Stakeholder Engagement Plan

For Integrating Transportation and Stormwater Infrastructure

North Central Texas Council of Governments

1 Introduction

Flood events across Texas have prompted the state to take a proactive approach to flood mitigation. The study to integrate Transportation and Stormwater Infrastructure (TSI) in North Central Texas is such an approach. The study integrates planning for transportation and stormwater infrastructure, including green infrastructure, to address rapid growth and development. This growth is occurring in the upstream portion of the Trinity River. Efforts to mitigate future flood risk in this area will protect health in safety both for communities within the TSI study area and communities downstream in heavily populated Dallas-Fort Worth. More information on TSI can be found at www.nctcog.org/tsi.

The TSI study requires robust stakeholder engagement with local governments and other stakeholders. This TSI Stakeholder Engagement Plan serves as a guide for TSI study partners for planning, strategizing, implementing, and documenting stakeholder engagement activities in the TSI study area.

TSI will lay the foundation for comprehensive planning by providing recommendations that local governments, transportation agencies, and others can adopt. These recommendations must be feasible for these entities to adopt to ensure the TSI study provides the intended benefits. The study team must engage with stakeholders to gather data and other information to inform these recommendations.

The study team will communicate with stakeholders using the following methods:

- Steering Committee composed of elected officials and city managers
- Technical Advisory Group and other advisory groups as necessary
- Training workshops covering topics relevant to the study
- Regional project update workshops held in-person across the study area and virtually as needed
- Meetings with cities, counties, mayors' councils, and similar groups including site visits and windshield tours
- Outreach to communities that do not participate in the National Flood Insurance Program

- Outreach to underserved communities in the study area
- Interactive tools that visualize data and project outputs
- Publications including brochures, factsheets, or frequently asked questions and answers
- Presentations to engineering and other industry groups
- Project website

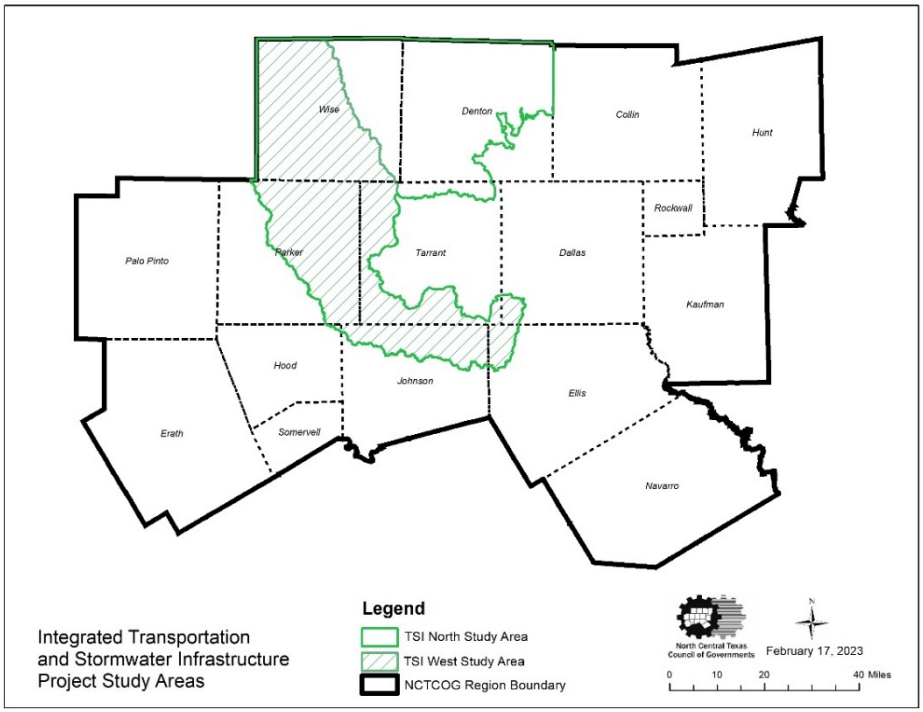
This Stakeholder Engagement Plan will identify stakeholder groups and relevant outreach strategies. Stakeholders include local government staff and elected officials, business sectors, and rural interests. For local government stakeholders, this plan will help the study team prioritize among cities and counties for outreach, including emphasizing equity. The plan also will document needed preparation and follow-up for outreach to local governments.

It is important to engage the local governments because they "make the rules." However, to create win-win situations, the study team also must engage businesses and others who interact with local governments.

2 Local Governments

The overall TSI study area includes 85 cities or towns and eight counties. This Stakeholder Engagement Plan covers the TSI West Study Area (Figure 2-1), which includes 48 cities and seven counties. Some cities and Wise County are located in both the West and North study areas.

Figure 2-1. TSI study areas.



2.1 Local Government Staff

Larger or better resourced cities and counties will employ staff such as floodplain managers, emergency preparedness personnel, and others with whom the study team can engage prior to engaging elected officials. Staff and elected officials will have different outlooks on TSI. When possible, outreach with staff should occur first so they can provide briefings to elected officials when those officials are contacted as stakeholders for TSI.

Successful outreach to municipal and county staff in previous NCTCOG campaigns has included educational toolkits, such as quarterly or monthly newsletters. NCTCOG also has experienced success by reaching out to municipal and county staff on a jurisdiction-by-jurisdiction basis, rather than inviting multiple jurisdictions to a larger meeting. These jurisdictions have felt more comfortable speaking freely when meeting individually. For this reason, the study team will reach out to cities to schedule site visits and windshield tours, if possible.

The study team should engage staff from a variety of departments, including those with pre-disaster and post-disaster responsibilities. Contact lists must be updated frequently because of the turnover municipalities and counties are experiencing. The study team should identify contacts' preferred means of communication and conduct outreach via these means. The study team will engage emergency preparedness staff by utilizing outreach assistance from NCTCOG's Emergency Preparedness Department (see section 2.1.1).

