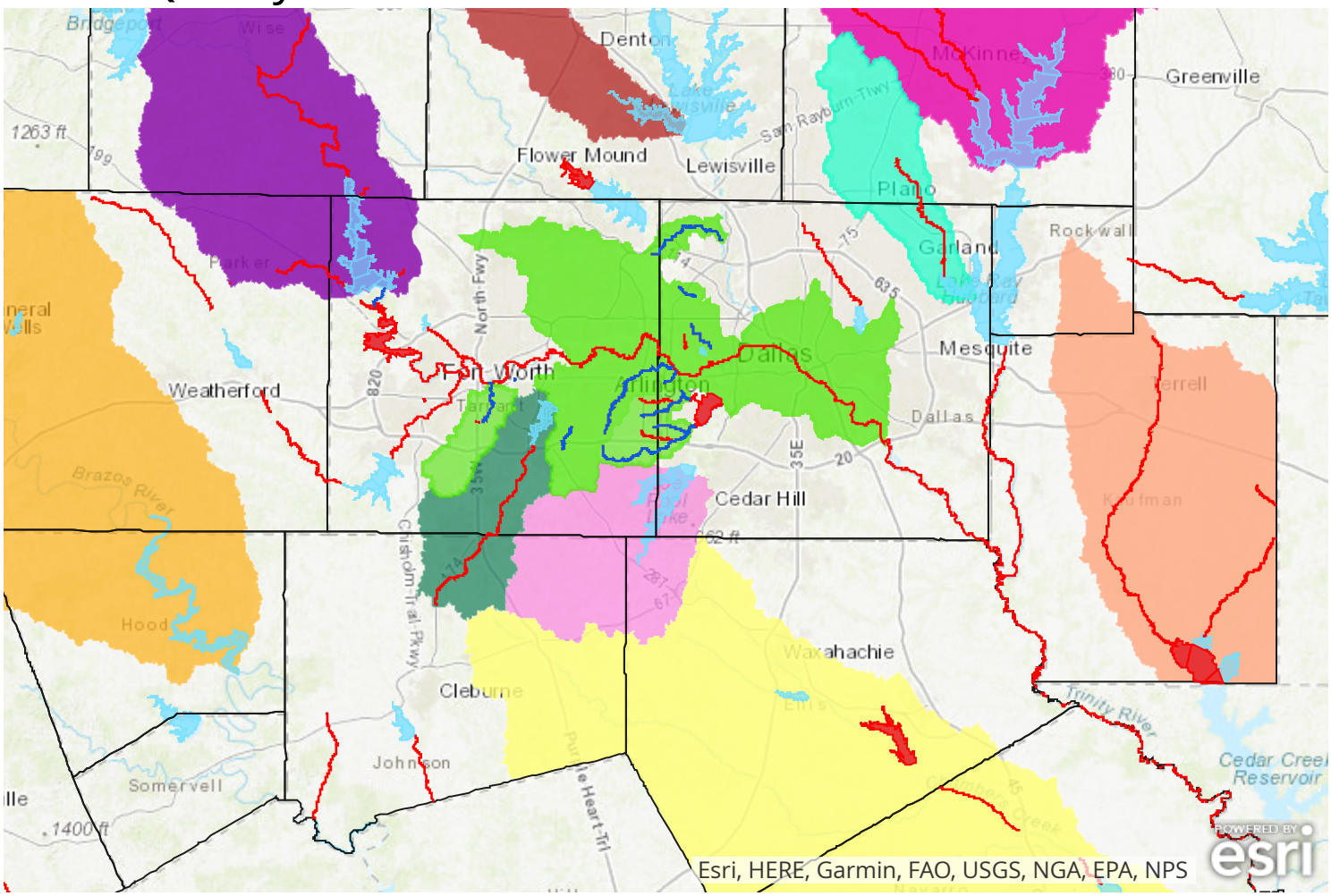
Major Waterways

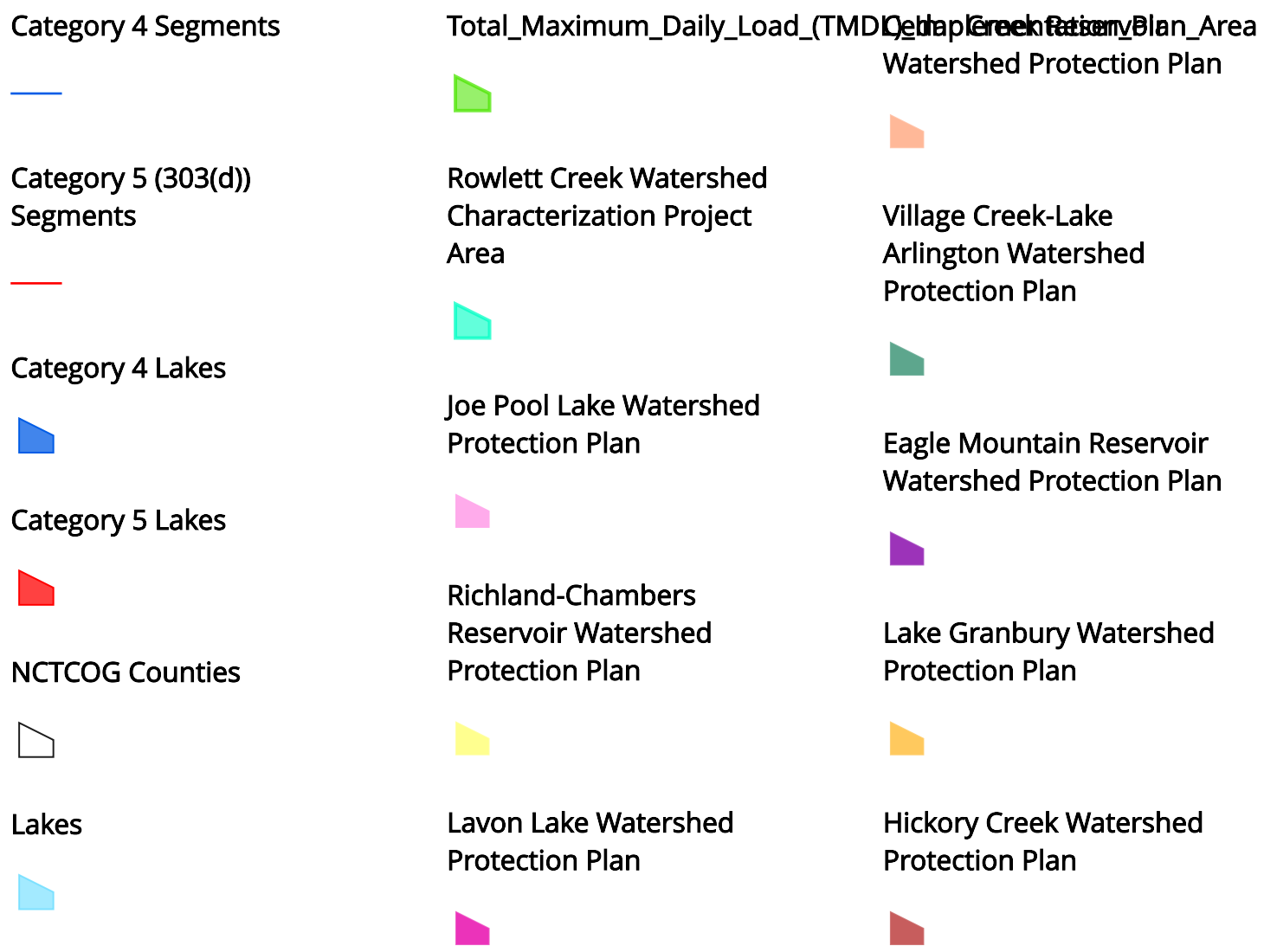
Lakes

The North Central Texas region has an extensive network for water quality monitoring, which is supported by state and local governments as well as citizen scientists. NCTCOG has gathered data on the water quality monitoring activities occurring in the region to provide a more complete view of efforts being implemented to improve or maintain water quality. The map shows Texas Commission on Environmental Quality's Surface Water Quality Monitoring stations in orange along with the sites currently monitored in association with NCTCOG's Regional Stormwater Monitoring Program in green. [1]

[1] TCEQ's Open Data Portal, Water Category, File Name SWQM Stations, **https://gis-tceq.opendata.arcgis.com/search?categories=water**, and NCTCOG.

Water Quality Overview





NOTE: All the water quality data in this interactive mapping tool was downloaded from Texas Commission of Environmental Quality's (TCEQ's) [GIS Data Hub, Water Programs](), which uses data from the most recent report on the status of Texas' waterways, the [2020 Texas Integrated Report of Surface Water Quality](). TCEQ adopted the draft 2020 Integrated Report on March 25, 2020, and U.S. EPA approved the 2020 Texas 303 (d) List on May 12, 2020.

The water quality in the NCTCOG region is important to the health, safety, and welfare of residents, ecosystems, and long-term economic growth. TCEQ administers the water quality standards for Texas and assigns a category of 1 through 5 to a water body based on its attainment of the water quality standards. Categories 4 and 5 include all the waters that are "impaired," meaning they are not attaining the water quality standard. TCEQ defines the categories 4 and 5 as follows:

- Category 4 includes impaired waters for which TMDLs (Total Maximum Daily Loads) have already been adopted or for which other management strategies are underway to improve water quality, and

- Category 5 includes impaired waters for which TMDLs or other management strategies are planned. This category is also known as the Texas 303(d) List. [1]

A TMDL establishes the amount of pollutant that a stream segment can receive and still maintain the water quality standards for its designated use. It is used as a planning tool for restoring water quality in a specific area. Another planning tool to restore water quality is a **Watershed Protection Plan** (WPP). WPPs address nonpoint source pollution in a watershed through the consensus of stakeholders on strategies. They are mostly funded through TCEQ, the Texas State Soil and Water Conservation Board, and the U.S. Environmental Protection Agency, but can also be funded from local sources. The TMDL Implementation Plan and WPPs in the NCTCOG region are discussed in more detail in the next two sections of this report. The planning areas for these efforts in the NCTCOG region are shown on the map with the TMDL planning area shown in bright green near the center. More information about each specific planning area can be found by clicking on the map.

According to TCEQ's 2020 Texas Integrated Report of Surface Water Quality, the NCTCOG region has 70 waterways, meaning both stream segments and lakes/reservoirs, that are considered "impaired" because they fall in either category 4 or 5. Of these 70 segments, 56 waterways fall in category 5 and are on the Texas 303(d) List. The map on the right displays the 2020 Texas 303(d) List of impaired waterways in red. The dark blue waterways indicate Category 4 stream segments as well as one category 4 lake, Fosdic Lake in Tarrant County. The table **here** shows the new waterways added to and removed from the category 5 list in the NCTCOG region between the previous 2018 Integrated Report, and the most recent version, the 2020 Integrated Report.

