North Central Texas Water Resources Report

Produced by the North Central Texas Council of Governments
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TCEQ

North Central Texas Council of Governments
Environment & Development

EPA United States Environmental Protection Agency

The North Central Texas Council of Governments (NCTCOG) is an association of, for, and by local governments. We assist our members in planning for common needs, cooperating for mutual benefit, and recognizing regional opportunities for improving the quality of life in North Central Texas. This report is an effort by NCTCOG and regional partners in conjunction with the Texas Commission of Environmental Quality to determine what communities in North Central Texas are, or will be doing, related to regional priorities for water resources.

This report shares the results of a questionnaire administrated by NCTCOG. A total of 56 regional entities, including local governments, water districts, groundwater districts, independent school districts, and the general public, responded to the questionnaire in March 2016. The results indicated three priority themes for water resources in North Central Texas; Increasing Public Awareness of Water Resources, Water Conservation & Ensuring Appropriate Water Supply, and Funding for Aging Water & Wastewater Infrastructure.

This report was developed as a part of the 2016 Water Quality Management Plan for North Central Texas. If you would like more information or to view the document, please visit www.nctcog.org/envir or contact Rachel Evans at REvans@nctcog.org.

Prepared in cooperation with the Texas Commission on Environmental Quality and U.S. Environmental Protection Agency

North Central Texas Water Resources Report

Water is an important key to everyday life in North Central Texas

Our Water

In North Central Texas there are many entities working together through regional collaboration to help protect water resources. North Central Texas is growing rapidly. By 2040 the population of the NCTCOG regional planning area will be 10,835,154, nearly double the current population. In order to keep up with the growing demands for on our water resources, regional entities are working to improve the quality and quantity of water in this region.

The Value of Water

Many 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.

Where Has Your Water Been?

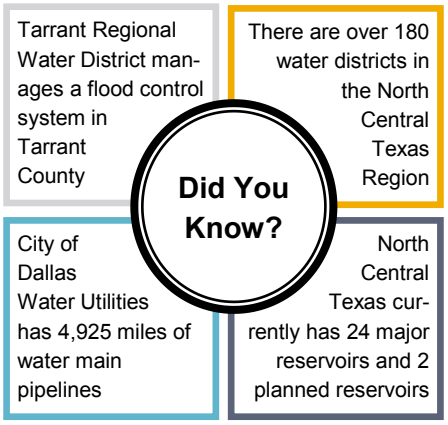
It is commonly known that our water comes from rain falling from the sky, running off into streams and rivers and collecting in lakes, reservoirs and aquifers. But not everyone knows the important series of events that take place to get water from the source to your home. After the water settles in the regional water bodies, local entities called water providers pump the raw, natural water to a water supply facility. Here water is treated to remove any natural or man-made pollutants it picked up during its journey. Water providers sell the clean water to its members and customers, like your local governments. Through vast expanses of water pipelines, water is carried into your community and available for use by you for your everyday needs.

Once water has been used, it becomes wastewater. Wastewater is piped from your home through a series of sewer lines that are connected to a wastewater treatment plant. Here, the wastewater is treated to remove pollutants and solids and attain clean water that meets standards set by the U.S Environmental Protection Agency (EPA). The treated water, known as effluent, is discharged into local waterways where it is used again to supply drinking water and irrigation needs.

Who Provides Your Water?

In Texas, water is provided via Water Districts which are local, governmental entities that offer services to customers and residents. Services often include, water and wastewater, water conservation, water supply, and solid waste.

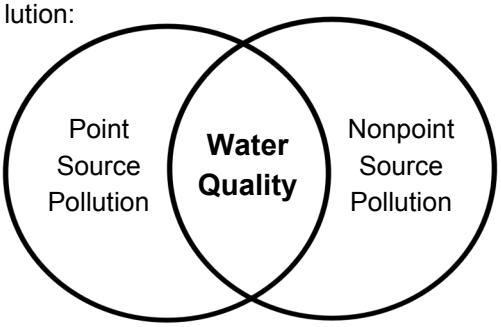
There are 5 major regional water providers in North Central Texas: The North Texas Municipal Water District, Tarrant Regional Water District, Upper Trinity Regional Water District, Dallas Water Utilities, and Fort Worth Water Department. These 5 entities serve more than 4.5 million people in the region. The remainder of the region is served by a variety of other small water districts, including groundwater districts, municipal utility districts, water control and improvement districts, special utility districts, and river authorities.