Some cities have already sought engagement on TSI, such as Fort Worth and Weatherford. Responding to these cities' interest is essential; however, it is also essential to seek to engage those cities who have not yet sought out the study team. The median population size of municipalities in the TSI study area is less than 5,000. The study team must identify tailored outreach strategies for those municipalities that may have fewer resources available to participate in the study.

Outreach could be incorporated into existing engagement with municipal and county staff, such as the Flood Management Task Force, Public Works Council, Total Maximum Daily Load Stormwater Subcommittee, Regional Codes Coordinating Committee, Regional Integration of Sustainability Efforts Coalition, and Regional Stormwater Management Coordinating Council.

2.1.1 NCTCOG Emergency Preparedness Department

The Emergency Preparedness Department helps build regional capacity to protect North Central Texas residents and critical infrastructure. This is accomplished by facilitating information sharing, collaboration, and cooperation between urban, suburban, and rural communities (NCTCOG, 2024). The department works with local governments to help counties develop and update hazard mitigation plans that are then approved by the Federal Emergency Management Agency (FEMA). These plans have ensured the local governments are eligible for mitigation funding from FEMA. The study team will coordinate with the Emergency Preparedness Department to engage local government stakeholders relevant to TSI but not within the study partners' current contacts.

The department communicates with local governments via working groups and list servs. The department hosts meetings of the Emergency Preparedness Planning Council. These communication outlets provide an opportunity for the TSI study team to reach stakeholders relevant to TSI but not within the study partners' current contacts.

2.2 Local Government Elected Officials

In smaller or less resourced cities, the study team may reach out directly to elected officials. In larger or better resourced cities, the study team will reach out to elected officials following outreach to staff.

Engaging elected officials may require a request from someone influential, such as department or agency leadership at NCTCOG or the US Army Corps of Engineers. Local elected officials may not be subject matter experts in technical topics such as floodplain management or hydrologic and hydraulics engineering. Therefore, outreach using plain English is necessary. The study team has initiated a Steering Committee of elected officials and city managers. The committee, which meets quarterly, is tasked with guiding the project and promoting it to other elected officials.

Outreach should occur annually because of turnover that can occur following elections. Outreach could be incorporated into existing engagement with local elected officials, such as NCTCOG's annual Elected Officials Floodplain Seminar and monthly Regional Transportation Council meetings.

The study team could seek to promote TSI at county mayors' meetings to reach a larger number of elected officials at one time. These meetings could be leveraged to facilitate meetings with individual elected officials.

FEMA is developing an outreach program to educate elected officials about floodplain management, according to an announcement made during a training session for floodplain managers hosted by NCTCOG in December 2023. If this program is published over course of the TSI study, the study team will seek to incorporate this program into TSI outreach efforts.

2.3 Prioritizing Municipalities and Counties for Outreach

The combined TSI study areas include 85 cities or towns and parts or all of 8 counties. Municipalities range in population from fewer than 400 to more than 1.3 million. County dominant land uses range from agricultural to urban. Because each municipality and county brings a unique flood history and level of resources, the study team will seek to reach out to as many as possible to identify study outputs that will best benefit their range of needs. But in the interest of time, the study team must loosely prioritize which municipalities and counties to reach out to. The study team will consider the following factors:

- Equity
- Flood history
- Population growth

- Participation or non-participation in the National Flood Insurance Program
- Presence of relevant ordinances or other flood mitigation activity
- Resources and professional capacity to address flood mitigation
- Interest in TSI study and goals

Interest in the TSI study and goals may ultimately drive outreach efforts, as municipalities and counties who are interested in the project are most likely to respond to the study team's communications and be most likely to implement the study's recommendations.

2.3.1 Equity

NCTCOG received funding from FEMA to prioritize equitable outreach in the TSI study area. Staff developed a plan titled Equity-Based Outreach in North Central Texas using this funding. The plan is included as **Appendix 1**. The plan is based on the definition of equity developed by FEMA's Equity Enterprise Steering Group (FEMA, 2022 a):

> Equity is the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities of color; persons who belong to communities that may face discrimination based on sex, sexual orientation, and gender identity (including members of the LGBTQ+ community); persons with disabilities; persons who may face discrimination based on their religion, national origin and persons with Limited English Proficiency; and persons who live in rural areas that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.

FEMA also identifies underserved communities as those who may experience disproportionate hazard risks or barriers or discrimination when accessing assistance following disasters. These communities include persons adversely affected by persistent poverty in addition to those groups identified in the equity definition (FEMA, 2022 b).

2.3.2 Flood History

FEMA makes historical flood risk and costs available from the National Oceanic and Atmospheric Administration (NOAA) Storm Events Database (NOAA, 2024 a). The data is provided at the county scale. Counties in the TSI study area have experienced the following number of historical flood events (Table 2-1):

Table 2-1. NOAA's Storm Events Database on historical flood risk at the county scale.

TSI County Historical Flood Events

County	Historical Flood Events	County	Historical Flood Events
Dallas	131	Johnson	88
Denton	96	Parker	70
Ellis	66	Tarrant	158
Hood	52	Wise	60

FEMA also provides aggregated data for severe repetitive loss properties. These National Flood Insurance Program-insured structures have had four or more losses/payments greater than $5,000 each in a 10-year period since 1978 (FEMA, 2024 a). For properties not insured under National Flood Insurance Program, FEMA provides data on high-risk properties. This data can capture property owners who may have a lower income, resulting in inability to purchase insurance. The study team is acquiring these datasets but cannot share them publicly. The study team will use these datasets behind the scenes to prioritize local governments for outreach.

The Nature Conservancy has developed a Trinity Floodplain Prioritization Tool (The Nature Conservancy, n.d.). The tool includes data on community flood risk and development pressure. The study team will use this data as it prioritizes outreach.

2.3.3 Population Growth

Growth is a primary factor in future flood risk because it leads to an increase in impervious surface. More people moved to the Dallas-Fort Worth-Arlington metro area than any other US metro area from 2021 to 2022, according to the Census Bureau (US Census Bureau, 2023). Both *how much* municipalities are growing and *how* they are growing are relevant to TSI.