NCTCOG and entities across the region actively engage in pollution prevention strategies to reduce the amount of pollution entering into the regional waterways. These activities help improve the water quality throughout the region and support efforts that work towards removing water bodies from the Texas 303(d) List. Such strategies include:

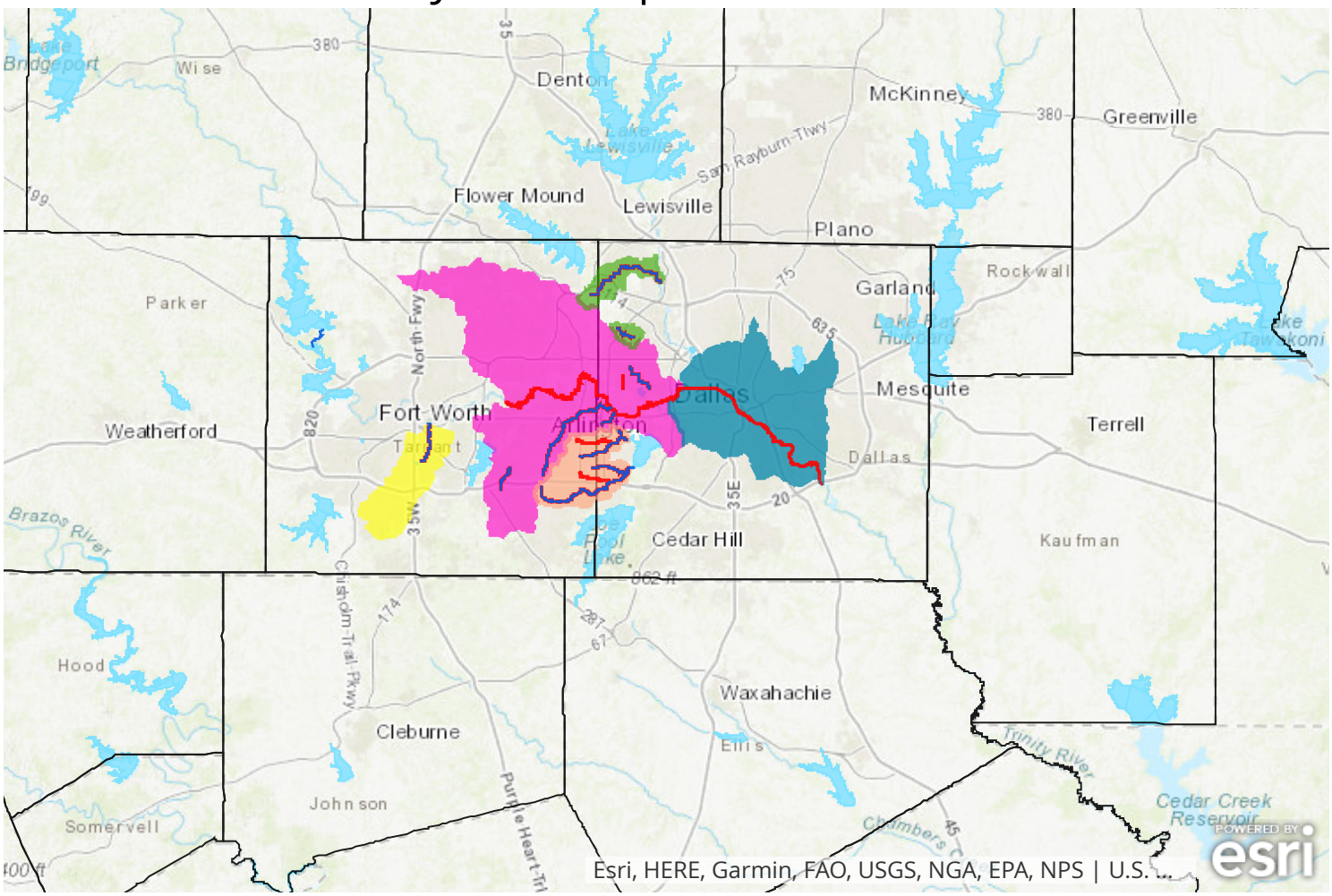
- Municipal Separate Storm Sewer (MS4) operators (such as cities and transit authorities) are required to reduce pollution that could contaminate stormwater and run off into local waterways. NCTCOG coordinates the **Regional Stormwater Management Program** to engage MS4s in regional efforts to achieve the permit requirements for their individual permits.
- Entities throughout North Texas have begun the development and implementation of WPPs in an effort to improve and prevent water quality pollution.
- Entities throughout North Texas participate in the **TMDL Implementation Plan Program**, which aims to reduce the amount of bacteria entering into the

Greater Trinity River and some of its tributaries through the implementation of water quality improvement strategies.

- There are eight WPPs currently under development or implementation in the NCTCOG region and one Watershed Characterization study, the Rowlett Creek Watershed Characterization Project, that is collecting data unique to the Rowlett Creek watershed so that a WPP can then be developed. WPPs are designed to prevent, reduce, or manage nonpoint source water pollution.
- Volunteer organizations, such as the **Texas Stream Team**, coordinate with citizens to monitor water quality to provide cities and other entities supplemental information to help recognize waterways being impacted by pollution.

[1] **https://www.tceq.texas.gov/waterquality/assessment**

Total Maximum Daily Load Implementation Plan



Category 4 Segments in TMDL I-Plan Area

Category 5 Segments in TMDL I-Plan Area

Sycamore Creek

Cottonwood Branch and Grapevine Creek

Mountain Creek Lake Tributaries

Upper Trinity River

Lower West Fork Trinity River

NCTCOG Counties

Lakes

NCTCOG supports the development and implementation of the Total Maximum Daily Load (TMDL) Implementation Plan (I-Plan) to address bacteria levels in the Greater Trinity River Region. TMDL boundaries in the NCTCOG region are shown on the map. A TMDL

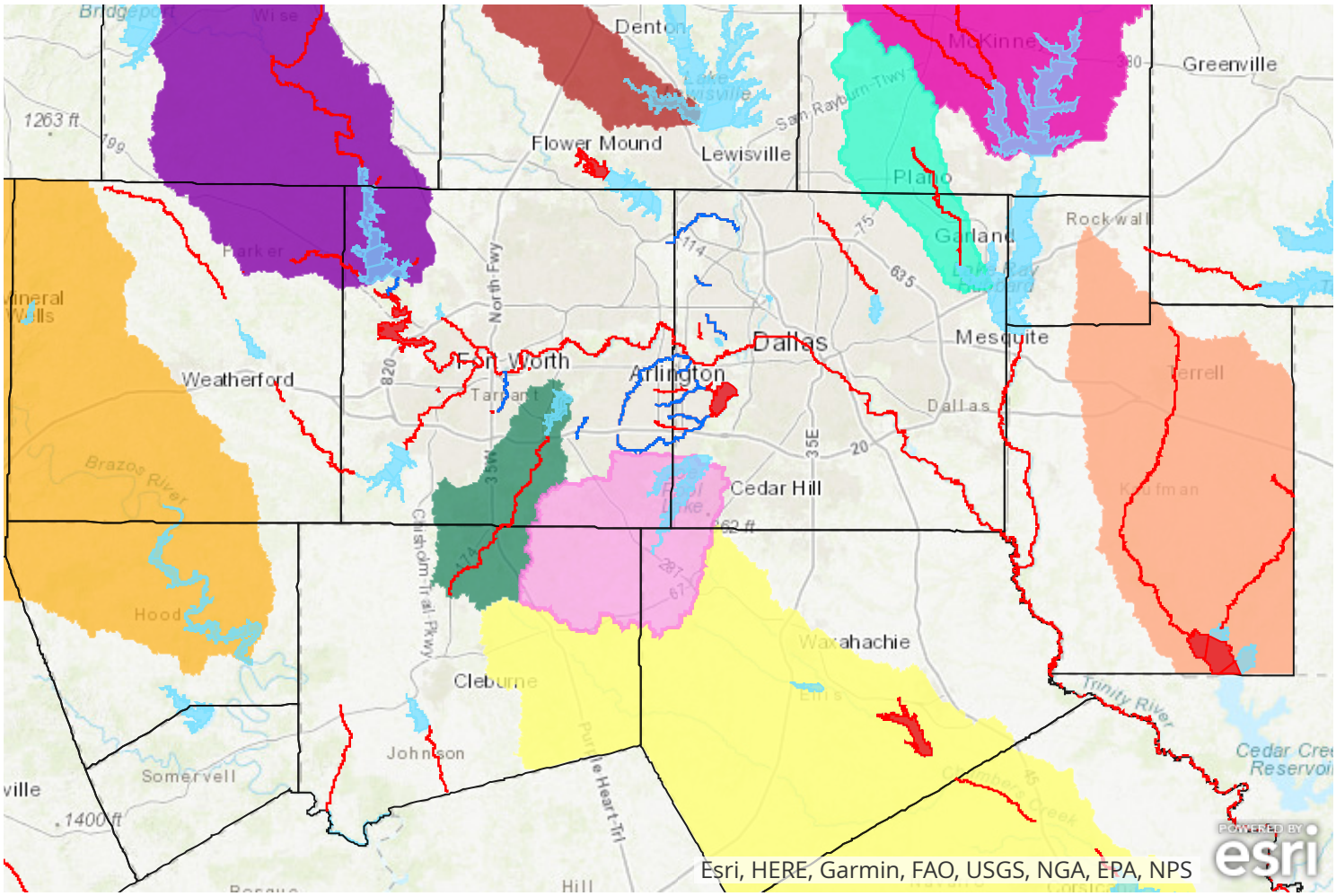
establishes the amount of pollutant that a stream segment can receive and still maintain the water quality standards for its designated use.

The I-Plan was approved by TCEQ Commissioners in 2013 and initially included 17 TMDLs. It was updated in 2017 to include an additional 4 TMDLs, and again in mid-2019 to include an additional TMDL for Sycamore Creek. Most recently, in late 2019 it was updated to include segment 0841Q in the Mountain Creek Lake Tributaries portion of the TMDL I-Plan area. The I-Plan describes strategies that can be taken to reduce the levels of bacteria loading in portions of the Trinity River and its tributaries that are listed as impaired for bacteria in the Texas Integrated Report Index of Water Quality Impairments (which includes the 303(d) List). The I-Plan has outlined implementation strategies to reduce bacteria loading in the following waterways:

- **Upper Trinity River** (Segment 0805)
- **Cottonwood Branch and Grapevine Creek** (Segments 0822A and 0822B)
- **Lower West Fork Trinity River** (Segments 0841, 0841B, 0841C, 0841E, 0841G, 0841H, 0841J, 0841L, 0841M, 0841R, 0841T, and 0841U)
- **Mountain Creek Lake Tributaries** (Segments 0841F, 0841K, 0841N, 0841Q, and 0841V)
- **Sycamore Creek** (Segment 0806E)

The efforts underway since the inception of the TMDL I-Plan have been outlined in the 2020 TMDL Annual Program Summary. To view the TMDL I-Plan and the TMDL Annual Program Summary, visit **www.nctcog.org/TMDL**.