Water providers bring water to North Central Texas from regional sources, including reservoirs, groundwater, and surface water. They are also responsible for other programs that influence water conservation, water quality, and the future water supply.

Water Pollution

Pollution affects the water quality of streams, rivers, lakes, reservoirs, and groundwater. There are two types of pollution:



Point source pollution typically comes from specific locations or sources such as pipes, permitted facilities, or wastewater treatment plants, and carried to streams, rivers, lakes, wetlands, and ground water.

Nonpoint source pollution is typically caused by rainfall moving over and through the ground. As the runoff moves, it picks up man-made and natural pollutants and carries them to streams, rivers, lakes, wetlands, and groundwater.

In North Central Texas, the water quality is most notably effected by nonpoint source pollution. Some examples of nonpoint source pollution are: sanitary sewer overflows (SSOs), bird and pet waste, fats, oils, and grease, and agricultural practices (fertilizer, feed, and animal feces).

Nonpoint sources of pollution can be eliminated by local governments and communities with the help of a few proactive steps!

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Ways Local Governments are Helping to Reduce Nonpoint Source Pollution

- Implementing Stormwater Management plans
- Involvement in Fats, Oils, and Grease programs
- Implementing Construction Standards
- Building Green Infrastructure and Low Impact Development
- Increasing Public Awareness with Outreach and Education programs
- Planting Native and Drought Tolerant Species
- Developing and Implementing Watershed Protection Plans
- Updating Aging Water and Wastewater Infrastructure

Ways You Can Help Reduce Nonpoint Source Pollution

⇒ **Pick up pet's waste on walks at the park and your back yard**
Not only is pet waste unsightly and smelly, it is a health risk to pets and people and a water quality issue. Visit www.DFWstormwater.com/petwaste to take the pledge to 'Doo the Right Thing' and clean up after your pets!

⇒ **Do not pour your grease down the drain**
Instead, scrape cooled grease into a container and drop off at one of the regional sites participating in the Cease the Grease program. For more information, check out www.ceasethegrease.org to see if your city participates.

⇒ **Educate yourself!**
Check out what workshops and programs your cities are offering about water quality, landscaping, best management practices and so much more!

⇒ **Plant native species and adaptive species**
Native species are adapted to our regional climate and conditions and require less water and fertilizer! For more information on beautiful, maintainable, and sustainable species, please visit www.TXSmartScape.com.

⇒ **Only rain goes down the storm drain!**
Water in storm drains are never treated, so you need to be mindful of what ends up down the drains. Yard waste adds extra nutrients to the water causing impairments to the quality.

⇒ **Defend your drains while protecting water quality**
Do not use the toilet as a wastebasket and dispose of household hazardous wastes responsibly. Visit www.DefendYourDrainsNorthTexas.com for more about what to do with wipes, feminine hygiene products, paints, pesticides, medicines, cleaning products, and more.

⇒ **Avoid using pesticides and fertilizer on your lawn and gardens**
Instead, use composted yard waste to help your lawn grow.

⇒ **Report illegal dumping!**
Trash dumped in unauthorized locations can pollute the water quality and cause major public health and safety concerns. Dumping is illegal and punishable by the Texas Health and Safety Code 365. For more information on how to report illegal dumping, please visit www.ReportDFWDumping.org.

Installation of Bioretention Green Infrastructure on Merritt Road in Rowlett, TX

58% of surveyed entities participate in a Sanitary Sewer Overflow (SSO) program

30% of surveyed entities are engaged in Green Infrastructure or Low Impact Development

15 communities are Integrated Stormwater Management (iSWM) Communities

40% of surveyed entities incorporate Lawn Maintenance or Drought Tolerant Landscaping

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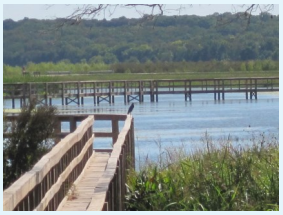
Good Partners in Water Resources

Many North Texas communities are working hard to protect water quality in North Central Texas. Some of these "Good Partners in Water Resources" are highlighted below.