Control Over Growth

In Texas, any authority counties have over zoning is granted by the Local Government Code, Chapter 231. Within the TSI study area, the only zoning authority granted to a county is around Lake Ray Roberts in Denton County (State of Texas, 1987). This zoning is designed to support public health, safety, and general welfare while encouraging recreation at the lake. Outside this exception, counties are locations of uncontrolled growth in the study area and should be prioritized for outreach.

Growth Rate

Growth rate and projected growth rate were calculated for cities and towns using data from the 2000 and 2020 Decennial Census (US Census Bureau, 2003 and US Census Bureau, n.d.) and the 2045 NCTCOG Demographic Forecast for cities (NCTCOG Regional Data Center, n.d.). The 2020 Decennial Census was the only product of these that contained data for all cities in the TSI study area; some cities and towns had not yet been established in 2000. The 2045 NCTCOG Demographic Forecast (City) included cities with populations of at least 5,000 in the 2020 Census (NCTCOG Regional Data Center, 2022). Therefore, this data has limited use in prioritizing cities in the TSI study area because the median population size of those cities is less

than 5,000. This means many cities' projected growth rates are unavailable. Available data on growth rate and projected growth rate is available in **Appendix 2**.

2.3.4 Participation or Non-Participation in National Flood Insurance Program

The majority of TSI communities participate in the National Flood Insurance Program. The study team will prioritize outreach to those communities that do not participate. These communities are: Annetta North, Draper/Corral City, and Newark. The study team will further investigate the following communities, whose status is unclear in the FEMA Community Status Book Report: Alvord and Providence Village. The study team will prioritize these communities if they do not participate.

Study team staff will seek meetings with these cities and use flood data and existing FEMA documentation to promote the value of National Flood Insurance Program participation. The team will ask the cities/towns about what challenges they face in joining National Flood Insurance Program and will coordinate with FEMA and the Texas Water Development Board to assist the cities/towns in overcoming those challenges.

According to FEMA, the following steps are necessary for participation (FEMA, 2024 b):

1. Complete an application
2. Adopt a resolution of intent to participate and cooperate with FEMA
3. Adopt and submit a floodplain management ordinance that meets or exceeds the minimum National Flood Insurance Program criteria. The floodplain management ordinance must also adopt any Flood Insurance Rate Map or Flood Hazard Boundary Map for the community.

2.3.5 Presence of Relevant Ordinances or Other Flood Mitigation Activities

NCTCOG surveyed cities and researched websites to identify jurisdictions' flood-related ordinances, Community Rating System (CRS) participation, and freeboard. Information was gathered for half of the jurisdictions in the West Study Area under a past FEMA grant. Information was gathered for the remaining West Study Area jurisdictions as part of this Stakeholder Engagement Plan. A complete table of relevant ordinances or other flood mitigation activities is found in **Appendix 3**. Information was unavailable for some cities and towns.

Twenty-six jurisdictions had a stand-alone flood ordinance. Table 2-2 describes flood regulation in ordinances, including those in addition to or instead of a stand-alone ordinance.

Table 2-2. Flood-related regulations outside stand-alone ordinances.

West Study Area

Location of Flood-Related Regulations	Number of Jurisdictions
Stand-Alone Flood Ordinances	26
Building Ordinances or Regulations	13
Subdivision Ordinances	8
Other Regulations[1]	7
Zoning Ordinances	5
Sanitary Ordinances	2
Unified Development Code	1

[1] Including gas well and land usage regulations and engineering design and construction manuals

NCTCOG identified six communities as participating in FEMA's CRS program. Their ratings ranged from 10 to 3 – the latter being City of Dallas (FEMA, 2023 a). CRS ratings of 9 or better enable property owners in the eligible community to receive discounted flood insurance premiums. Communities become CRS-eligible by adopting practices that exceed minimum National Flood Insurance Program requirements (FEMA, 2024 c).

The freeboard amount most frequently adopted by cities, towns, and counties was 24 inches, with 28 jurisdictions adopting this amount. Twelve adopted no freeboard, four adopted 36 inches of freeboard, and three adopted 12 inches of freeboard. Freeboard amount was not found for 9 cities or towns.

2.3.6 Resources and Professional Capacity to Address Flood Mitigation

Smaller cities may have fewer resources and less professional capacity to address flood mitigation. The TSI study needs to produce outcomes that benefit the majority of jurisdictions in the study area. With the median city or town population at less than 5,000 for TSI cities, the study team will prioritize these smaller cities that may have fewer resources.

The study team can determine the cities' professional capacity as contact lists are updated. For example, a city whose floodplain manager also serves as the fire chief and other roles will have less professional capacity to address flood mitigation than a city who has a staff person serving solely as the floodplain manager.

2.3.7 Interest in TSI Study and Goals

Several cities have expressed strong interest in the TSI project. These cities range in size from several hundred residents to almost a million residents. The study team will ensure it prioritizes responding to these communities, which may be the most likely to implement TSI recommendations.

2.4 Preparing for Outreach to Local Government Staff

When engaging local governments on the TSI study and mitigating flood risk, it will be important for the study team to communicate clearly and concisely using persuasive data. The study team will communicate about flood risks, required flood regulations, and the benefits of long-range planning. Outreach to local governments must be tailored to each city/town and county to address their specific needs and priorities, accounting for differences in size, population, location, and resources. This will ensure the study team is prepared to provide the most relevant information needed to address the concerns or questions the local governments may have. Outreach will be conducted using effective communication tools, including the Final Regional Environmental Impact Statement for Trinity River and Tributaries, best practices and guidelines, and case studies including data on return-on-investment. The Stakeholder Engagement Plan identifies resources that must be developed to support outreach for the TSI study. The plan also includes a checklist (**Appendix 4**) that summarizes preparations for meetings with local government staff and sample outreach language that could be included in postcards, emails, and phone calls to local governments (**Appendix 5**).

2.4.1 Flood Risk

An important message to communicate to the local governments is the risk associated with flooding. This includes not only safety and property damage, but the risk to property tax rolls if flooded properties must be removed. This risk can be communicated by providing a comprehensive assessment of the potential flood risk in the area, including historical data, FEMA flood maps, future hydrology and hydraulics scenarios as available, and the amount risk will be exacerbated by urbanization.