Watershed Protection Plans



Category 4 Segments

Category 5 (303(d)) Segments

Category 4 Lakes

Category 5 Lakes

NCTCOG Counties

Lakes

Rowlett Creek Watershed Characterization Project Area

Joe Pool Lake Watershed Protection Plan

Richland-Chambers Reservoir Watershed Protection Plan

Lavon Lake Watershed Protection Plan

Cedar Creek Reservoir Watershed Protection Plan

Village Creek-Lake Arlington Watershed Protection Plan

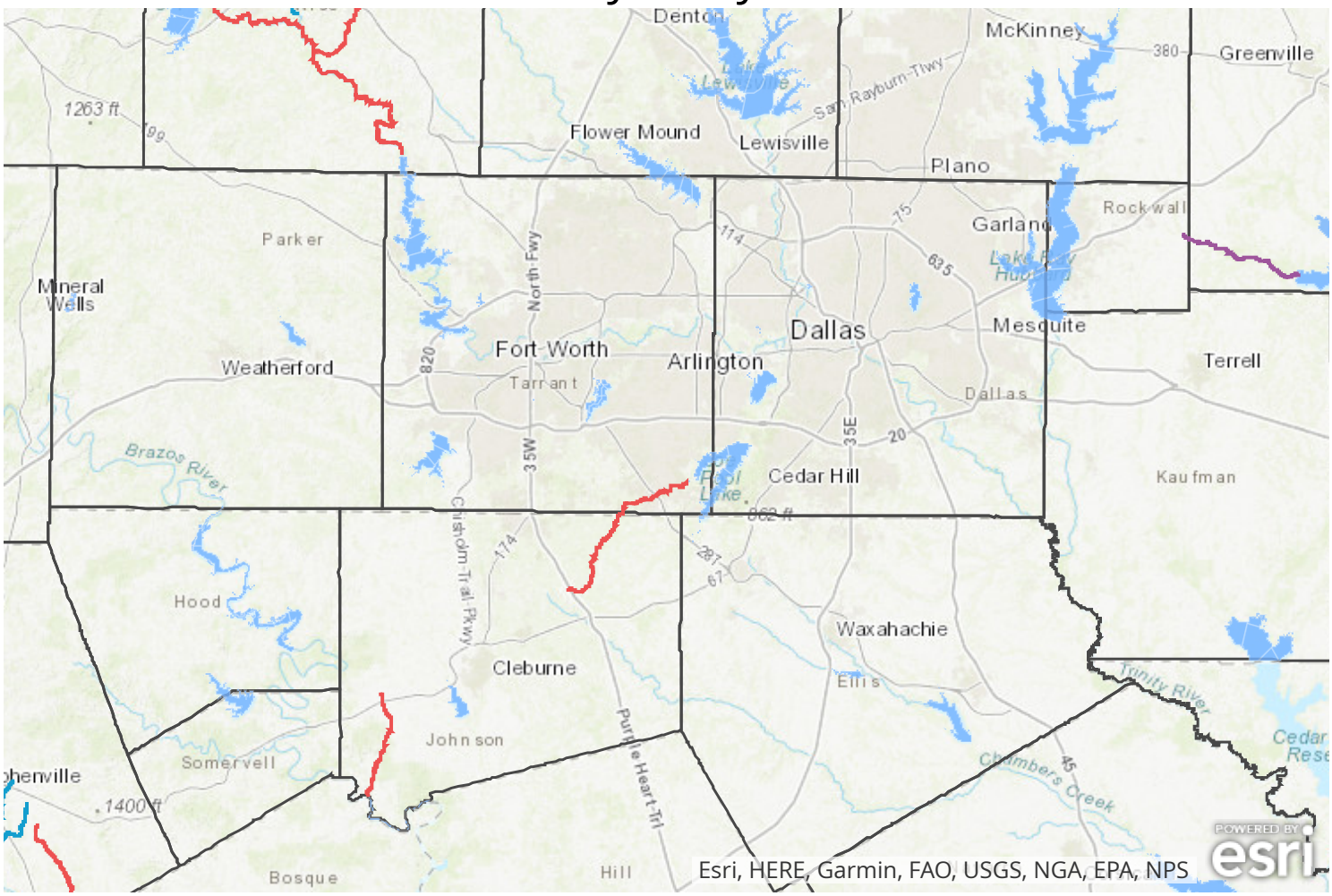
Eagle Mountain Reservoir Watershed Protection Plan

Lake Granbury Watershed Protection Plan

Hickory Creek Watershed Protection Plan

A Watershed Protection Plan (WPP) is a coordinated framework for implementing water quality protection and restoration strategies within a watershed. WPPs holistically address all the sources and causes of impairment to both surface and groundwater resources. Developed and implemented through a diverse, well-integrated partnership of stakeholders, a WPP assures the long-term health of the watershed and is one of the ways that entities in the NCTCOG region are helping with pollution prevention efforts. As the map shows, there are eight watershed protection plans under development or implementation in the region. The status of each WPP in the region, as of May 2021, can be seen in a table format here or by clicking on the map. Additionally, there is a Watershed Characterization (WC) study underway in the region, the Rowlett Creek Watershed Characterization Project, and efforts are underway to gather stakeholder input as well as collect and analyze water quality data for the Rowlett Creek Watershed. These efforts are considered the first steps toward developing a WPP.

Recreational Use Attainability Analysis Studies



RUAA Stream Segments-As of April 2021

- Retained designated use of Primary Contact Recreation
- Revised designated use to Secondary Contact Recreation 1
- Revised designated use to Secondary Contact Recreation 2
- Pending

Lakes-TCEQ 2020 IR

Counties

Texas Commission on Environmental Quality (TCEQ) is responsible for establishing and enforcing water quality standards for Texas waterways and employs several tools to define appropriate water quality standards for each stream segment across Texas. One

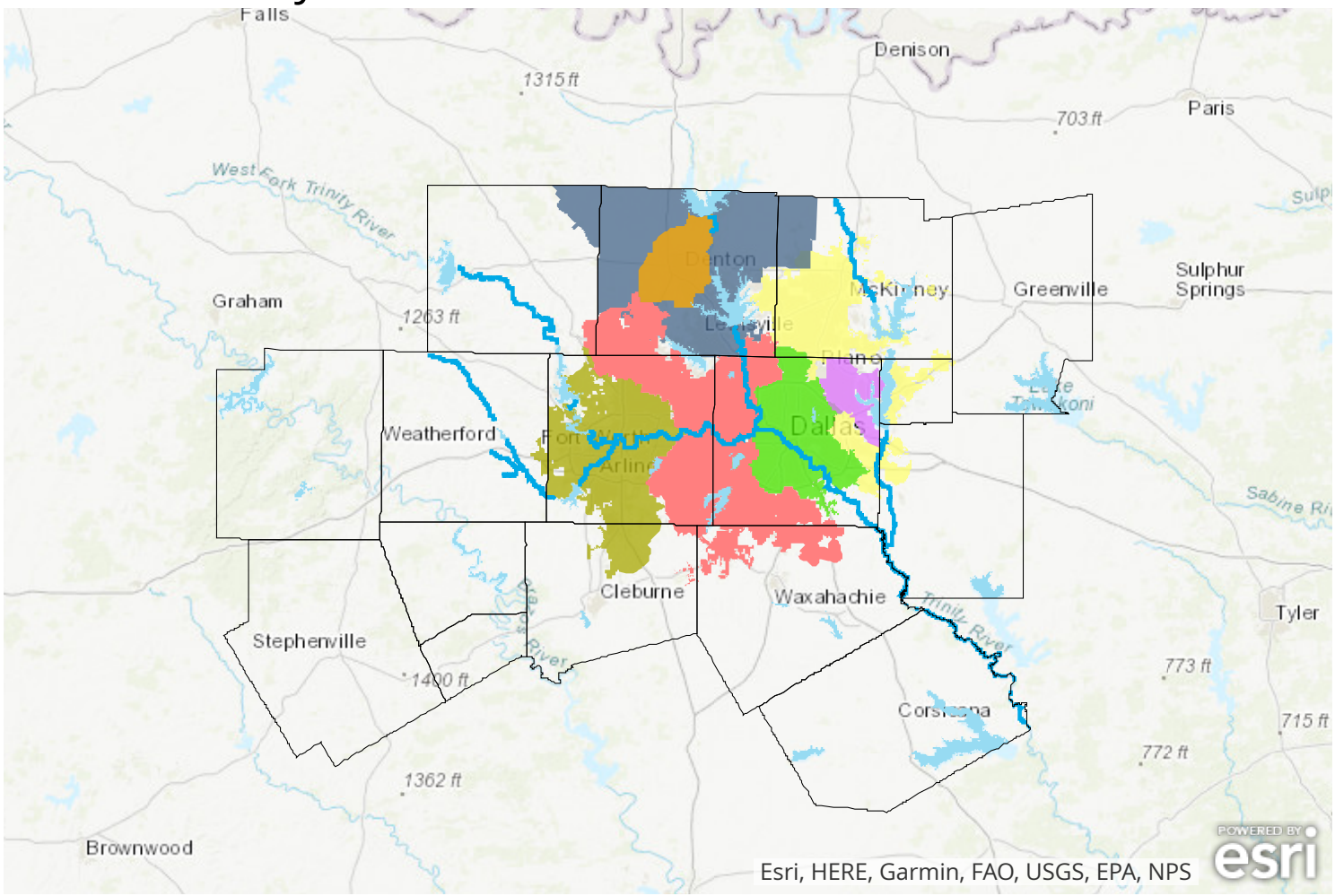
tool, the Use Attainability Analysis (UAA), reevaluates the designated (or presumed) use of a water body. A UAA would be performed if a water body's water quality standard is questioned as appropriate for local conditions. Analysis of use is based on the physical and flow characteristics of the stream; supporting information from individuals and organizations with firsthand knowledge; and historical and existing patterns of use (TCEQ, 2016).

The most common UAA is the Recreational Use-Attainability Analysis (RUAA), which determines what category of recreational use is appropriate for a particular water body. There are four categories:

Primary Contact Recreation: Activities that are presumed to involve significant risk of ingestion of water
Secondary Contact Recreation 1: Activities that commonly occur but have limited body contact, incidental to shoreline activity
Secondary Contact Recreation 2: Activities with limited body contact, incidental to shoreline activity
Non-contact Recreation: Activities that do not involve a significant risk of water ingestion, such as those with limited body contact, incidental to shoreline activity.

RUAA studies within the NCTCOG Region, as of April 2021, can be viewed by clicking on the map or viewing the table **here**. Performing a RUAA has the potential to change the designated water quality standard of a waterway, which could cause a waterway to achieve attainment for certain pollutants and no longer be considered impaired. Stream segments with pending outcomes are still awaiting EPA approval of TCEQ recommendations.

