Integrated Stormwater Management (iSWM) Subcommittee Meeting

Staff Planner: Casey Cannon

January 12, 2022

North Central Texas Council of Governments
Environment & Development

Agenda

1. **Welcome and Introductions**

PRESENTATION/ACTION ITEMS

2. **Approval of October 14, 2021, Meeting Summary** A vote on the meeting summary as presented.
3. **Task Order 6 (Work Scope) Updates.** Task Order project updates by consultants Halff Associates.
4. **Discuss iSWM Outcome 17 (Water Quality) Process** Staff will update the Subcommittee on the status of this task.

INFORMATION ITEMS

5. **Regional Public Works Program Update.** NCTCOG staff will update IIS on the FY22 Regional Public Works Program.
6. **Total Maximum Daily Load Program Update.** NCTCOG staff will update IIS on the FY22 Total Maximum Daily Load Program.

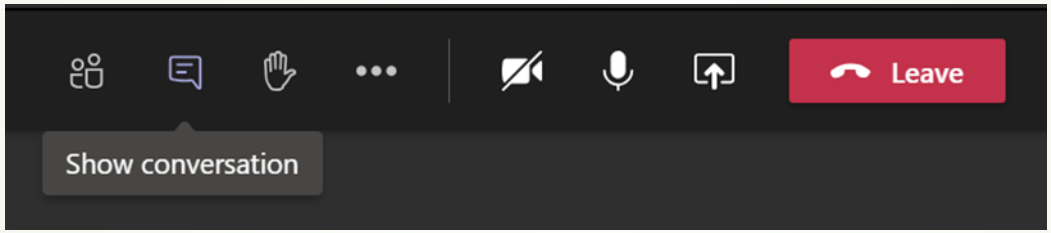
OTHER BUSINESS AND ROUNDTABLE DISCUSSION

7. **Upcoming Events and Conferences.**
8. **Future Agenda Items and Roundtable Discussion**.
9. **Schedule for the Next Meeting**. The next meeting is scheduled for April 6, 2022.

Adjournment

WELCOME AND INTRODUCTIONS

- The meeting agenda, presentation and handouts are located on the iSWM Subcommittee webpage - https://www.nctcog.org/envir/committees/public-works-council/iswm-implementation-subcommittee
- Please use the chat function to add your name and organization for attendance



- Approval of October 14, 2021, Meeting Summary

SUMMARY OF TASKS

- Task 2 – Reorganize/Re-evaluate Site Development Controls
- Task 3 – BMP Design and Maintenance Training
- Task 4 – Technical Manual Updates
- Task 5 – Guidance on Forebay Design
- Task 6 – Hydrologic Mimicry Research
- Task 7 – Technical Assistance for Case Studies/Outcome 17
- Task 8 – Benefits of iSWM

TASK 2 – REORGANIZE/RE-EVALUATE SITE DEVELOPMENT CONTROLS

- Draft of summary pages and vegetation tables have been made available for review, feedback will be received by **January 26th** and revised/returned by **end of February 2022**

Summary Pages in Site Development Technical Manual to be updated:

- Multi-Purpose Detention Areas
- Organic Filter
- Green Roof
- Proprietary Structural Controls
- Open Conveyance Channel

Vegetation Tables in Landscape Design Manual to be Updated:

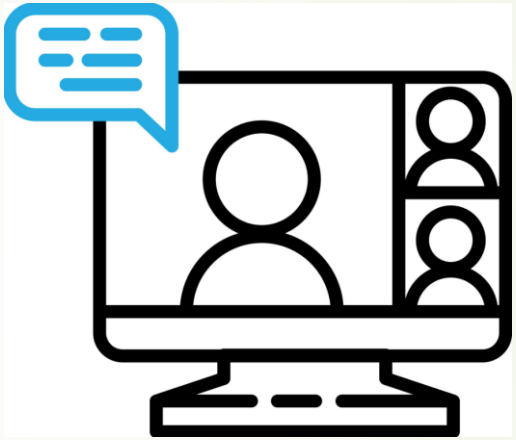
- Table 1.2 Wetland Plants
- Table 1.4 Commonly used species for bioretention
- Table 1.6 Common grass species for dry and wet swales and grass channels

- Final drafts will be presented prior to April subcommittee meeting

TASK 3 – BMP DESIGN & MAINTENANCE TRAINING

- Training was held December 9th
- Training Topic: Permeable Pavement design, construction and maintenance
- Roughly 70 attendees

- Thanks to Troy Dorman for the training!



TASK 4 – TECHNICAL MANUAL UPDATES

- Draft updates have been provided as well as a highlighted version of the changes:
  - Construction Controls Technical Manual
    - Section 3.9 Sediment Basin design
  - Hydraulic Technical Manual
    - Add guidance for calculations for an on-grade inlet for a parabolic crowned street.
  - Hydrologic Technical Manual
    - Revise wording in Section 1.3.7 Simplified SCS Peak Runoff section to refer to TR 55 for full description.
- If no comments are received by **January 26th**, this version will be considered final.

TASK 5 – GUIDANCE ON FOREBAY DESIGN

CHALLENGES

- Design forebay for wet ponds with pipe outfalls below the water surface
  - Energy dissipation
  - Sediment control
  - Maintenance required

OPTIONS

- Hydrodynamic Separator
- Tiered system using extended detention with the idea of creating micropool
- Underwater sediment forebay

PICTURE SOURCE: SARA LID MANUAL

TASK 5 – GUIDANCE ON FOREBAY DESIGN

NEXT STEPS

- Develop guidance document, containing pros and cons associated with approved method(s)
- Initial draft will be presented prior to April subcommittee meeting.