North Texas Municipal Water District: East Fork Wetlands Project

Photos Courtesy of the North Texas Municipal Water District

The North Texas Municipal Water District (NTMWD) is a regional water district that provides and plans for future superior water, wastewater, and solid waste services. As a part of their effort to plan for future water needs, NTWMD developed the East Fork Wetlands Reuse Project to help serve the growing population in the North Central Texas. The East Fork Wetlands Reuse Project is a man-made wetland that utilizes natural filtration to cleanse raw, natural water from the Trinity River which increases the NTMWD's water supplies for North Central Texas.

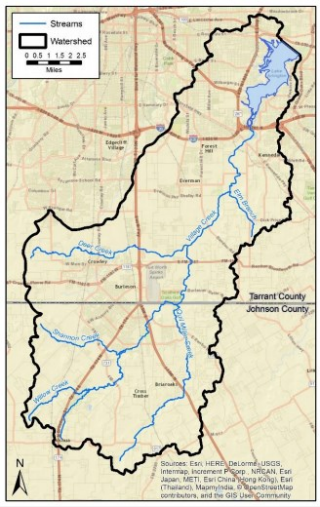


The East Fork Wetlands Project was a $246 million investment by NTMWD to help avoid the severe financial impact that would be caused by a regional water shortage. As the water passes through the 1,840 acres of wetland, aquatic plants clean the water. This natural process removes about 95% of the sediment, 80% of the nitrogen, and 65% of the phosphorus. The cleansed water is then piped 40 miles to Lavon Lake and blended with NTMWD's other raw water sources for use by their members and customers.

For more Information, please visit: www.ntmwd.com/EastForkRawWaterSupply.

Trinity River Authority: Village Creek-Lake Arlington Watershed Protection Plan

The Trinity River Authority (TRA) is currently developing a watershed protection plan for Lake Arlington and Village Creek. A watershed protection plan is a framework for implementing integrated water quality protection strategies that are driven by stakeholder engagement. Village Creek is currently listed as an impaired water body on the 2014 Texas 303(d) List, which means that the creek is not meeting designated contact recreation use standards due to elevations in bacteria levels. Lake Arlington acts as a drinking water source for cities and residents in North Central Texas and has concerning levels of chlorophyll-a and nitrate, according to the 2014 Texas Integrated report. A watershed approach is being used to help improve the water quality of the two water bodies. The watershed protection plan that is currently being developed will address the needs of the watershed and communities that interact with it.



Village Creek
Lake Arlington
WATERSHED
PROTECTION

Images courtesy of the Trinity River Authority

Watershed protection plans rely on stakeholder driven decision-making. Any person who lives, works, recreates, or passes through the watershed is considered a stakeholder. If you are a stakeholder or would like more information on how to be involved in the development process, please visit www.trinityra.org/LakeArlingtonVillageCreek.

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The City of Cleburne: Industrial Reuse Program

The City of Cleburne has been implementing an industrial reuse program at their wastewater treatment plant since 1997. At the time, the East Loop Reuse project was the largest industrial reuse program in Texas. In 2015, the City of Cleburne applied for a State Water Implementation Fund for Texas (SWIFT) funding opportunity to develop a new project which would tie into the current pipeline called the West Loop Reuse Project. The project would help the City of Cleburne achieve their goal to maximize its use of reuse water. The extension of the East Loop pipeline would help with long-range water supply strategy and defer more expensive sources of water from Lake Whitney. The West Loop pipeline would supply reclaimed water for oil and gas development, irrigation use by Cleburne Municipal Gold Course and commercial facilities, and industrial use.

The current East Loop reuse program provides reclaimed water from its only wastewater treatment plant to a major industrial customer and a recreational sports complex for irrigation. Looking forward, the demand for water, for both industrial and drinking water use, will continue to grow as the city's population is expected to triple by 2050. The higher demand on available water resources has created a need for new water options which the City of Cleburne is hoping to find new sources from expanding the current reuse system.