Wastewater System Overview



NCTCOG Counties

Trinity River Authority

Dallas Water Utilities

Trinity River

Upper Trinity Regional Water District

City of Fort Worth

Lakes

City of Garland

North Texas Muncipal Water District

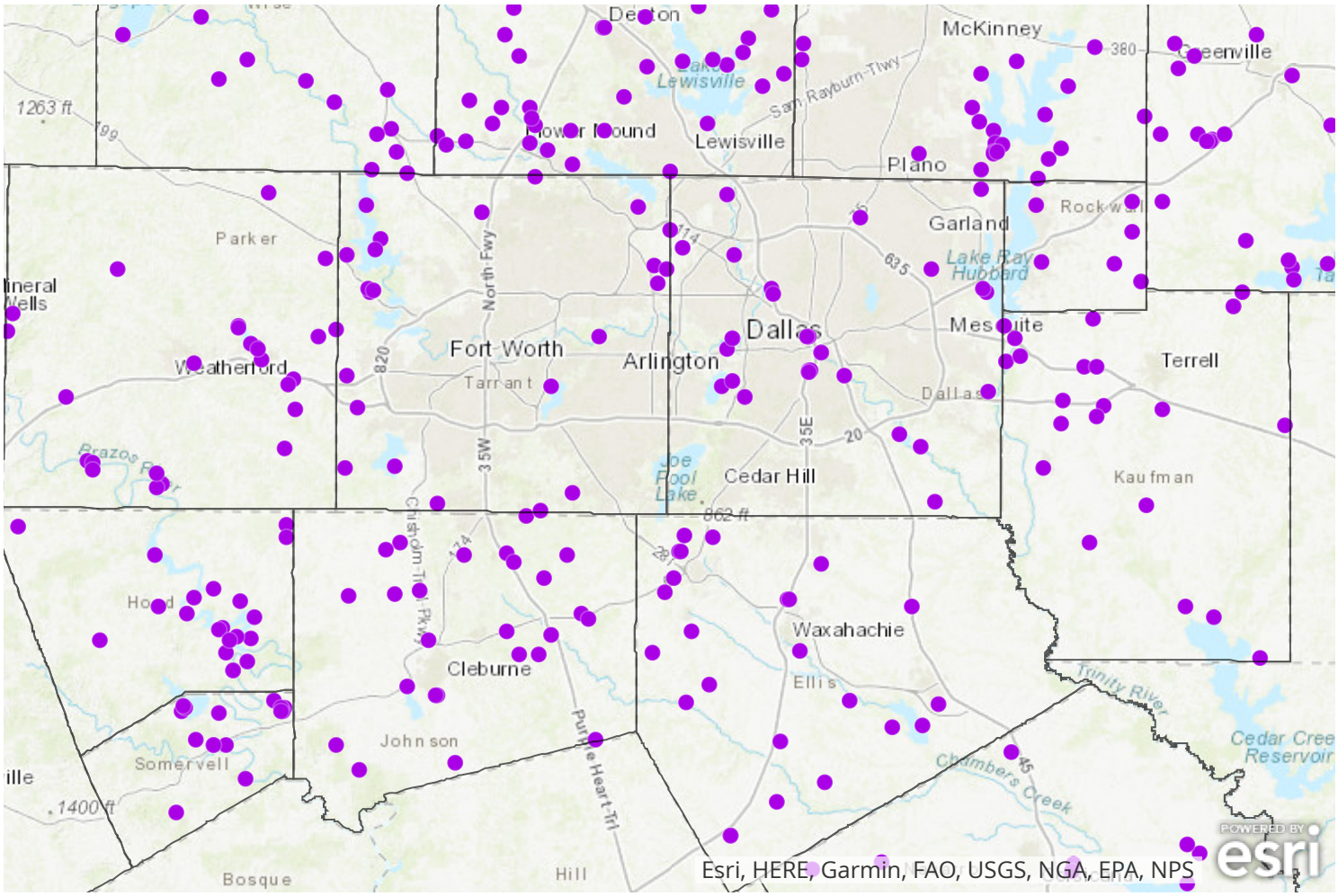
City of Denton

Ensuring adequate capacity to treat wastewater from new residential and commercial development in addition to existing residents and businesses is a long-term planning

need in the NCTCOG region. Wastewater service providers monitor growth trends to ensure their systems address issues such as plant expansions or new infrastructure that might be needed to meet future wastewater demands. Furthermore, several communities in the region have invested in wastewater infrastructure over the past year to upgrade or build new wastewater treatment facilities to treat increasing amounts of wastewater.

Communities located on the perimeter of the urbanized area and rural communities may become more dependent on each other to partner, or engage in existing partnerships, to provide cost efficient wastewater services. For such a densely populated and growing region, the need for adequate treatment services is a crucial component to protecting water quality and is a priority to the seven wastewater joint system providers and individual wastewater system operators. The joint system providers in the region serve many local governments as members or customers. **NCTCOG's Water Resources Council** recommends that regional wastewater system providers aim to incorporate new entities into the existing systems, rather than have new systems operate independently. Service areas of wastewater systems, as seen on the map, can serve as an indicator of the expanding wastewater capacity within the region.

Wastewater Outfalls



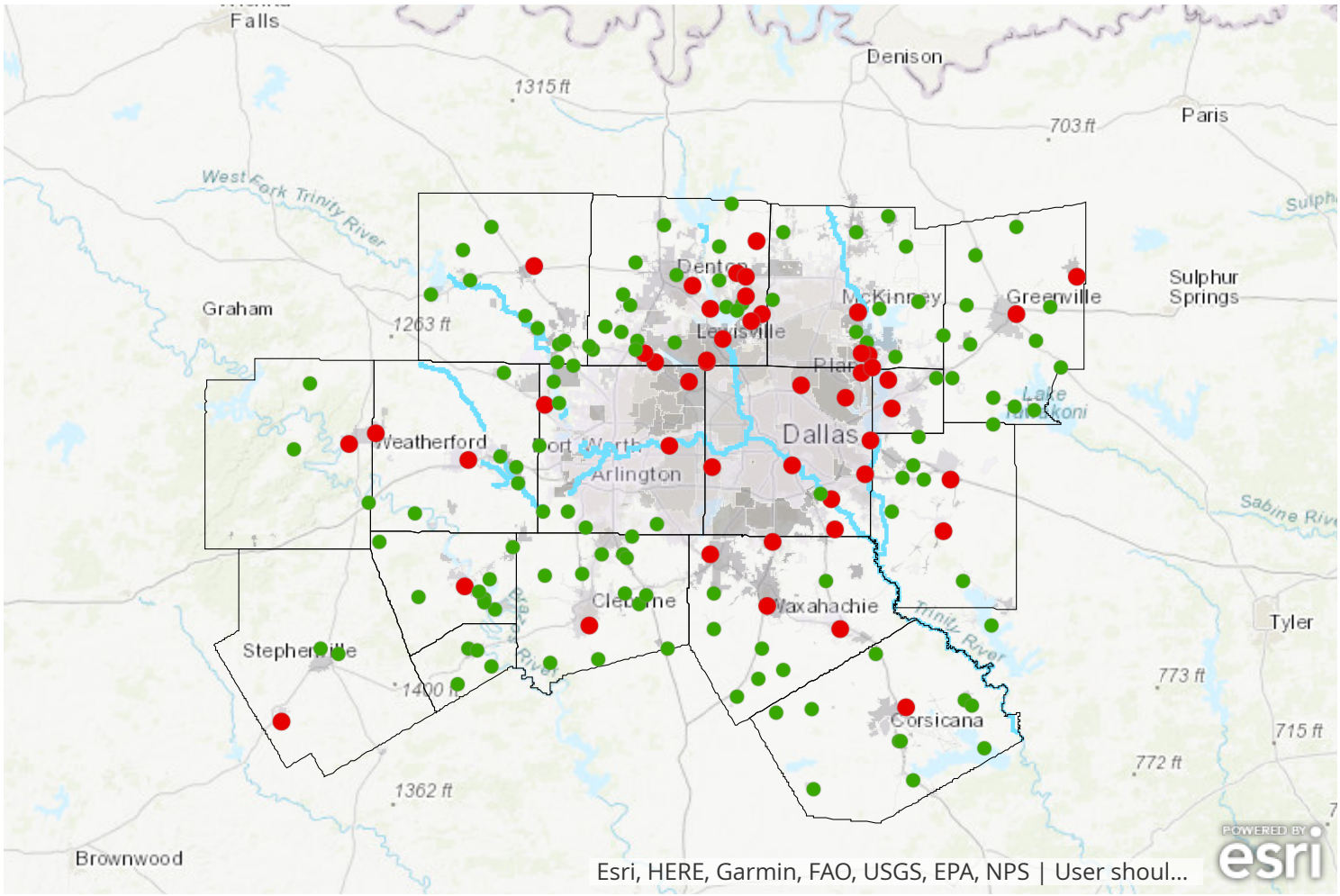
NCTCOG Counties

Wastewater_Outfalls

Local, state, and federal regulations require pretreatment programs as part of the National Pollutant Discharge Elimination System (NPDES), which is administered at the state level by TCEQ's Texas Pollutant Discharge Elimination System (TPDES) program. The TPDES program controls water pollution by regulating point sources that discharge pollutants into waterways. Any industrial, municipal, or other facility must obtain a TPDES permit if their discharge goes directly into surface waters. This includes but is not limited to wastewater treatment plants. The map to the right shows all the wastewater outfalls regulated by TCEQ with a TPDES permit as of March 31, 2021. [1] By clicking on the points on the map, you can obtain the name and permit number for each outfall.

[1] TCEQ's GIS Data Hub, Category "Water," File name: Wastewater Outfalls at https://gis-tceq.opendata.arcgis.com/search?categories=water.

