SUMMARY

TSI Technical Advisory Group Meeting
Friday, October 25, 2024
10:30 AM – 12:00 PM, Virtual Meeting via Microsoft Teams

integrating **Transportation & Stormwater Infrastructure**

https://teams.microsoft.com/l/meetup-join/19%3ameeting_YTNiZThmYWUtYTEyMy00Y2ZlLTljZjgtZWNiMThmOGQ0MDhl%40thread.v2/0?context=%7b%22Tid%22%3a%222f5e7ebc-22b0-4fbe-934c-aabddb4e29b1%22%2c%22Oid%22%3a%22fef9df7e-b27d-4225-9db6-9edfd4cbfb51%22%7d

Meeting ID: 240 787 317 493
Passcode: auzLsp
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Phone conference ID: 940 809 598#

I. Recap May 6th Meeting

Jai-W Hayes-Jackson reviewed the meeting notes from the May 6th meeting and progress that has been made over the last five months. In September, NCTCOG and study partners conducted another round of subarea meetings with stakeholders. Technical work has also kicked off including additional H&H pilot studies, the optimization study, and the stacking model.

II. Update on Current Project Progress

Kate Zielke shares that contracting is ongoing for the North Study Area, which includes Denton County and the northeast portion of Wise County. The contract with the Texas General Land Office (TX GLO) was executed in June. NCTCOG requested proposals for H&H, transportation planning, and environmental economics services in July; Highland Economics was awarded the environmental economics services and Halff Associates was awarded the H&H and transportation planning. Contracts are being negotiated for both entities. As for the current study partners, NCTCOG is aiming to have all partners under contract by December.

For the West Study Area, NCTCOG has received contract extensions from both the Texas Department of Transportation (TxDOT) and Texas Water Development Board (TWDB). TWDB has approved the partner contract extension language and NCTCOG expects to have the contract extensions completed by December.

III. Outreach to Local Governments

a. Equity Based Outreach Site Visits

Jai-W Hayes-Jackson overviews the work done on the $100,000 grant from FEMA to conduct equity-based outreach within the TSI study area. NCTCOG is prioritizing outreach to communities that have a high percentage of Communities of Color and Rural households. NCTCOG has met with nine communities and wants to meet with more.

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So far NCTCOG has met with 9 communities:

FEMA
- Fort Worth
- Ponder
- Wise County

TWDB
- Cross Timber
- Newark
- Paradise
- Springtown
- White Settlement

During our community visits, discussions focused on developer relationships and policy, growth challenges and opportunities, and green stormwater infrastructure (GSI). What many communities relayed to us is that relationships with developers vary and communities are changing their development criteria to remove grey areas and confusion. They are also concerned about the ETJ and Shot Clock legislation that take away their ability to control growth. Additionally, the study area is rapidly growing and urbanizing and each community is dealing with growth differently. Land availability is becoming more of a challenge and communities are starting to prioritize high-density developments. Communities struggling with future water supply are interested in incorporating GSI for aquifer recharge. Although communities think GSI is a good idea, they are concerned with how to maintain it and obtaining resources to do so.

IV. Technical Advisory Group Discussion Items

a. H&H Pilot Study Update

Matt Lepinski presented the progress made on the H&H pilot studies. Now that the study team is starting more analyses, we are starting to see synergies between the different fields of the study. The pilot studies are updating hydrology models that already exist from INFRM. The downside to the Trinity Watershed Hydrology Assessment is that the subbasins are large. The BLE has comprehensive stream and inundation mapping and modeling, so the hydrology needs to have some granularity. USACE has developed SOPs of the process to add details to the hydrology. USACE is about to kick off pilot studies on the Clear Fork and West Fork.

Eagle Mountain Lake initially only had two junctions with high quality flow data. USACE is adding detail to better align with the hydraulic data. The goal is to make the study replicable for others who would want to do something similar. TSI is making that data and methodologies available. Both the 1D and 2D data are available in study area and SOPs for the hydraulic work. USACE is partnering with

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TxDOT to get detailed bridge information that can be incorporated into the pilot studies.

The intent of the pilot studies is to create starting points for the accurate representation of current condition flooding and then add future land use and estimate future conditions. The final step will be to look at how flooding can be reduced if we incorporate TSI elements. In the North Study area, this work will kick off on the Pecan Creek pilot study.

b. Optimization Study Update

Dr. Nick Fang presented an overview of the results and methodology used for the optimization study. UTA is incorporating features from transportation planning and stormwater management into the modeling process. The assumption is that imperviousness will increase through 2070, creating more runoff. The goal of the optimization study is to identify where detention ponds, GSI and NBS solutions can be applied and best locations for them to reduce flood risk. UTA will use the suitability index developed by Dr. Fouad Jaber's group and USACE's modeling to identify the best locations and size for the solutions.