Photos courtesy of the City of Cleburne

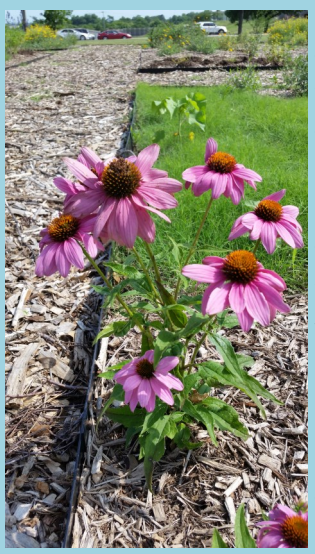
Lady Bird Johnson Middle School: Net-zero School in North Central Texas

Lady Bird Johnson Middle School is located in Irving, TX and is recognized as the nation's largest net-zero school and the first net-zero school in the State of Texas. At 150,200 square feet, the facility uses wind and solar power to produce as much energy as it consumes from the electric grid over a one year period. This facility incorporates energy reducing systems with goals to reduce energy consumption by over 50% from the traditional school model.

The school educates students on the importance of conserving water. It has a Rainwater Harvesting system where rainwater is collected and stored in a large cistern on site and is used for irrigation of landscaping. Additionally, bioswales and grass filter strips are present along the parking lot area to reduce sediment removal and improve the water quality of the stormwater run-off. The school also features a Water Conservation Learning Node that provide a hands on learning experience for the students. The green school concept is connecting children to the real world. Students are able to see their impacts on energy and water consumption on a day to day basis.

Photo courtesy of DFW Solar Tours

The General Services Administration: High Performance Landscapes



The General Services Administration (GSA) partnered with the Fort Worth Botanical Research Institute of Texas (BRIT) to implement a project to conserve water and provide natural habitat for pollinators through the planting of native vegetation at the greater southwest region's Fort Worth Federal Center.

The Fort Worth Federal Center (FWFC) identified "no mow" zones as a part of the pollinator initiative which also influences local water quality by reducing the amount of yard waste that ends up in the streams. The planting of native vegetation also helps 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, fertilizers, and herbicides used.

Photos courtesy of the General Services Administration

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Water Conservation

Water Conservation is a crucial part of ensuring future water supply and improving water quality for North Central Texas. 85% of surveyed entities agree that residential water conservation is a priority in protecting North Central Texas water resources.

The Texas Water Development Board (TWDB) defines water planning regions in Texas. The NCTCOG region falls mostly within the Region C Water Planning area (which is made up of Cook, Grayson, Fannin, Jack, Wise, Denton, Collin, Parker, Tarrant, Dallas, Rockwall, Ellis, Kaufman, Navarro, Freestone, and part of Henderson County). The Region C Water Planning Group has projected that **27% of the water supply in 2070 will come from water conservation and reuse.**

93% of surveyed entities have implemented or sustained conservation best management practices in the past year

Water Wise Landscaping in North Central Texas

Photo courtesy of Texas SmartScape

Benefits of Water Conservation

Simply put, if you use less water, your water bill goes down. Individuals can take small steps in their homes, like turning off the sink when brushing your teeth, minimizing the use of the garbage disposal, or taking shorter showers, to help conserve water and also save a few dollars. This concept can be applied on a larger scale to the North Central Texas region. The financial impact of not having adequate water supply in the future for our growing population will be massive. Additionally, water quality and quantity impact recreation and other economic activities. Maintaining water quality of streams, rivers, and lakes is important long-term. The cleaner the water is, the less it costs to treat the water to acceptable levels.

Water conservation is a necessary component of planning for future water supply. Without it, North Central Texas will be in a water shortage because there are not enough surface water supplies available to support our growing population. Conserving water now allows cities and regions to plan for more efficient use of water resources in the future.

How Can You Help?

Have your irrigation systems checked for efficiency
Most cities offer free sprinkler system check-ups. Check out your cities website to find more information.

Learn and follow your city's watering schedule
Many cities have a water conservation plan that they implement to help conserve water for future supply. Properly following your water schedule helps your city stay on track with their goals and reduces your water bill.

Did you know your city has a Conservation or Drought Plan?
Every city must develop an implementation plan in the event that heavy drought is depleting available water resources. Visit your city's website to learn more about your city's best management practices for conservation and drought.