Wastewater Treatment Plants



Wastewater Treatment Plants

- Minor
- Major

NCTCOG Counties

Trinity River

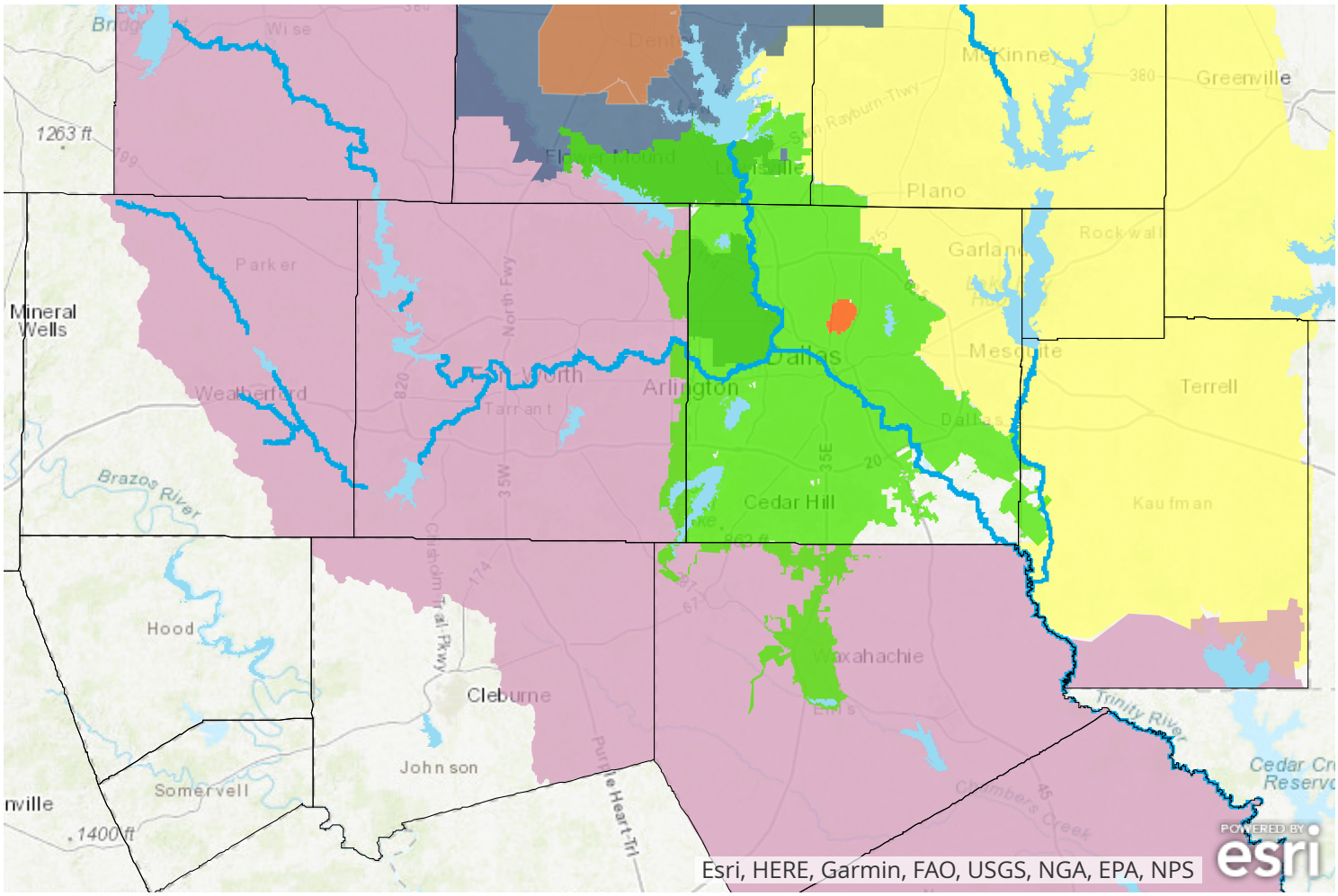
Wastewater service providers operate wastewater treatment plants (WWTPs) as a part of the wastewater system. WWTPs are regulated by TCEQ and are required to acquire Texas Pollutant Discharge Elimination System (TPDES) permits for discharges to receiving water bodies. The permit limits are set by the state to avoid pollutant overloads to surface waters.

The TPDES program helps to control discharges of pollutants into surface waters. Every TPDES permittee must submit monthly Discharge Monitoring Reports (DMR) to TCEQ, which can be used to assess the yearly wastewater discharge of individual WWTPs. There are 111 minor and 44 major WWTPs in the NCTCOG region. WWTPs are designated as

minor when the design flow is less than or equal to 1 million gallons per day (MGD). The largest design flow values are found within the urbanized Dallas and Tarrant County area.

Click on a wastewater facility on the map to view the facility's name and annual discharge rate, which was calculated by NCTCOG using monthly DMR data obtained from TCEQ for the year 2018 (January 2018 – December 2018). Monthly DMR data obtained from TCEQ for the NCTCOG region for 2020 are available for download **here**.

Water Service Areas



NCTCOG Counties

City of Denton

Trinity River

Lakes

Park Cities Municipal Utility District (MUD)

Dallas Water Utilities Water Services

Upper Trinity Regional Water District Water Services

Tarrant Regional Water District Water Services

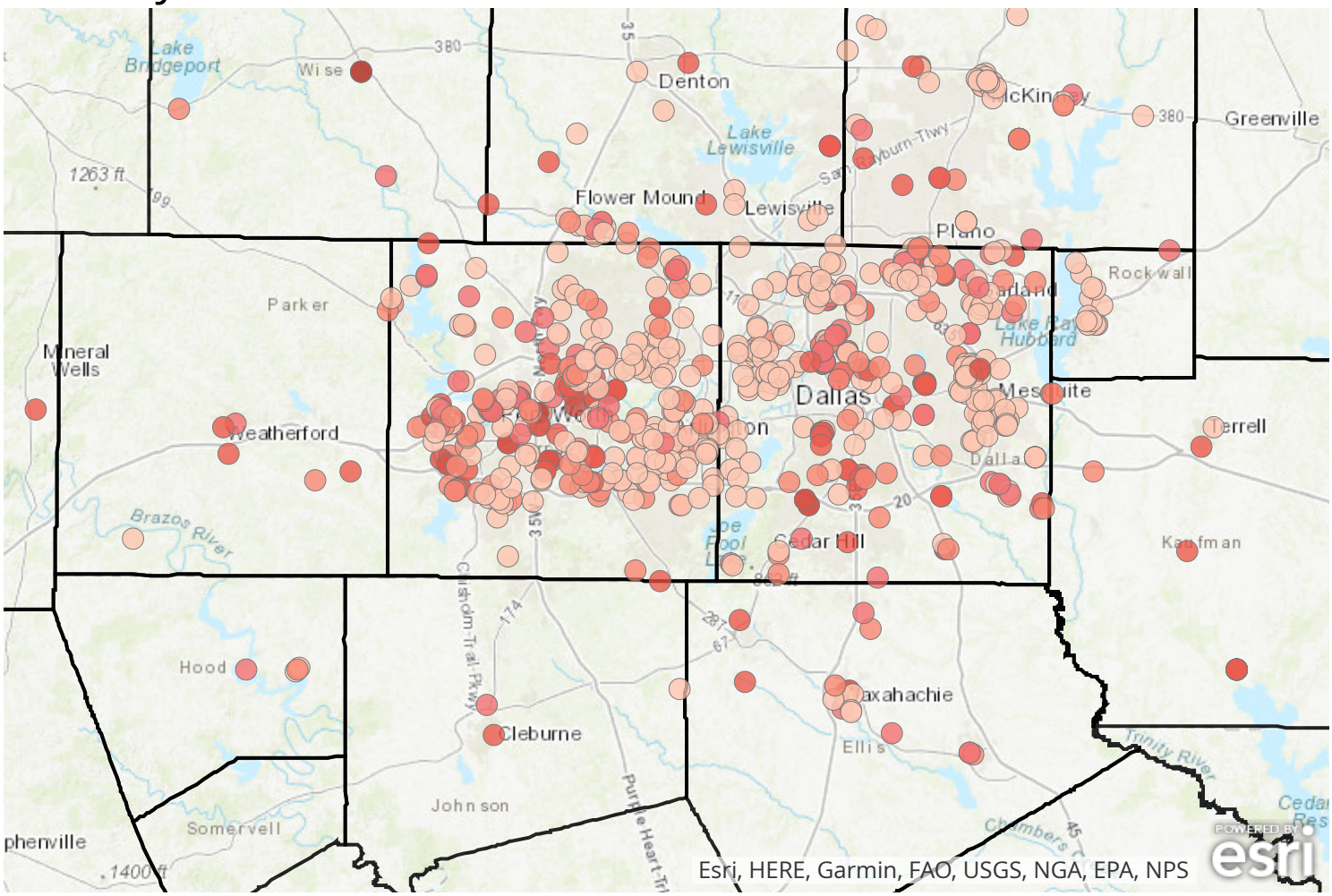
North Texas Municipal Water District Water Services

A water district is a local, governmental entity that provides limited services to its customers and residents. Water districts are created when a group of cities and utilities

come together for the purpose of planning water use on a multi-community basis. Water districts help to plan for current and future water use by collecting funds and allocating capital for water related infrastructure projects within the region.

The map shows the major water providers in the NCTCOG region and the areas served with a diverse set of water needs and services. The cooperation of multiple cities and utilities on the water districts' boards help to facilitate compliance with water, wastewater, and reclaimed water.

Sanitary Sewer Overflows



R04 DFW SSOs 2020 - Copy for Lat-Long

AMT_NUM

- > 5,000,000 – 12,552,000
- > 1,000,000 – 5,000,000
- > 500,000 – 1,000,000
- > 100,000 – 500,000
- > 10,000 – 100,000
- > 2,500 – 10,000
- > 500 – 2,500
- 1 – 500

Counties

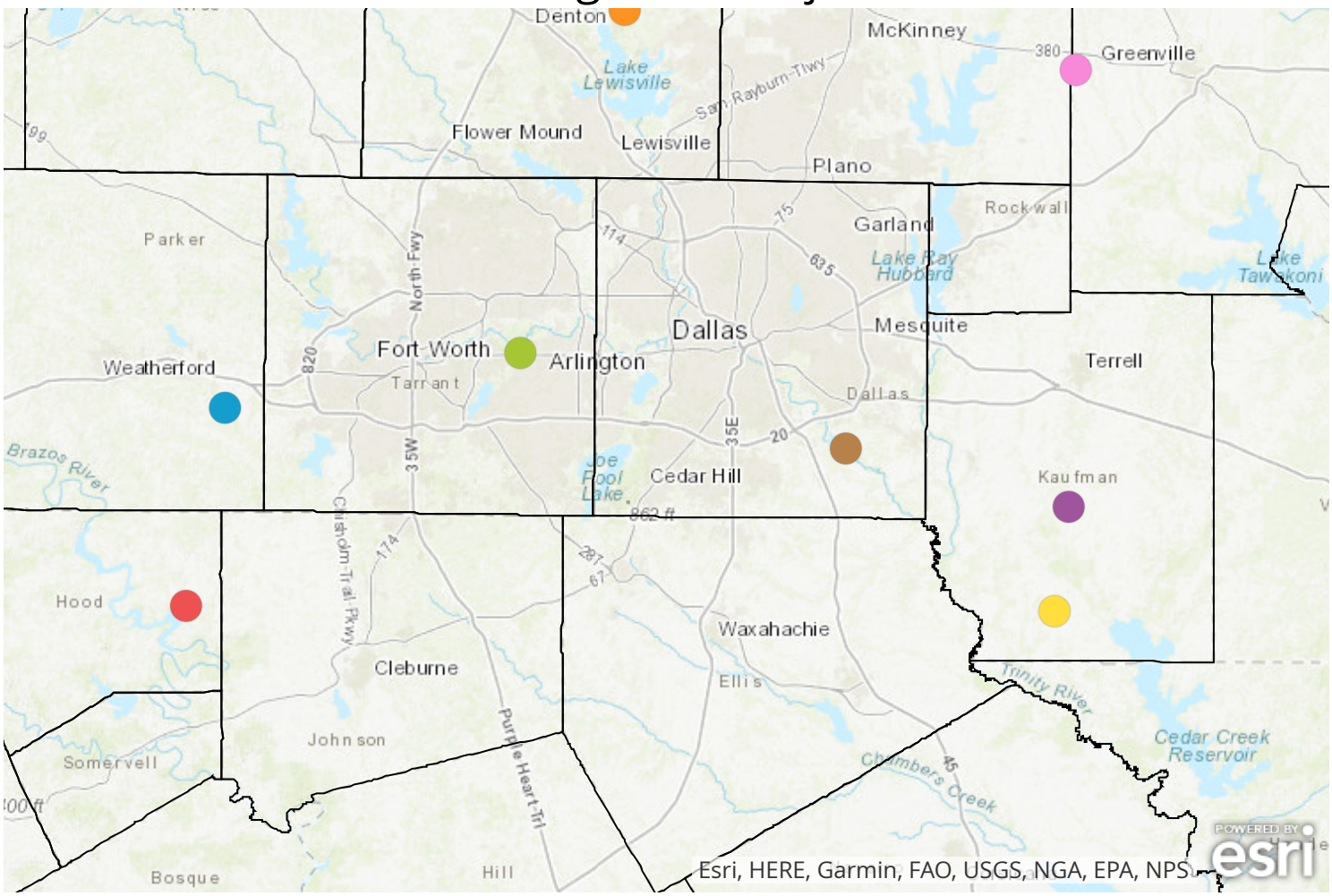
Sanitary sewer overflows (SSOs) are a type of unauthorized discharge of untreated or partially treated wastewater from a collection system or its components (TCEQ, 2018). SSOs can occur if there is significant inflow/infiltration, if the collection system is poorly