Urbanization of the study area is increasing due to the influx of people moving to North Central Texas. In 2015, approximately 60 percent of the TSI study area was undeveloped (NCTCOG Regional Data Center, 2017). But between 2006 and 2016, impervious surfaces increased about 20 percent (Multi-Resolution Land Characteristics Consortium, n.d.). NCTCOG 2045 population projections show the study area cumulatively increasing in population by about 50,000 per year (NCTCOG Regional Data Center, 2023). This increase in population will bring economic pressure to develop the TSI study area. The removal of open space or pervious surface prevents water from infiltrating into the ground, leading to increased surface runoff during rainfall. As a result, more water is channeled into stormwater drains and rivers, potentially causing flooding. The study area includes about 7,000 stream miles and close to 274,000 acres within the 1 percent annual floodplain. As the more rural and agricultural areas in the study area become more developed and increase the amount of impervious surface, flooding risks will increase in the study area and downstream of the development.

As this growth continues, spending on transportation infrastructure will continue to grow as well. Transportation infrastructure sometimes precedes growth, but its design only considers current flooding conditions. This excludes the impacts of future development. Increases in flooding in the study area also increase the rate of deterioration for regional infrastructure affecting its entire lifecycle. In NCTCOG's Mobility 2045: The Metropolitan Transportation Plan for North Central Texas – 2022 Update, it is projected that investments in transportation infrastructure will total close to $150 billion (NCTCOG, 2022 a) over the life of the plan. It will be important for the

study team to highlight the potential vulnerability of these investments by informing communities of flood risks and providing data that is reflective of future growth and urbanization.

The study team will also need to clearly outline the social and economic consequences of flooding. Flooding can result in property damage, injuries, and fatalities. This may be especially true for historically underserved populations, which FEMA indicates may "experience differences in preparedness and mitigation measures as well as how quickly their communities can resume social and economic life after a disaster" (FEMA, 2024 d). Historically underserved and socially vulnerable communities include communities of color; lesbian, gay, bisexual, transgender, and queer persons; individuals with disabilities; members of religious minorities; people with limited English proficiency; rural communities; and low-income communities (FEMA, 2022 b). These groups may be disproportionately affected by flooding due to limited resources, accessibility challenges, and inadequate infrastructure. When flood risks are not properly addressed, homes and properties can be damaged. The TSI study must address equity in flood risk and equity in investments in stormwater control measures.

2.4.2 Regulatory Requirements

It's essential for local governments to enforce regulatory requirements related to flood risk management because compliance can affect a community's eligibility for funding or assistance. The National Flood Insurance Program was established as part of the National Flood Insurance Act of 1968 to address losses due to flooding by creating higher standards. Participating communities agree to adopt and enforce Federal standards for developing within a Special Flood Hazard Area (TWDB, 2023). In exchange, flood insurance is offered to residents as protection against flood losses. When meeting with local governments, the study team should identify if participating communities face any challenges with compliance. For those communities not participating, the study team will explain the benefits of joining the National Flood Insurance Program and the steps necessary to join (see 2.3.4).

2.4.3 Benefits of Long-Range Planning

The TSI study addresses the long-range planning needs of reducing flood risks by integrating long-range transportation and land use planning with stormwater management and environmental planning. Transportation plans are forward looking and developed regionally and locally; land use plans are forward looking and developed locally; stormwater management plans also are developed locally but can generate watershed-scale impacts. By removing the silos that exist between planning efforts, the study team can stress the importance of adopting integrated long-range perspectives in planning when implementing flood risk reduction measures and encourage the development of comprehensive strategies that consider future changes and challenges.

2.4.4 Effective Communication Tools

During site visits and other meetings, the study team will leverage existing data, tools, and resources to aid in persuading communities to adopt higher standards and best practices while also investing in environmental and cost-effective solutions.

Leverage economic impact assessments and relevant studies and reports

Multiple sources of information demonstrate the potential economic losses associated with flooding and the return on investment for investing in stormwater infrastructure. Local governments will be interested in the economic impact and losses that will occur if flooding isn't addressed. NOAA publishes state datasets on weather-related economic damage. This data can be used to show local governments how Texas's economic losses due to flooding compare to those of other states. NOAA has also stated that investments in stormwater infrastructure return $5 to $7 for every $1 invested (NOAA, 2024 b).

The US Army Corps of Engineers (USACE) has developed data specific to the Trinity River in the TSI study area. In 1988, USACE produced a Final Regional Environment Impact Statement for the Trinity River and its tributaries. The environmental impact statement identified the impact of proposed development along the Trinity River corridor. The report found that, if unmanaged, damages from depleted valley storage could total over $11 billion dollars (USACE, 1988). When presenting this data, the study team should highlight the long-term savings and benefits of investing in preventive measures compared to the costs of responding to and recovering from floods.

Economic data also can promote the benefits of green stormwater infrastructure. The Nature Conservancy in conjunction with Texas A&M AgriLife conducted a study to determine where green stormwater infrastructure can most effectively enhance urban flood management within the city of Dallas. The study considered capacity, cost, and future impacts of climate change. The study evaluated opportunities to enhance flood management where the existing drainage network may be limited. The study concluded that green stormwater infrastructure reduced modeled overflows and was over 70% less costly than gray infrastructure, with the greatest return on investment from green stormwater infrastructure produced by bioretention (The Nature Conservancy, 2023). Promoting findings such as this will validate the worth of investing in green options.

Highlight best practices and guidelines

The National Flood Insurance Program outlines best practices and guidelines to reduce flood risk and promote community resilience (FEMA, 2005). One fundamental recommendation is the adoption and enforcement of effective land-use planning measures to steer development away from high-risk flood areas. The National Flood Insurance Program emphasizes the importance of open space preservation, encouraging communities to designate floodplain areas for recreational purposes or as natural buffers to absorb excess water. Effective public information and outreach campaigns are also integral, promoting awareness of flood risk, insurance options, and emergency preparedness. Additionally, the National Flood Insurance Program advocates for the implementation of building codes that incorporate flood-resistant construction techniques and elevation standards to safeguard structures from potential flood damage. These best practices collectively contribute to fostering a culture of flood risk awareness and proactive mitigation within communities participating in the National Flood Insurance Program.