Check your toilets and sinks for leaks
Annually, there is over 1 TRILLION gallons of household leak water waste nationwide. That is equivalent to water use in over 11 million homes.
To learn about how to check and fix leaks in your home from visit www.epa.gov/watersense/our_water/howto.

Plant native and drought tolerant species in your yard
Visit www.TXsmartscape.com for information on design, care, and plant search tools to enhance your yard and make it water wise!

See Water Waste? Report it!
Report broken pipes, open hydrants, broken sprinklers, etc. to the property owner, local authorities, or your water management district. Check your city or water district's website for more information on how to report water waste in your community.

Use a broom, not a hose, to clean driveways and sidewalks
Using a hose wastes water and encourages yard waste down the storm drain which can affect the water quality of local streams and rivers.

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Water Reuse

Water reuse, or water recycling, is the process of reusing water that has already been used for residential, commercial or industrial purposes. Water reuse generally occurs for non-potable (non-drinking water) use. This includes agricultural irrigation, landscape irrigation, and industrial processes. However, some projects use reuse water indirectly for potable (drinking water) purposes, such as recharging groundwater aquifers or expanding surface water reservoirs with recycled water. Reused water can help satisfy most water demands by adequately treating the water to ensure the water quality is appropriate for the use.

29% of surveyed entities said they are exploring or already implementing reuse to increase irrigation or drinking water supplies

Water reuse can result in different levels of water quality. Typically, a minimum of secondary treatment to municipal wastewater is required for groundwater recharge. Tertiary treatment generally results in an effluent that meets state and federal water quality standards. Advanced treatment would be necessary if the reuse water was going to meet the desired water quality standards for agricultural irrigation.

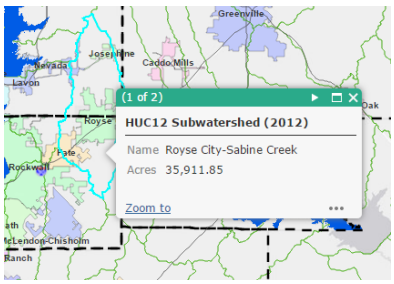
2012 Guidelines for Water Reuse, EPA

According to the U.S EPA, the cost of treating wastewater to secondary standards for groundwater recharge is generally lower than the cost of potable water from unconventional sources, such as desalination. Several North Central Texas entities have explored water reuse as a way to bolster future water supplies. NCTCOG is exploring how water reuse will support water conservation as a crucial step to supplying future water needs.

Watershed Protection

We all live in a watershed. A watershed is an area of land that water flows across, to a common area, like a stream, river, or lake. There are over 400 different watersheds in the North Central Texas area. Watershed boundaries do not follow city limits or county lines, but extend far into different areas driving regional communication. Watershed pollutants cannot be contained by jurisdictional boundaries and may cause issues far from the source of the pollutant. Coordinating plans at a watershed level encourages regional collaboration, helps identify pollutant sources, and strengthens teamwork among stakeholders to make real world improvements to the region.

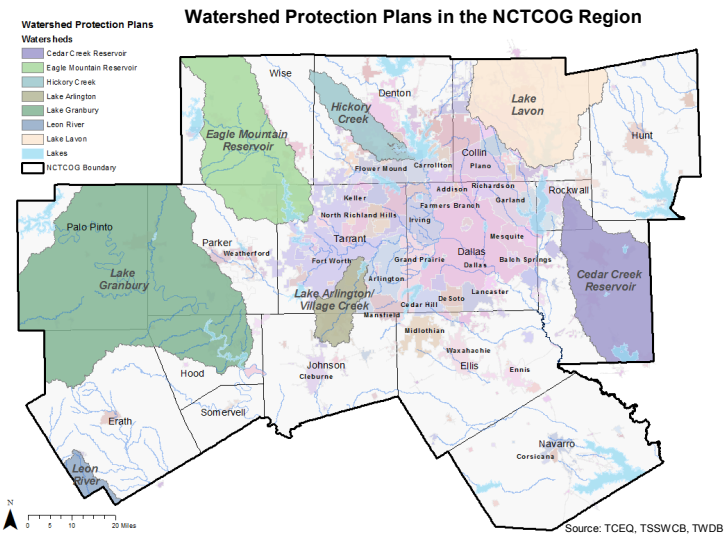
Watershed planning serves as a tool to better leverage the resources of local governments, state and federal agencies, and non-governmental organizations. This approach to watershed management recognizes that solutions to water quality issues must be socially acceptable, economically bearable, and based on environmental goals. Increasing Watershed Protection not only helps improve water quality but also helps obtain goals of ensuring appropriate water supplies for the future.