operated or maintained, or the collection system lacks adequate capacity to collect or store flows for treatment. The map shows the total number of reported SSOs from January - December 2020 per county in the NCTCOG region.

Infrastructure solutions to address SSOs can be both time consuming and costly to address. The NCTCOG region has recognized that a significant way to minimize the number of SSOs is with education and outreach aimed at the proper disposal of fats, oils, and grease (FOG) which cause blockages in the sewer mains. The Wastewater And Treatment Education Roundtable (WATER) supports a region-wide effort to educate the public on FOG and to educate regional entities with trainings and workshops. More information on WATER's activities and initiatives can be found at this link: **https://www.defendyourdrainsnorthtexas.com/**.

Additionally, TCEQ has a voluntary program called the **Sanitary Sewer Overflow Initiative** (SSOI). The SSOI program was started in 2004 when an increase in SSO events was observed due to aging wastewater collection systems (TCEQ, 2019).

Clean Water State Revolving Fund Projects - 9/1/19 to 8/31/21



CWSRF Projects (Sept. 2019 - Aug 2021)

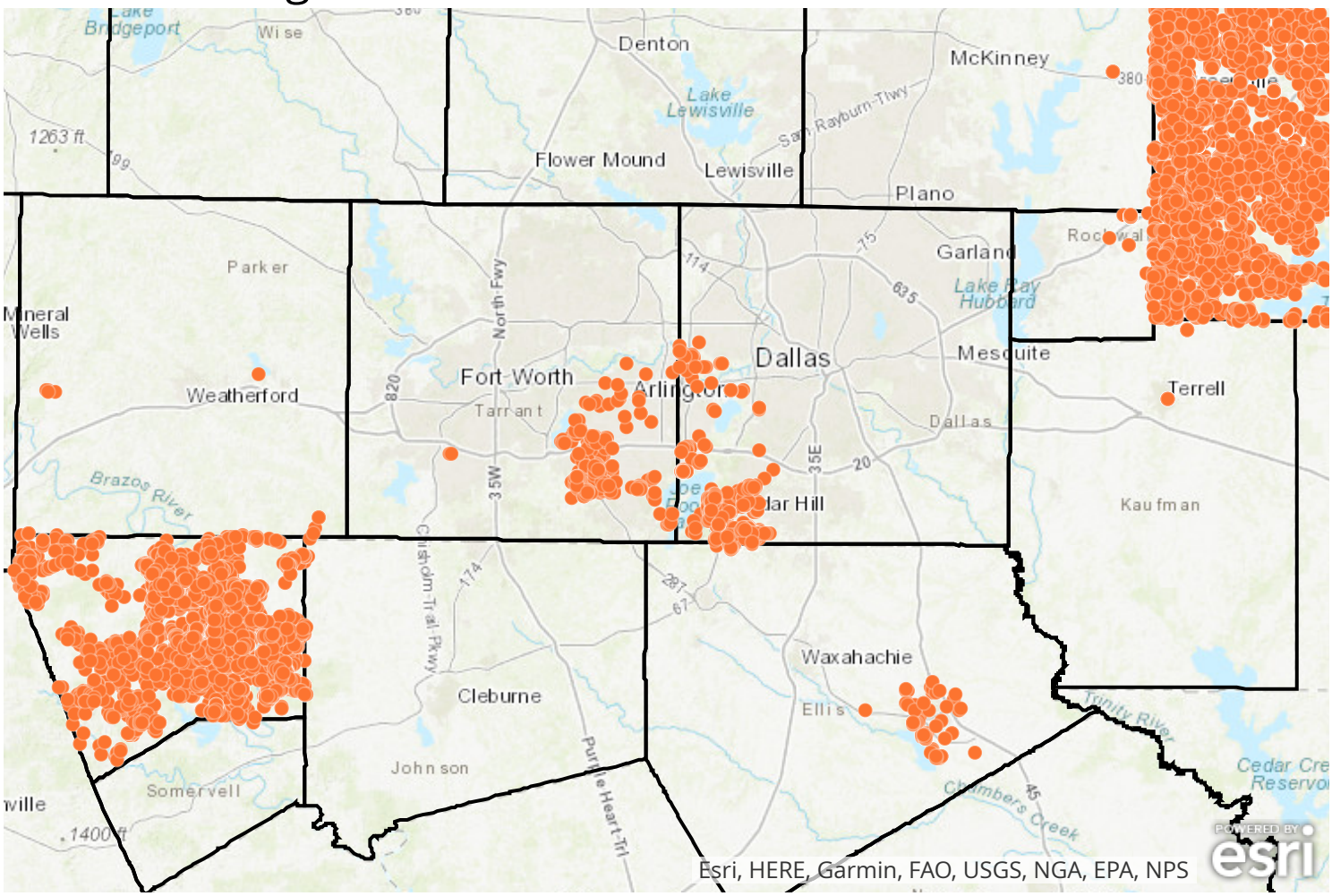
- Acton Municipal Utility District
- Aledo
- Fort Worth
- Greater Texoma Utility Authority/City of Kaufman
- Mustang Special Utility District
- North Texas Municipal Water District - Buffalo Creek Project
- North Texas Municipal Water District - Sister Grove Project
- Sandbranch Development and Water Supply Corporation

Counties

As the designated water quality management planning agency for the North Central Texas region under Clean Water Act Section 208, NCTCOG evaluates Clean Water State Revolving Fund (CWSRF) projects that aim to develop and implement wastewater treatment management plans and practices to meet the goals of the Clean Water Act, and to coordinate with the state agency to ensure that plans developed under Section 208 are consistent with companion requirements under Clean Water Act Section 201, which relates to facility planning and funding of treatment facilities or infrastructure. The 208/201 coordination activities typically involve examination of facility plans submitted as part of funding applications. NCTCOG compares the facility planning information with regional goals and plans included as part of the current amended areawide Water Quality Management Plan.

NCTCOG performs conformance reviews at TCEQ's request and provides the project plans to the Water Resources Council for expert input. NCTCOG compiles the feedback and submits responses to TCEQ for each project, acknowledging whether they are consistent with the current Water Quality Management Plan. This most recent fiscal year, from September 1, 2020 to August 31, 2021, NCTCOG received one request from TCEQ to complete a conformance review for the Buffalo Creek Interceptor Project from the North Texas Municipal Water District. However, NCTCOG completed seven conformance reviews last fiscal year, that is, from September 1, 2019 to August 30, 2020. All eight of these projects along with NCTCOG's review outcome, can be found in the table **here**. The map shows the discharge locations for these projects. The information about each project can be found by clicking on spots on the map.

On-Site Sewage Facilities



Hood County OSSFs

Hunt County and Arlington, Grand Prairie, Cedar Hill, Ennis & Millsap

Counties

For the 2021 Update to the WQMP, NCTCOG initiated work to create a centralized, spatial database of On-site Sewage Facilities (OSSF) in the 16-county NCTCOG region. An OSSF, also known as a septic system and usually consisting of a septic tank and a drainage field, treats and disposes wastewater at the site where the wastewater is created. These sites are typically single-family residences and businesses that do not have access to public wastewater infrastructure and can be found in either rural or urban areas. In Texas, there are over 2 million OSSFs, and they are installed at approximately 20% of the new homes built. [1], [2]

NCTCOG obtained the locations of OSSFs shown on the map from OSSF permit data in the region. A permit is required to construct, alter, repair, extend or operate an OSSF in

Texas after September 1, 1989. Texas Commission on Environmental Quality (TCEQ) regulates on-site sewage facilities in Texas, but delegates this authority to authorized agents at the local level. [3] There are over 70 authorized agents in the NCTCOG region who maintain the permit data in various formats: digital spreadsheets, digital shapefiles, paper files, or a combination thereof, so contacting these agencies and collecting the data is a substantial effort. [4] The map on the right shows about 26,000 locations gathered as of May 21, 2021, from Hood County, Hunt County, and the Cities of Arlington, Cedar Hill, Ennis, Grand Prairie, and Millsap. Data gathering efforts will continue over the next year and an update will be provided in the 2022 Update to the WQMP. The locations of unpermitted OSSFs built prior to September 1, 1989, are more difficult to determine and will likely be included in the database at some point, but not until efforts to collect the permitted locations are further along.

Proper design, installation and periodic, routine maintenance are key to keeping OSSFs functioning properly, and therefore, maintaining their ability to effectively treat wastewater. However, when not properly designed or maintained, OSSFs can leak untreated wastewater to groundwater and surface waters, which in turn endangers human health by releasing pathogens into the environment and endangers the health of our waterways through increased nutrient loading, decreased dissolved oxygen levels, fish kills, and problems with other aquatic life. [5] In Texas, estimates show that an average of about 13% of OSSFs are failing. [6]

A lack of knowledge about the proper maintenance of OSSFs has been identified as one of the contributing factors to failing OSSFs. [6] In order to assist stakeholders, NCTCOG has expanded its outreach resources to include information on OSSFs. The NCTCOG OSSF Educational Social Media Toolkit has images and text that local governments and other entities can use to create their own social media posts on OSSF maintenance. NCTCOG also developed an Instructional Guide for homeowners. These items can be found on NCTCOG's website under the green banner called "Septic System (OSSF) Resources" here: **www.nctcog.org/tmdl**.