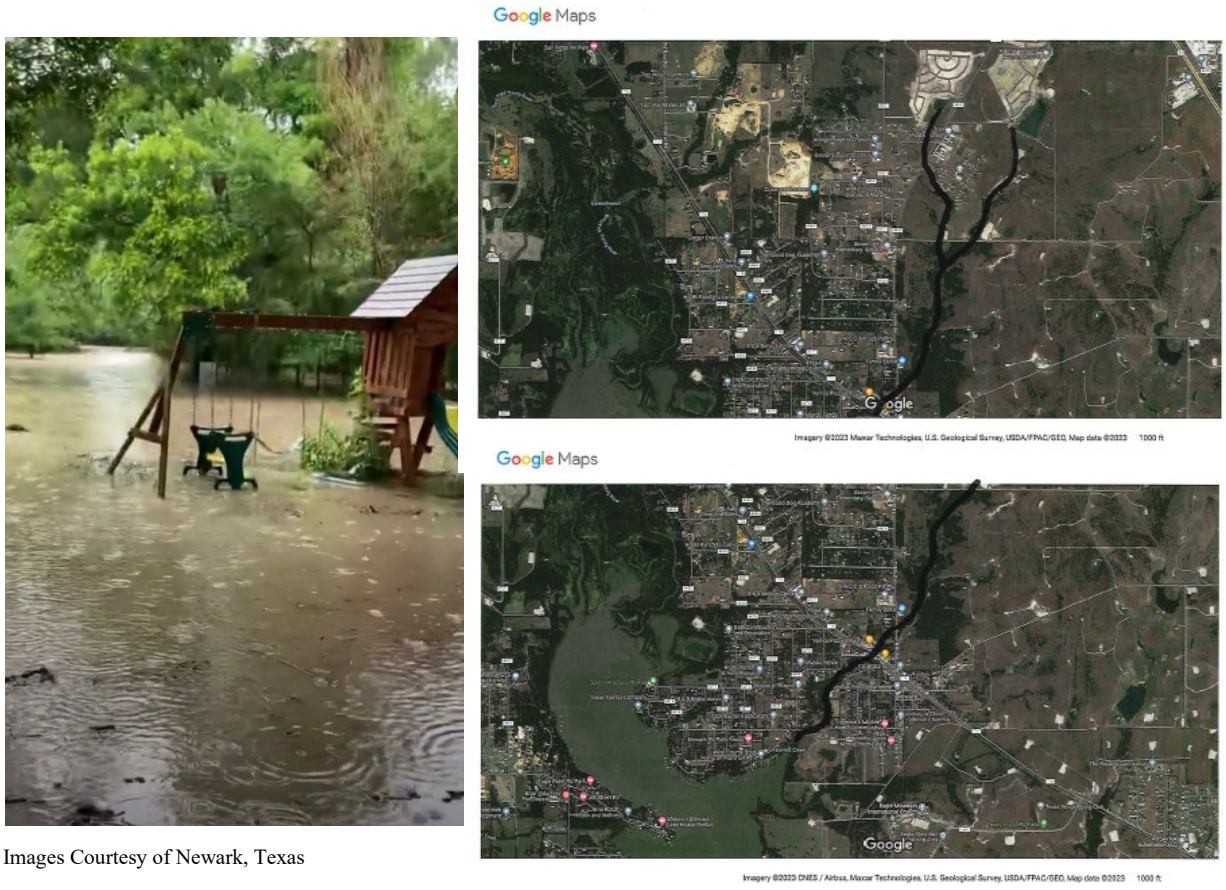
When researching how communities are exceeding National Flood Insurance Program requirements, NCTCOG conducted a survey of the cities within the study area to identify similarities of best practices (see 2.3.5). The survey showed that when complying with National

Flood Insurance Program requirements, communities favored freeboard to exceed minimum requirements. Freeboard refers to the amount in feet a structure is built above the flood elevation (FEMA, 2020 a). By incorporating a margin of freeboard above the expected flood elevation, communities ensure that developments have an additional buffer to withstand unexpected water elevations above the flood height. Having communities incorporate freeboard into their local ordinances protects them from variations within flood-prone areas.

Share case studies and success stories

Sharing case studies within the study area will help communicate relevant challenges and opportunities from neighboring jurisdictions that are facing development pressures or have implemented successful green stormwater infrastructure and flood control projects. As the study team conducts site visits to local governments, the team can track each jurisdiction's highlights, challenges, and lessons learned. This information can be shared in print and digital format. Local governments already have shared narratives about development pressures and flooding (Figure 2-2). As the study team meets with the other local governments, stories and images like the ones already shared could be more persuasive than datasets and projections.

Figure 2-2. Flooding in Newark, Texas, and Illustration of a New Development's Spatial Relationship to Water Bodies



Images Courtesy of Newark, Texas

2.4.5 New Resources

New resources may be required to persuade local staff and elected officials about the need to reduce flood risk. Base Level Engineering and 1D and 2D hydraulic modeling can provide up-to-date and detailed information on flood-prone areas. Geographic Information System platforms, like ArcGIS, enable users to create interactive maps to visualize flood risks, helping local staff and elected officials to understand the potential impact development may have on their surroundings. A combination of technological advancements and tailored stakeholder engagement efforts will benefit efforts to communicate flooding risks.