Example of Watershed Boundaries

What is a 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 diverse, well integrated partnerships, a WPP assures the long-term health of the watershed. Currently in the North Central Texas Region there are four Watershed Protection Plans in place and two being developed: Cedar Creek Reservoir, Eagle Mountain Reservoir, Lake Granbury, Hickory Creek, Leon River, Lake Arlington & Village Creek (being developed), and Lake Lavon (being developed).



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Water quality standards are established to protect water for designated uses such as drinking, recreation, agricultural irrigation, or protection and maintenance of aquatic life.

Water Quality

Water quality is a measure of suitability of water for a particular use based on selected physical, chemical, and biological characteristics. To determine water quality, data needs to be collected on several characteristics of the water such as temperature, dissolved mineral content, and number of bacteria. Selected characteristics are then compared to standards to decide if the water is suitable for a particular use. Standards for drinking-water quality ensure that public drinking-water supplies are as safe as possible. The EPA and TCEQ are responsible for establishing these standards.

What's Naturally Occurring in My Water?

Turbidity – Typically after an intense rain storm water running off the land picks up and carries sediment that causes the water to look cloudy or hazy. Sediment runoff occurs naturally, but has increased significantly in the region due to increased impervious surfaces and construction.

Bacteria – All warm blooded mammals have bacteria. However, bacteria at high concentrations in waterways can pose health risks to humans and animals. Bacteria enters the waterway from a variety of sources including, pet and animal waste, stormwater runoff, and over use of pesticides and fertilizers.

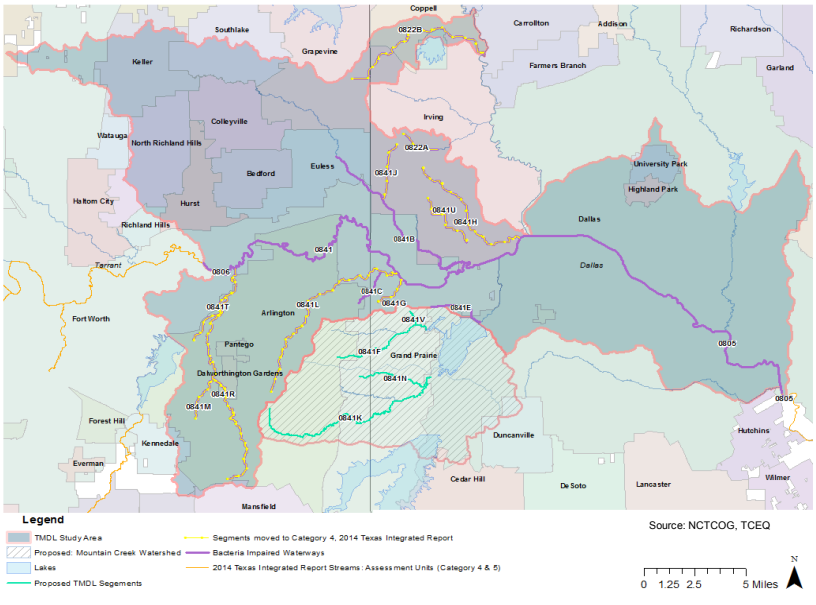
Common Water Quality Pollutants

Total Dissolved Solids	Phosphorus	Bacteria	Depressed Dissolved Oxygen
Related to hardness, saltiness, or corrosiveness of water	Excess amounts of phosphorus can lead to over growth of algae	Occurs naturally, but excessive amounts can make plants and animals sick	Most aquatic organisms need oxygen in the water to survive

What is the Region Doing to Improve Water Quality?

Partners in the region including, cities, nonprofit groups, citizen scientists, and variety of stakeholders have begun to coordinate watershed planning. The goal is to protect unimpaired waterbodies from pollution threats and restore impaired, polluted waterbodies. Texas develops a report called the *Texas Index of Water Quality Impairments* that provides assessments of water quality of Texas streams which helps regional stakeholders identify areas of priority for water quality protection and improvement.