[1] *Texas Water Quality and Septic Systems*. Kerry Halladay. Texas Water Resources Institute. August 2020. https://twri.tamu.edu/news/2020/august/texas-water-quality-and-septic-systems/

[2] TCEQ, https://www.tceq.texas.gov/assistance/water/fyiossfs.html

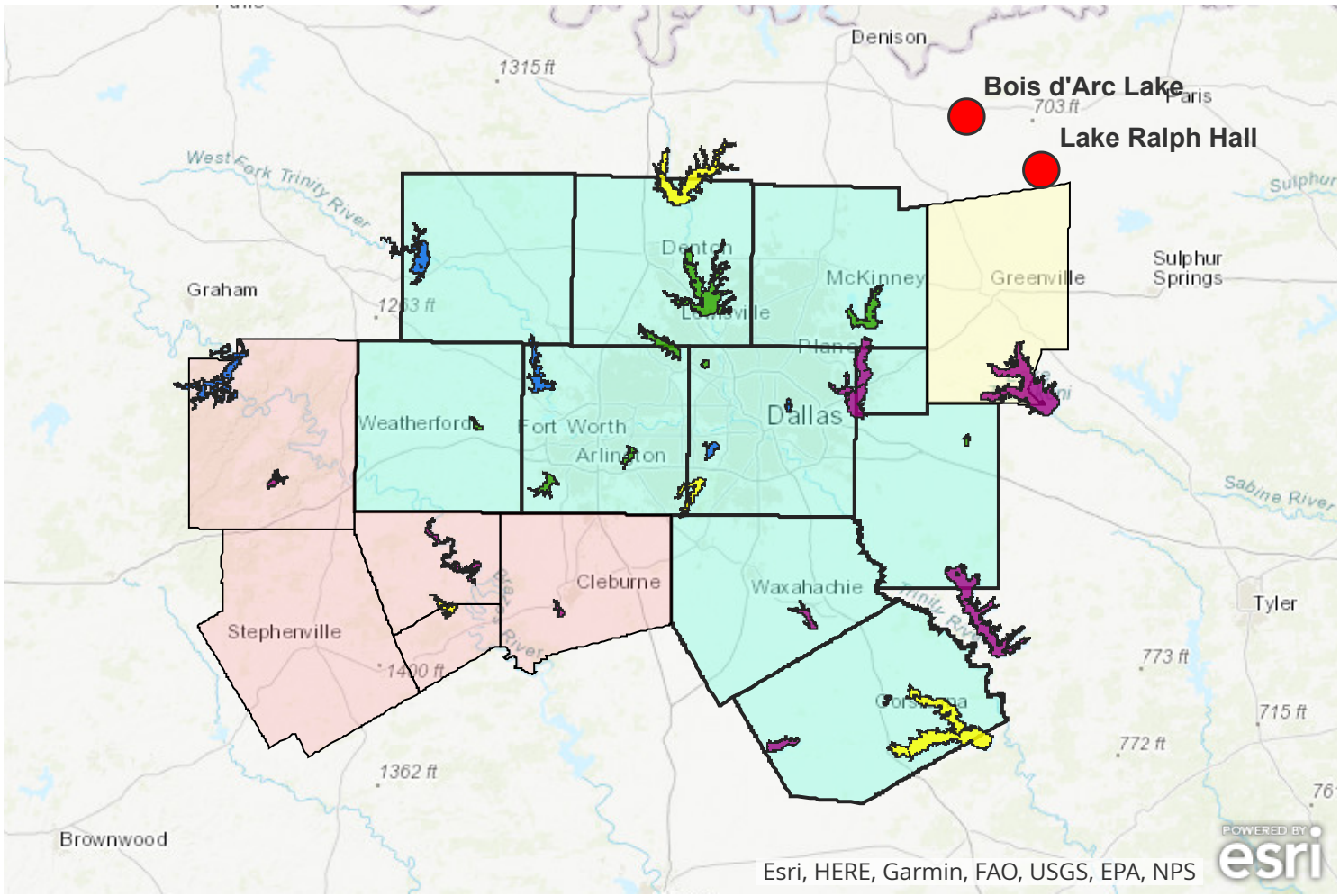
[3] TCEQ, https://www.tceq.texas.gov/permitting/ossf/ossfpermits.html

[4] TCEQ, https://www6.tceq.texas.gov/oars/index.cfm?fuseaction=search.county

[5] U.S. EPA, https://www.epa.gov/septic/septic-systems-overview

[6] Reed, Stowe, and Yanke, l.LC. *Study to Determine the* Magnitude *of,* and *Reasons for, Chronically Malfunctioning On-Site Sewage Facility Systems in Texas.* Austin, Texas: On-Site Wastewater Treatment Research Council, 2001.

Reservoirs, Water Reuse, and Water Conservation



Reservoirs Under Construction

Lakes built from1900-1950

Lakes built from 1950-1960

Lakes built from 1960-1970

Lakes built - 1980s

Region D Water Planning Group

Region G Water Planning Group

Region C Water Planning Group

Reservoirs

The NCTCOG region utilizes analyses on available water supply, water shortage, and water demand developed by the [Region C Water Planning Group](#) (WPG) who are tasked

with developing a regional water plan to recommend management strategies for water in North Texas. The **2021 Region C Water Plan** projects that over 90% of the water demand in 2070 will be for municipal users and predicts Collin, Dallas, Denton, and Tarrant Counties will have the largest water needs in the Region C area in 2070. [1] These forecasted needs encourage regional stakeholders to continue collaborating on best management strategies for meeting future water supply demands. NCTCOG supports the Region C management strategies for achieving water supply goals as laid out in the *2021 Region C Water Plan*.

There are 16 regional water planning areas in Texas. Six NCTCOG region counties fall into different regional water planning jurisdictions, however the recommendations for water management strategies serve to accomplish the same goals as Region C. The **Region G Water Plan** serves Plano Pinto, Erath, Hood, Somervell, and Johnson Counties, and the **Region D Water Plan** serves Hunt County.

In the 2021 Region C Water Plan, the Region C WPG defines major water management strategies as those that would supply more than 30,000 acre-feet per year or more. (An acre-foot is defined as 325,851 liquid gallons.) [2] Two new reservoirs currently under development will supply water to the northern portion of the NCTCOG region and can be found on the map to the right just outside the NCTCOG region in Fannin County: Bois d'Arc Lake and Lake Ralph Hall.

The North Texas Municipal Water District (NTMWD) is working to incorporate the proposed Bois d'Arc Lake as a supplemental water supply for NTMWD member cities and customers through 2040. The reservoir will comprise about 26 square miles of surface area and yield 120,200 acre-feet per year, or about 108 million gallons per day. NTMWD projects the reservoir will be providing vital water resources to citizens of Fannin County and members of the NTMWD district in the northern portion of the NCTCOG region by the spring of 2022. The construction of this reservoir is a recommended strategy from the Region C WPG. [3]

In September 2013, Upper Trinity Regional Water District was granted a water rights permit from the State of Texas to develop proposed Lake Ralph Hall located on the North Sulphur River also in Fannin County. In January 2020, the U.S. Army Corps of Engineers issued a section 404 Clean Water Act permit. This is the final federal permit required to construct the reservoir.

The proposed lake is projected to produce 39,220 acre-feet a year, or 54 million gallons per day, 19 million gallons a day of which will be from reuse. Water from Lake Ralph Hall will be delivered to Denton County and is expected by 2025. [4] The construction of this lake is a recommended water supply strategy from the Region C WPG. The proposed

locations for Bois d'Arc Lake and the proposed Lake Ralph Hall Reservoir can be seen on the map, along with a timeline of overall reservoir construction in the North Central Texas region.

Water Reuse

According to the 2021 Region C Water Plan, reuse of treated wastewater effluent is becoming an increasingly important source of water in Region C. Reuse is projected to comprise 31% of the 2070 water supply for the Region C water planning area, which includes most of the NCTCOG region. [5] The two types of reuse are:

Indirect Reuse - the placement of water, typically treated effluent, back into a water supply source, such as a lake, river, or aquifer, and then retrieved to be used again; and

Direct Reuse -treated wastewater is delivered from a wastewater treatment plant to a water user, with no intervening discharge to waters of the state.

Each category can be further defined by the end use, either potable (drinking purposes) or non-potable (non-drinking purposes). In North Central Texas, reuse typically occurs as direct non-potable reuse or indirect potable reuse. Direct non-potable reuse programs require notification to TCEQ, obtainment of a 210 Use of Reclaimed Water permit, and must meet state designated regulations designed to protect public health. This type of reuse is most commonly used to supply water to landscape irrigation and industrial uses.

Indirect potable reuse effects water rights in Texas and requires entities to demonstrate that its reuse scheme will not negatively impact downstream water rights holders. [6] Indirect potable reuse programs use reclaimed water to augment drinking water supplies by discharging it to a water body, such as groundwater or surface water, which is subsequently treated for potable consumption. NTMWD implemented an indirect potable reuse project in Lavon Lake in 1985, diverting water from a wastewater treatment plant and treating it for municipal use as drinking water. [7]

During the 84th Texas Legislative Session, action was taken directing TWDB and TCEQ to support the creation of a direct potable reuse model under House Concurrent Resolution (HCR) No. 74. [8] HCR 74 identified the Dallas-Forth Worth Metroplex as the region to develop the model, as it is projected to house 32% of the state's population by 2070 and has the largest projected demand for new water supplies between 2020 and 2070, a 71% increase. [9] The model reuse project, in conjunction with renewable energy technologies, could provide opportunities for public education on water reuse and renewable energy.

The Legislative action predicts that creation of a direct potable reuse project in Region C of the TWDB Water Planning Area has the potential to yield sufficient water supply to region residents while alleviating the depletion of already scarce resources.

Water Conservation

Water conservation is a crucial part of ensuring future water supply and improving water quality for North Central Texas. Based on questionnaire responses on existing water conservation strategies occurring in Region C and historical water use data, the Region C WPG determined that significant efforts have been made by water providers and water users to conserve water in the region. To this end, the WPG will continue to place a strong emphasis on water conservation and reuse as a means to reach water supply goals for future needs.

In the NCTCOG regional planning area, there are large efforts underway to promote the effectiveness of water conservation. Conservation is an important component to water resources in the region. Regional stakeholders and municipalities conduct public education, develop water conservation plans, implement green infrastructure, utilize water reuse, and implement watershed protection in order to obtain water conservation goals for future demands.