UTA can set up additional objective functions to identify the best locations. Dr. Fang shows the results of the optimization from the Eagle Mountain pilot area. This pilot area has 41 subbasin catchments and is about 75 square miles. The optimization was applied at different locations with about 40,000 HMS runs. The goal is to find a global solution and compare it to local solutions.

UTA tested the feasibility of 5 discharge limits. The goal is to protect these locations so the future peak flows do not increase. The model should show where we need to have more stormwater controls on the hydrologic side of the simulation. UTA is working with NCTCOG's Transportation team to prioritize bridge and culvert data, average daily traffic, and historical significance information. The model weighs those factors in the optimization process. In a month or two, we will have more refined answers using this information.

Jeff Neal is curious to see if any of the TAG participants care about other transportation factors such as detour links or functional classifications regarding traffic load.

Jerry Cotter asked if UTA has considered the impacts of the loss of valley and overland storage on discharges and flooding. Dr. Fang states that they have considered it but there is no way we can project 2070 loss of storage at this time. Jerry states that they could try to quantify it based on historical data and project that into 2070 but understands that is difficult to do. Dr. Fang agrees that as more work is done on this project, more questions will need to be addressed.

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c. Stacking Model Updates

Dr. Yufan Zhang explains the methodology regarding the stacking model. Texas A&M AgriLife is trying to identify the flood prone areas in the Eagle Mountain and Mary's Creek pilot areas including urban and street flooding. AgriLife is considering all the factors identified from the project literature review that could affect this flooding. The sources were taken from 30 papers from the past three years. The factors used to create the stacking models include environmental, socio-economical, infrastructural, and institutional categories. The stacking model returns a curve number based on land use, NDVI and soil type.

AgriLife has completed the model for current conditions and will use future land use, future NDVI, and predictions on future transportation corridors to calculate future information. The advantage of using GIS is that we can home in on roadways, addresses, and critical infrastructure locations that may be at high flood risk. This will allow us to prioritize locations and where to put GSI. Next steps will be how to design and maintain GSI. The next step is to set up a framework to help future planners do this from scratch. At the next meeting, there will be more details about how we use these factors and we will be able to show the final map and the current and future conditions.

d. Flood Warning System Coordination

Matt Lepinski overviews the work being done on flood warning systems. There is a lot of information from sensors on the local and federal levels and we need to figure out what the true intent of TSI should be on this task. We are looking at state-of-the-art technology that could enhance existing data and recommendations for new processes as well as investigating best practices on the meteorological and H&H sides. Some projections have helped in real-world situations such as a hospital in North Carolina being warned ahead of time that it would flood during Hurricane Helene and helicopters were staged to support successful evacuation. The National Water Model has historically been a courser effort using the HAND method, but recent advancement moving from RAS to FIM combines flood inundation mapping tools with HEC RAS to create flood inundation maps that can be incorporated into a tool. We can take 1D and 2D steady state analyses and combine them to form model-based inundations that can assist with forecasting.

At local level, communities are interested in getting more gauges. TxDOT And UT Austin's Streamflow III project is doing streamflow modeling. There is an option for low-cost gauges that can fill in gaps between more expensive USGS gauges. Realtime road flood inundation mapping can show information with a lot more fidelity than it has in the past. We have more data than in the past that we can use to save lives.

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e. Flooded Roads Information Systems Project
Jeff Neal shares that there is minimal funding available for TSI's Flood Warning System task and emphasizes building on existing systems. NCTCOG's Transportation Department sought additional funding through the SMART grant program but was not awarded the funding. However, they received $2 million from the Regional Transportation Council ($400,000 in Transportation Development Credits as match) in Surface Transportation Block Grant funds. This funding has been incorporated into the Transportation Improvement Program and will start work in 2025. The work scope enables the integration of existing systems and will review whether additional gauges are needed.

Lisa Biggs shares that the City of Fort Worth has tried to figure out how they can incorporate flood warning data information into Waze but has made little progress. They are interested in what the project can come up with that they can use. Lisa shares that TSI staff can talk to Ranjan Muttiah about the city's flood warning system. Jeff says the team will want to speak with City of Fort Worth and many others.

V. Next Steps and Upcoming Events

Floodplain Seminar for Elected Officials
November 1, 9:30-11:30 AM
NCTCOG Offices, Transportation Council Room, 616 Six Flags Dr, Arlington, TX 76011
Registration: https://www.addevent.com/event/Eb22200441