Total Maximum Daily Load (TDML) Study Area



The region is working in partnership with TCEQ on a Total Maximum Daily Load (TMDL) Program. A TMDL measures the amount of pollutant that a stream segment can have and still meet the water quality standards for its designated use. TMDLs help us to measure our efforts to protect and improve the quality of our streams, rivers, lakes, and reservoirs.

Communities within the region are also engaged in the Integrated Stormwater Management (iSWM) program which helps mitigate the impacts of development in a community that results in loss of natural areas, more sources of pollution in run-off and heightened flood risks. iSWM is an initiative that assists cities and counties achieve their goals of water quality protection. For more information and to see if your community is participating, visit www.iswm.nctcog.org.

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Water Supply

By 2040, North Central Texas population will grow by more than 50%. Increasing available water supply is important to support the continual growth in the region.

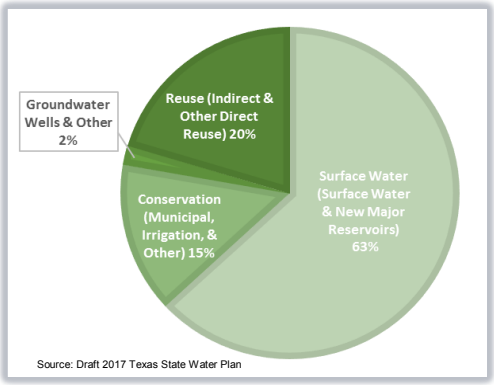
When asked about emerging or potentially worsening water problems for the region in the next 5 to 10 years, 81% of surveyed entities answered the need to have available water supply for the growing population

Having adequate water supply for the effects the three priority themes of North Central Texas Water Resources.

Without updated water and wastewater infrastructure, necessary water supply will not be able to reach the future growth.

Without water conservation, North Central Texas will not be able to support future demands.

Without public awareness of the value of water, there will be no change in how North Central Texas consumes water. It's through small actions and thoughtful choices that communities will be able to conserve water and protect the quality for future generations.



The Texas Water Development Board Region C Water Planning Group develops a regional water plan focused on supply. The planning group looks at the feasibility of water sources and recommends water management strategies for wholesale water providers and for water user groups by county. Moving forward, the water supply for North Central Texas will come from a variety of sources. The pie chart above breaks down projected water supply for the NCTCOG region for 2040.

Wastewater

Water quality standards for wastewater discharges are established by the U.S. EPA and the TCEQ to protect the environment and receiving waterways. Wastewater is water that has been used in homes or by industries and businesses and carried via sewers to be treated at a wastewater treatment facility. Wastewater can include human waste, food scraps, oils, soaps, and chemicals. In homes, wastewater is what goes "down the drain" from sinks, showers, bathtubs, toilets, washing machines, and dishwashers. Businesses and industries release large amounts of wastewater from their machinery, cooling processes, and other uses that also must be cleaned before being released back into surface water.

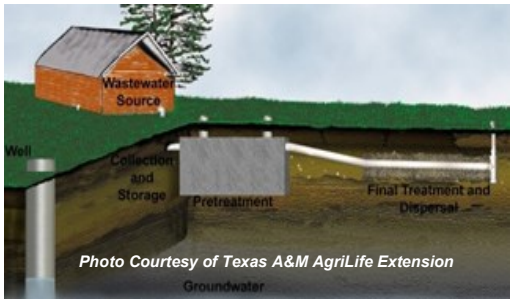


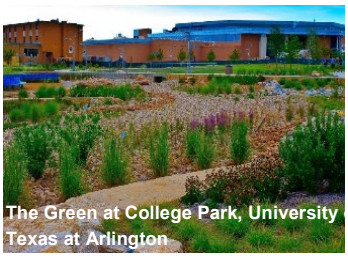
Photo Courtesy of Texas A&M AgriLife Extension

Not all North Central Texas communities are served by wastewater treatment plants. In fact, 55% of surveyed entities utilize septic tanks in their communities as the wastewater treatment source. A septic tank is made up of a collection a storage area and dispersal area. Wastewater is pumped from the source (typically a home) to a pretreatment tank and then distributed for dispersal through the soils for final treatment.