[1] 2021 Region C Water Plan. p. 14-15.
https://www.twdb.texas.gov/waterplanning/rwp/plans/2021/index.asp#region-c

[2] 2021 Region C Water Plan, p. 5C-1.
https://www.twdb.texas.gov/waterplanning/rwp/plans/2021/index.asp#region-c

[3] Bois d'Arc Lake website. https://boisdarclake.org/about/fast-facts/

[4] Lake Ralph Hall website.
https://lakeralphhall.com/

[5] 2021 Region C Water Plan. p. ES.8, Figure ES.4.
https://www.twdb.texas.gov/waterplanning/rwp/plans/2021/index.asp#region-c

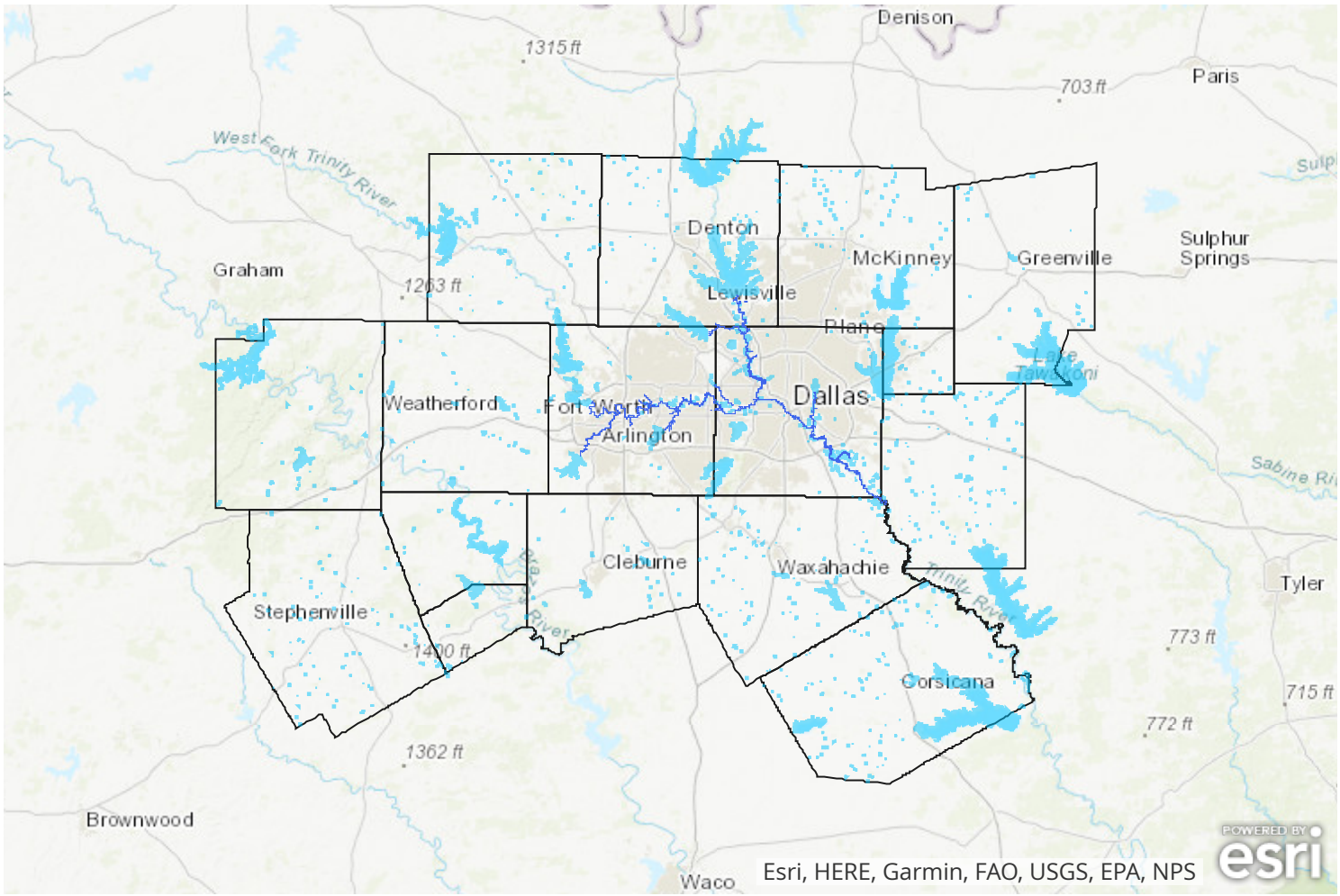
[6] Requirements for Reclaimed Water, TCEQ February 28, 2020.
https://www.tceq.texas.gov/assistance/water/reclaimed_water.html

[7] History of Water Reuse in Texas, TWDB February 2011.
http://www.twdb.texas.gov/innovativewater/reuse/projects/reuseadvance/doc/component_a_final.pdf

[8] HCR No. 74, 84th Texas Legislative Session, 2015.
https://www.legis.state.tx.us/tlodocs/84R/billtext/html/HC00074I.htm

[9] 2017 Texas State Water Plan, p. 52 and 55, respectively, updated February 2020. **https://www.twdb.texas.gov/waterplanning/swp/2017/index.asp**

Water Resource Initiatives and Public Comments



TrinityRiver Lakes Counties

Water Resource Initiatives and Public Comments

In North Central Texas, there are many entities working together through regional collaboration to help protect water resources. By 2045, the population of the NCTCOG region will increase by about 3.8 million. In order to keep up with the growing demands on our water resources, regional entities are working to improve the quality and quantity of water in this region. Often, people do not think about the scarcity and importance of water when it is available to them every day. Water, however, is a precious resource that needs protection. Ensuring appropriate water quality and quantity is a big job, but with the help of individuals, communities, and local governments, we can work towards gaining a better understanding of where our water comes from, how to protect the quality, and how to ensure availability of clean water for future generations. Many North Central Texas communities are working hard to protect water resources in the region.

Local governments and regional entities work to engage and educate residents about water resources through outreach, incentives, and active communication.

In addition, NCTCOG actively engages regional entities in water quality and water resources efforts and initiatives.

Water for North Texas Online Library

This online library is a compilation of existing local, state, and federal resources on water topics in five main categories: Water Supply/Conservation, Water Management, Water Quality, Seasonal, and Other. These resources include explainer videos, brochures, webinars, and social media toolkits and are intended to be used by member governments to educate residents about the value of water across the growing NCTCOG region, which is projected to add approximately 3.5 million more people between 2020 and 2045. New resources will also be included here as they are developed. The Water for North Texas Online Library can be viewed here: **http://conservenorthtexas.org/water-north-texas-online-library**

Wastewater And Treatment Education Roundtable

Aiming to reduce potential damage to the region's household plumbing systems and wastewater treatment systems as well as to decrease hazards to water quality, the Wastewater And Treatment Education Roundtable (WATER) supports educational efforts related to the proper disposal of items such as wipes, paper towels, feminine hygiene and personal care products, medicines, household hazardous waste, and fats, oils, and grease (FOG). As part of this effort, WATER supports a regional FOG collection during the holidays. To learn more on how to properly dispose of problematic items, visit: **http://www.ceasethegreasentx.com/**.

Total Maximum Daily Load Implementation Plan Program

NCTCOG is currently working in conjunction with TCEQ on the Total Maximum Daily Load Implementation Plan (TMDL I-Plan) Program addressing bacteria loading for several impaired water bodies in the Dallas-Fort Worth Metroplex. A TMDL measures the amount of pollutant that a waterway can have and still meet the water quality standards for its designated use. Twenty-three waterways in North Central Texas are currently included in the TMDL I-Plan program. For more information, please visit: **www.nctcog.org/TMDL**.

NCTCOG also coordinates with regional entities on a basin-wide approach to conduct and document efforts that help reduce the bacteria impairments in the Upper Trinity River Basin, one of the major river basins in the region, through the Upper Trinity River Basin Coordinating Committee. For more information on the Upper Trinity River Basin Coordinating Committee, visit:

https://www.nctcog.org/envir/committees/upper-trinity-river-basin-coordinating-committee.

Texas Smartscape

Texas SmartScape is an outreach program that educates residents on landscape best management practices, including the benefits of using plants that are native or adapted to our regional climate and local conditions. The program goals are to conserve local water supplies and improve stormwater runoff quality by reducing the amount of water needed to maintain landscapes while decreasing the amount of pesticide, fertilizer, and herbicides used. Many cities in the North Texas region have also participated in a recent effort to promote Texas SmartScape plants and the program by partnering with nurseries and garden centers on plant sale events. To learn more, please visit: http://www.TXsmartscape.com.

Regional Ecosystem Framework

The development of the Regional Ecosystem Framework (REF) was a collaboration between the Transportation and Environment and Development departments at NCTCOG. The REF uses a watershed approach to define areas of ecological importance. The REF was developed into an interactive viewer that allows users to evaluate the ecological priorities at the subwatershed level and overlay additional spatial data relevant to efforts to conserve natural areas or mitigate environmental impacts of infrastructure projects. For more information and to view the interactive mapping application, please visit: http://www.nctcog.org/REF.

COMMON VISION Program

The Trinity River COMMON VISION Program facilitates the coordination of local governments along the Trinity River who launched a regional initiative that promotes a safe, clean, enjoyable, natural, and diverse Trinity River. The program established the Corridor Development Certificate (CDC) process to stabilize flood risks along the Trinity River. A CDC permit is required to develop land within a specific area of the Trinity floodplain. Under the CDC process, neighboring local governments along the Trinity River Corridor are given the opportunity to review and comment on projects in each other's jurisdiction. This process will help prevent any increase in flood risks as the Metroplex continues to grow. For more information, please visit: https://www.nctcog.org/envir/committees/trinity-river-common-vision-steering-committee.

integrated Stormwater Management

The Integrated Stormwater Management (iSWM) program for Construction and Development is a cooperative initiative that helps cities and counties achieve their goals of water quality protection, streambank protection, and flood mitigation, while also

helping communities reach their construction and post construction obligations under state stormwater permits. The program consists of four types of documents and tools that can be utilized by regional entities. There are 15 founding iSWM communities in the North Central Texas Region. Moving forward, cities will go through a certification to become an iSWM community. For more information, please visit: **http://www.iSWM.nctcog.org**.

Trash Free Waters

United States Environmental Protection Agency (U.S. EPA) is currently working to develop a program with a focused set of national and regional actions that support trash prevention and reduction initiatives by many public and private stakeholders, resulting in significantly less trash entering watersheds. The goal is to begin approaching zero loadings of trash into coastal watersheds and ecosystems within 10 years. NCTCOG is working in partnership with communities in the region on a Trash Free Waters project to help reduce aquatic trash.

In June 2020, U.S. EPA selected NCTCOG as one of seventeen awardees to receive funding under its **Trash Free Waters program**. The news release can be found **here**. This project aims to expand the **Trash Free Texas website** by adding more litter adopt-a-spot locations, reduce the use of single use plastics in restaurants, and partner to coordinate regional cleanup events. To learn more about NCTCOG's activities under this grant, visit: **http://www.nctcog.org/trashfreewaters**.

For more information on these and other programs from the North Central Texas Council of Governments, visit: **http://www.nctcog.org/envir**.

Public Comments on the Draft 2021 Update to the North Central Texas Water Quality Management Plan

The public comment period for the Draft 2021 Update to the Water Quality Management Plan was open from May 28, 2021 to June 28, 2021. All comments received, as well as NCTCOG's responses, can be found **here**.