Base Level Engineering, 1D, and 2D Modeling

Base Level Engineering is a modeling and mapping approach that provides flood hazard data at various geographic scales such as the community, county, watershed, and state. This data is meant to complement the current effective Flood Insurance Rate Map data. For areas where no flood hazard data exists, the Base Level Engineering dataset may be the only source of flood risk data (TWDB, n.d.). When communicating flooding risks to local staff and elected officials, Base Level Engineering provides a foundational understanding of existing structures, drainage systems, and vulnerabilities. This can empower staff and elected officials to prioritize investments in infrastructure improvements, enact effective land-use policies, and implement emergency response plans tailored to the specific challenges identified through base level engineering. FEMA's Estimated Base Flood Elevation (estBFE) Viewer allows users to interact with a mapping tool that displays flood risk and and estimated base flood elevation – the approximate elevation flood water will reach during a 1% storm event (FEMA, n.d. a). The study team could develop scenarios that guide users through this tool to educate local governments about their flood risk. Data currently is unavailable in part of the study area.

Hydraulic 1D and 2D modeling can incorporate future conditions to convey where flooding may occur under growth and precipitation scenarios. 1D modeling focuses on linear representations to show the flow of water along a single line, typically rivers, streams, or drainage systems. This allows for a comprehensive visualization of the water's movement (USACE, 2021). 2D modeling introduces the lateral movement of water, showing flood scenarios across a floodplain (USACE, 2021). By utilizing these models, communities can see how water behaves when flooding occurs. The study team can present these future scenarios to local government staff and elected officials so they can identify vulnerable areas and understand the impact of floods. Integrating 1D and 2D modeling as communication tools empowers communities to make informed decisions and take a more proactive approach to mitigating flood risks.

ArcGIS StoryMaps

ArcGIS StoryMaps is a web-based application designed by Esri to create interactive narratives blending maps, images, videos, and text. In the context of community engagement, the application serves as a powerful tool to communicate information about projects, initiatives, or issues in a visually compelling manner (ESRI, 2022). By leveraging GIS technology, StoryMaps provides context that aids community members in understanding geographical aspects. Its multimedia integration facilitates dynamic presentations, ensuring accessibility and appeal. This platform can help the study team raise awareness by offering an accessible and shareable format for project documents and findings – and even video of flooding as it occurs.

Frequently Asked Questions

As the study team visits jurisdictions, they expect some questions to be repeated from jurisdiction to jurisdiction. The team can develop a Frequently Asked Questions publication to educate local government staff and elected officials about the study.

2.4.6 Checklist Content

The study team will engage in the following practices to ensure outreach to local governments is effective and tailored to each local government. Initial efforts will target local government staff, so these staff will be informed about TSI before the study team attempts to engage elected officials. This content is included as a checklist in **Appendix 4** to guide the study team as they prepare for outreach to local governments.

1. Include pre- and post-disaster staff in contact lists
2. Ensure contact lists are up-to-date
3. Contact staff prior to contacting elected officials (smaller cities may have minimal staff, leading to initial outreach to elected officials)
4. Contact staff via mail, email, and phone, and identify the preferred means of communication
5. Provide background information on TSI, such as the project factsheet and a link to the website
6. Schedule a meeting with the local government and request a windshield tour of flooding and development hotspots, sites where future parks or open spaces are desired, etc.
7. Review information on the city, town, or county that was gathered during the prioritization process (see 2.3, Appendix 2, and Appendix 3) and share with the local government as appropriate. Also consider sharing as appropriate:
    i. Data on return-on-investment of flood mitigation
    ii. Environmental Impact Statement for Upper Trinity River
    iii. National Flood Insurance Program requirements
    iv. COMMON VISION requirements
    v. Green stormwater infrastructure case studies and return-in-investment information
    vi. TSI deliverables' identification of potential mitigation projects and funding sources as it becomes available
8. Seek additional information about the local government prior to the meeting, such as:

i. Comprehensive plans and future land use plans

ii. Existing or upcoming drainage, stormwater, capital improvement, or other flood-related plans

iii. Thoroughfare plans

iv. Description of stormwater infrastructure and flood mitigation infrastructure

v. Hotspots for growth and employment

vi. Areas the jurisdiction would like to preserve for parks, open space, or environmental conservation

vii. Culturally important sites

viii. Low-water crossings

ix. Areas that flood repeatedly

x. Existing detention ponds or constructed wetlands

xi. Local governments' floodplain regulations, if not identified in Appendix 3 of the Stakeholder Engagement Plan

xii. Meeting location's access to Wi-Fi and projection equipment

9. Develop a custom presentation for the local government utilizing information gathered by the study team (see section 2.3), and information provided by the local government in #8 (in 2.4.6)

10. Prepare custom follow-up questions to pose during the meeting; questions should be based on information provided in #8 (in section 2.4.6). These questions may include:

    i. From whom the jurisdiction seeks technical advice currently or previously

    ii. Their level of communication with soil and water conservation districts, Texas A&M AgriLife Extension Service, and engineering companies

    iii. Their familiarity and interest in the Corridor Development Certificate Process that promotes higher standards for floodplain management

During the site visit, the study team should take notes and photos of flooding hotspots and other information, making sure to record locations of flooding hotspots.

2.4.7 Outreach to Rural Local Governments

Rural communities face equity issues, as noted in section 2.3.1. The study team will prioritize outreach to rural interests.

FEMA's "A Guide to Supporting Engagement and Resiliency in Rural Communities" makes important points the TSI study team will consider (FEMA, 2020 b). The guide describes resilience priorities that may be more important than flooding, such as access to healthcare and jobs. It notes the importance of building trust and strategies to do so. The outreach team should:

- Look like the people in the community and share similar life experiences to build credibility.
- Keep promises by saying what they are going to do, and then doing it.
- Be emotionally invested in the community and discuss trust and credibility.
- Listen to the community discuss their priorities and identify how the projects can support those priorities.
- Engage the community in developing meeting agendas.
- Send materials to the community so they can review before the meeting.
- Know that local leaders wear multiple hats.

A discussion of additional rural stakeholders is found in section 5.

2.5 Following Up After Outreach to Local Government Staff

After meeting with local government staff, the study team will seek a meeting with elected officials, if not present at the initial meeting. The team also will provide follow-up communications to staff.

The study team will seek meetings with individual elected officials, mayors' groups, or opportunities to present to city councils or county judges and commissioners. These meetings should be planned more than once over the course of the TSI study because of turnover in elected officials following elections.