Homeowners who utilize septic tanks must be aware of anything they dump down their sinks or drains because what goes down the drain will end up passing through the septic system and into the local ground and surface water sources. Septic tanks are often associated with water quality issues. It is important that if you have a septic tank that you are properly maintain it. Texas A&M AgriLife Extension has resources available for proper operation and maintenance. For more information, please visit www.OSSF.tamu.edu.

What is Stormwater Pollution?

Stormwater is a major cause of water pollution in urban areas. When it rains, stormwater runs over the landscape, picks up pollutants, and carries them to streams and rivers. In urban locations, where there is more concrete and impervious cover, stormwater moves faster and comes in contact with more pollutant sources from the urban landscape.


The Green at College Park, University Texas at Arlington

How Can Cities Reduce Stormwater Pollution?

Cities and local governments can implement "best management practices" to reduce the amount of runoff occurring which also helps improve water quality. Green infrastructure is one type of best management practice that can be incorporated into an urban environment, Green infrastructure uses vegetation, soils, hardscapes, and other elements to help manage the flow and pace of stormwater runoff. The slowing of stormwater allows the water to be absorbed properly into the ground, filtered and cleansed through the soils, and eventually returned to the rivers and streams.

Communities can also practice best management practices to help reduce the amount of pollutants going into the streams and rivers. Individuals need to be conscious of things around the home that could pollute the stormwater, including oil spills, leaking vehicles, and pesticides & fertilizers.

North Central Texas Council of Governments
Water Quality & Resources Programs, Efforts and Initiatives

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 www.DefendYourDrainsNorthTexas.com.

TMDL Program
North Central Texas Council of Governments is currently working in conjunction with the TCEQ on a Total Maximum Daily Load (TMDL) program for several stream segments in North Central Texas. A TMDL measure the amount of pollutant that a stream segment can have and still meet the water quality standards for its designated use. 17 segments in North Central Texas are currently included in the TMDL program. NCTCOG is coordinating with regional entities to conduct and document efforts to help reduce the bacteria impairment in the stream segments. For more information, please visit www.nctcog.org/TMDL.

Texas SmartScape
The Texas SmartScape program was developed with support from NCTCOG, its member governments, Texas A&M AgriLife Extension, Texas Parks & Wildlife, and Weston Gardens. Texas SmartScape is an outreach program to educate 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 www.TXsmartscape.com.

Regional Ecosystem Framework
The development of the Regional Ecosystem Framework (REF) was a collaboration between the Transportation and Environment and Development department at the 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 www.nctcog.org/REF.

COMMON VISION Program
The Trinity River COMMON VISION Program is the coordination of local governments along the Trinity River who launched a regional initiative that promote 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 flood risks as the Metroplex continues to grow. For more information, please visit: http://www.nctcog.org/envir/SEEsafe/fpm/C_V_background.asp.

Vision 303(d) Program
In 2011, the state of Texas and EPA developed a new approach to address impaired water bodies. The 303(d) Vision Watershed Priority Strategy improves on the TMDL approach and provides an opportunity to use different methods to address impairments. Through the 303(d) Vision project, Texas A&M AgriLife Research and Extension and a team of partner organizations and stakeholders initiated a 7 year effort to address bacterial impairments in the Upper Trinity River Basin. Currently, the program is conducting education and outreach programs as well as gathering and analyzing existing data on bacteria impairments in the basin and if there are already efforts to protect them. The second phase of the effort will be implementation of needed strategies in the identified impaired areas. For more information, please visit: http://www.nctcog.org/envir/SEEclean/wq/utrbcc.asp .

iSWM (Integrated Stormwater Management)
The Integrated Stormwater Management program (iSWM) for Construction and Development is a cooperative initiative that assists 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 4 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. The City of Denton has begun the process to become the first certified member community of the iSWM program. For more information, please visit www.iSWM.nctcog.org.

Trash Free Waters
The 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 along the Trinity River on a Trash Free Waters project to help reduce aquatic trash in the Trinity. For more information, please visit www.epa.gov/trash-free-waters.

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