Follow-up communications to local government staff could include quarterly newsletters, educational toolkits, and regular promotion of TSI activities such as study updates, Technical Advisory Group meetings, workshops, and sub-area meetings. Communications also could include a factsheet, video, or other summary of the findings from both the research the study team conducted prior to the visit and information gathered during the visit. This information could be shared with the community to promote project buy-in. It can also be incorporated into the project StoryMap.

3 Business Stakeholders

The study team must engage developers and other business interests associated with development. Development and the resulting increase in impervious surfaces are a driving force behind increasing flood risks. Other business stakeholders include the real estate and insurance sectors. The study team will engage developers, chambers of commerce, and NCTCOG's Economic Development Department (see section 3.4) to begin to develop a TSI business stakeholder contact list and identify opportunities to reach out to business stakeholders. Such

opportunities may include developing a business stakeholder advisory group, attending stakeholder meetings that already take place, and using resources that already exist to communicate flood risk messages.

A model for such engagement is the Urban Land Institute's partnership with the Southeast Florida Regional Climate Compact. This partnership evaluated the economic return-on-investment of infrastructure improvements to increase resiliency to sea level rise and flooding. The study identified a positive return on investment when the real estate sector developed resilient infrastructure (Southeast Florida/Caribbean ULI, 2024).

3.1 Development Sector

The TSI study team sought assistance from the Urban Land Institute and local governments on a plan to engage the development sector. This sector is not a typical stakeholder for the agency. Initial communications have yielded a path forward for engaging the development sector, which is essential to the success of the study.

3.1.1 Mini Technical Assistance Panel

NCTCOG, which leads stakeholder engagement for the TSI project, sought assistance from the Urban Land Institute Dallas-Fort Worth in engaging developers. The Urban Land Institute selected the TSI project for a Mini Technical Assistance Panel for Spring 2024. Members of the Urban Land Institute who are participating in a leadership class participated in the panel. They developed recommendations for the study team to engage developers. The members created the following roadmap:

1. Stakeholder Identification/Outreach
    i. Identification of the "Development Community"
    ii. Communication/Collaboration Options
2. Stakeholder Concerns/Obstacles to Voluntary Adoption and/or Developer Support for Green Infrastructure Alternatives
    i. Conduct Preliminary Survey
    ii. Perceptions
    iii. Communication/Education
    iv. Uncertainties (Cost, Timeline, Liabilities)
3. Strategies to Meet Obstacles
    i. Education
    ii. Simplification/Tools

iii. Incentivization

iv. Limit Liability

4. Roadmap for Continued Engagement

    i. Share Results of Preliminary Survey

    ii. Provide Resources to TSI Study team to Aid in Their Engagement with Development Community

The Urban Land Institute members compiled a directory of development-related stakeholders and organizations and recommended strategies to engage these stakeholders. Strategies ranged from panel discussions and other educational opportunities to a certification of green infrastructure or low-impact development in North Texas to a university "hack-a-thon" where student teams address TSI-related scenarios. The members suggested the TSI study team present the study to these stakeholders' conferences.

A preliminary survey distributed to contacts of the Urban Land Institute members identified challenges the TSI study team must overcome in persuading the development community to support TSI initiatives, including a lack of awareness of flooding and its watershed scale; negative perceptions of green stormwater infrastructure; and liabilities the development community would face related to space, cost, and legalities.

The Urban Land Institute members provided strategies to address these challenges, including case studies with hard data on effectiveness and cost benefits of green stormwater infrastructure; development patterns that reduce the financial and spatial impacts of green stormwater infrastructure; partners that could assist developers; and opportunities for developers to be recognized for implementing such infrastructure.

The TSI study team will work to implement the Mini Technical Assistance Panel's recommendations.

3.1.2 Additional Dialogue

Study partners also are engaging with the city of Fort Worth's existing developer stakeholder group to begin making connections with developers. An initial recommendation was to form a stakeholder advisory group. The study team will seek dialogue regarding the following questions:

- What challenges do developers face in the TSI study area?
- What knowledge and experience do development stakeholders have related to implementing green infrastructure?
- What data or incentives would development stakeholders require to implement green infrastructure in developments?

3.2 Real Estate Sector

State law, online real estate platforms, and continuing education are ways the real estate sector engages with floodplain management. The study team has identified strategies to further engage real estate professionals.

State law has led the real estate sector to communicate property flood risk to potential buyers. In Texas, sellers and landlords are required to disclose information about the property's flood risk (State of Texas, 1993 and State of Texas, 2022). Some real estate platforms are utilizing technology to communicate this information early in the buying process. Realtor.com, for example, includes environmental risk data for each property on the site. The site identifies the severity of the property's flood risk, whether that flood risk is increasing, the FEMA flood zone for the property, and whether the property requires flood insurance to be eligible for a mortgage. An article on the platform describes how buyers can use this information (Realtor.com, 2023). The information is provided by Risk Factor; this company models the financial cost of climate change for individual properties. For a fee, Risk Factor provides products for real estate agents, insurance agents, and mortgage lenders (First Street, n.d.).

Real estate professionals must complete continuing education. Professionals can select training via a Texas Real Estate Commission website with links to licensed providers of such training (Texas Real Estate Commission, n.d.). Training courses cover required education on legal updates and contracts plus electives relevant to TSI, such as asset management, environmental hazards, sustainability, and land use.

Engaging with the real estate sector offers an opportunity to indirectly inform potential buyers about a property's flood risk. The study team will consider the following possibilities to engage with the real estate sector:

- Develop a contact list that may include representatives from active real estate associations (e.g., The Real Estate Council and MetroTex) and real estate companies that are active locally (e.g., RE/MAX and Ebby Halliday).
- Identify meetings hosted by real estate associations and/or other organizations targeting real estate associations that the study team could attend to share information (e.g., Women in Real Estate).
- Host a workshop or webinar to educate real estate professionals. The event could include information from resources that already exist, such as FEMA's Real Estate Agent Toolkit (FEMA, n.d. b). The study team would need to identify a way to attract the real estate sector to attend a workshop/webinar. Real estate professionals are required to receive training to renew their license; however, the training must be approved by Texas Real Estate Commission and delivered by licensed providers.
- Seek information from the real estate sector on how the study team can support the sector's efforts in informing potential buyers about a property's flood risk. Ask questions to identify knowledge gaps, opportunities, challenges, and barriers to equality.
- Develop educational materials based on information received from the real estate sector.

- Identify real estate agents who may be willing to provide flood risk communication to potential buyers and follow their efforts for a case study.

3.3 Insurance Sector

Flooding is one of several factors that is leading to increasing insurance rates in North Central Texas and across the nation. Texas has the fifth-highest average home insurance cost of any state in the US, and some insurers are no longer doing business in the state (Texas Real Estate Source, 2024). The insurance sector has a vested interest in reducing future flood risks. Clients rely on insurance agents to inform them of potential risks to their current or prospective home, including those related to floods (FEMA, 2023 b). Insurance agents also assist clients with the recovery process after a flood (FEMA, n.d. c).

The insurance sector plays an important role in communicating flood risks that occur outside FEMA's Special Flood Hazard Area, where the purchase of flood insurance is not required of homeowners who have a mortgage from federally backed or federally regulated lenders (Risk Factor, n.d.). While insurance is not required in these areas, approximately 40 percent of all National Flood Insurance Program flood insurance claims from 2014 to 2018 were filed by policyholders outside the Special Flood Hazard Area (FEMA, n.d. d). This statistic should be communicated to clients; however, the cost of insurance may be a barrier among low-income households.

FEMA developed two-part training for property and casualty insurance agents. This training covers the National Flood Insurance Program and topics required related to the Flood Insurance Reform Act of 2007 (FEMA, n.d. e). FEMA provides additional resources at its Flood Smart website to help insurance agents communicate flood risks and insurance requirements to clients (FEMA, n.d. f).

Any licensed property and casualty insurance agent can sell flood insurance and must complete continuing education as directed by the Texas Department of Insurance (Texas Department of Insurance, n.d.). Only approved courses offered by registered providers can provide continuing education credits (Texas Department of Insurance, 2022). FEMA's two-part training is approved for credits in Texas.

Engaging with the insurance sector offers an opportunity to indirectly inform potential buyers and current owners of flood insurance requirements and flood risks. The study team will consider the following possibilities to engage with the insurance sector:

- Develop a contact list that may include representatives from active insurance agent associations (e.g., Independent Insurance Agents of Texas, Professional Insurance Agents of Texas, Insurance Council of Texas, etc.) and insurance providers that are active locally. A list of participating National Flood Insurance Program providers can be found at on FEMA's Flood Smart website (FEMA, n.d. g).
- Identify meetings hosted by insurance agent associations that the study team could attend to share information.

- Promote the resources that FEMA has available to educate insurance agents on flood risks and insurance requirements. Determine the feasibility of hosting a workshop or webinar in partnership with FEMA.
- Seek information from the insurance sector at this workshop/webinar on how the study team can support their efforts in informing clients about a property's flood risk. Ask questions to identify knowledge gaps, opportunities, challenges, and inequality barriers to the purchase of flood insurance (e.g., affordability, etc.).
- Develop/provide follow-up materials/education from this input.
- Identify a few insurance agents who may be willing to provide flood risk communication to clients and follow their efforts for a case study.

3.4 Economic Development Department

The study team will coordinate with the NCTCOG's Economic Development Department to engage business stakeholders relevant to TSI. The Economic Development Department supports partnerships between the public and private sectors to engage in collaboration and cooperative economic planning. Efforts are led by the public and private economic development officials who serve on the board of the North Central Texas Economic Development District (NCTCOG, n.d.). They follow the Comprehensive Economic Development Strategy, a plan for economic development (NCTCOG, 2022 b). The plan identifies critical focus areas for attracting and retaining economic development. Two of these areas are relevant to TSI: maintaining and improving robust transportation and public infrastructure and maintaining and improving quality of life. The plan describes economic resilience and identifies floods as a potential major disruption to economic resilience. A number of the plan's goals and objectives are relevant to TSI, including:

- Support NCTCOG Transportation Department's planning efforts and activities as the Metropolitan Planning Organization
- Support NCTCOG Environment and Development Department's plans to improve infrastructure, reduce costs, and maintain economic competitiveness through the Development Excellence program
- Support and convey watershed initiatives that support strategic conservation of open space, provide a network of improved ecosystem benefits, reduce flood risks, provide recreational opportunities, and encourage efficient water use
- Support local and regional planning efforts, including development of integrated community/county land use, transportation, and economic development plans
- Support local efforts to replace and upgrade aging infrastructure throughout the region
- Advocate for continued upgrading of critical infrastructure in the rural areas of the North Central Texas region
- Support the development of the region's infrastructure to meet the demands of growth and new technologies

- Promote reinvestment and redevelopment in areas with existing infrastructure, ensure that new infrastructure supports orderly and sustainable growth and provide coordinated regional systems of natural and built infrastructure
- Protect, retain, or enhance the region's important natural assets, including its air, water, land, and forests, and integrate these natural features and systems into the character of the region's communities and the experiences of its residents
- Achieve the region's vision by adoption of compatible comprehensive plans and ordinances for cities and consistent investment plans for regional systems; involve citizens and stakeholders in all aspects of these planning processes

4 Rural Interests

Study partner Tarrant Regional Water District will lead efforts to connect with rural stakeholders because of the water district's existing connections with these stakeholders. The study team will identify existing meetings these stakeholders already attend and seek to have a TSI presentation included in these meetings. Outreach efforts must consider the growing season to ensure best possible turnout at the meetings. Presentations must be customized to the rural audience; presentations created to-date have been geared toward government employees and elected officials and will require modification.

Potential stakeholders include:

- Texas A&M AgriLife Extension Service
- Soil and water conservation districts
- Texas Parks & Wildlife Department – Wildlife Division
- Natural Resources Conservation Service county offices

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