PICTURES SOURCE: SARA LID MANUAL

TASK 6 – HYDROLOGIC MIMICRY RESEARCH

CRITERIA MANUAL CONTEXT

1.0 Overview of iSWM Criteria Manual

•1.1 Introduction – Goals and Applicability

2.2 Steps in the Development Process

•Step 2 – Collect Data and Perform Site Analysis

•Step 3 – Prepare Conceptual/Preliminary iSWM Plans

3.2.2 Option 1: *integrated* Site Design Practices and Techniques:

•Conservation of Natural Features and Resources

3.5.2 Flood Mitigation Design Options

•Option 3: In lieu of a Downstream Assessment, Maintain Existing On-Site Runoff Conditions

TASK 6 – HYDROLOGIC MIMICRY RESEARCH

TECHNICAL MANUAL CONTEXT

iSWM Technical Manual – Planning

- 2.2 *integrated* Site Design Practices

iSWM Technical Manual - Hydrology: 1.0 Hydrological Analysis

- 1.0 Hydrological Analysis
- 4.0 Water Balance
- 6.0 Hydrologic Soils Data

Feedback:

- Please review memorandum and provide feedback; feedback needed by January 31, and final drafts will be presented ahead of April subcommittee meeting

TASK 7 – TECHNICAL ASSISTANCE FOR CASE STUDIES

- On call capacity to assist NCTCOG with case studies
- Developed list of potential case study topics for consideration

TASK 8 – ECONOMIC BENEFITS OF iSWM

KEY CONSIDERATIONS

Development of educational document:

•Focus on non-technical document to inform regional leadership

•Emphasize holistic impacts long term for different scales of implementation stressing value of full regional participation

•Include commentary and summarized case studies from participating communities

Feedback:

•Please review and provide feedback; feedback needed by January 31, and final drafts will be presented ahead of April subcommittee meeting

TASK 8 – ECONOMIC BENEFITS OF iSWM

North Central Texas Council of Governments

Stormwater Management

Regional Impact

The health and viability of our region is dependent on the health and viability of our streams, soils, and water bodies. Without safe, clean, and reliable water, our social and ecological systems are negatively impacted.

When rainwater falls, it eventually finds its way into streams and water bodies. Where it ends up is determined by the contours of the land, and how clean it is depends on our treatment of the land between rainfall and water source.

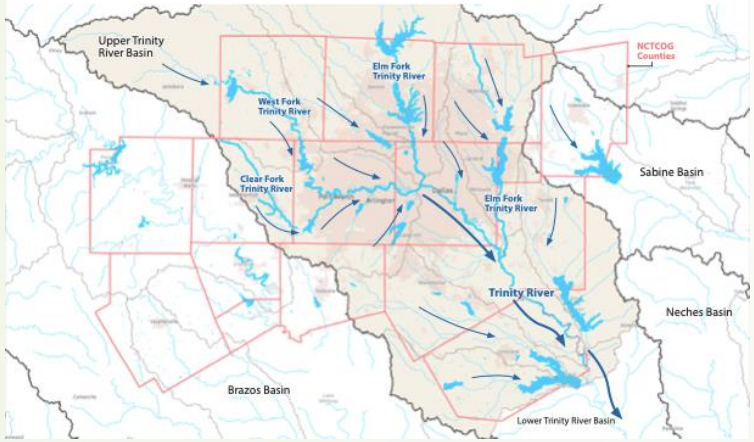
Crucially, watersheds span municipal boundaries. What happens upstream in our watershed does not just flow "away;" it has an impact downstream, with regional consequences.

It is therefore critical that action to protect and restore the health and safety of our water resources be coordinated at the regional level. The threats posed by degraded water quality, as well as the benefits provided by maintaining healthy water resources, are both regional in scale.

The regional impact of impaired waterways due to development is not abstract. Large amounts of impervious surface, such as pavement and buildings, lead to degraded water quality, air pollution, intensified heat waves, increased frequency and intensity of flooding, groundwater depletion, biodiversity loss, and higher carbon emissions. Streams and lakes become off-limits to recreation, instead of priceless quality-of-life amenities.

Each of these impacts carry price tags for municipalities, residents, and businesses that only rise as problems worsen. With an additional 3.5 million people expected to move to the region by 2045, the stress on our water resources will only compound with intensified development.

The good news is that when employed systemwide, green stormwater infrastructure offers a way to sustainably absorb population growth, improve the health and stability of the overall region, and generate places that are more human-friendly and economically vibrant. An integrated stormwater management system does much more than "green" our stormwater infrastructure. It is a multifunctional good: an economic asset, a boost to cost-effectiveness and water resource reliability, a climate mitigation strategy, a recreational outlet, and a life-support system.



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Stormwater Management

Cost Savings

Not only does green stormwater management contribute to beautification, recreational opportunities, and a healthier natural environment; it can bring significant cost savings for local governments (and ultimately, businesses and residents) over the long term as well. Green stormwater infrastructure has been found, through many research studies and municipal programs, to be both less costly and more cost-effective (that is, providing greater value in benefits for relatively lower costs) over the long term than equivalent grey infrastructure.

Construction & installation costs

Construction and installation of green stormwater infrastructure at sufficient scale may be 15 to 80 less expensive than conventional stormwater infrastructure, according to U.S. EPA.

Other reduced costs associated with GSI can include reduced land acquisition costs and reduced off-site costs imposed on others.

Maintenance intensity

While GSI methods may require more frequent maintenance than conventional stormwater infrastructure, they are much less intensive and expensive than maintaining high-cost built systems.

Widespread use of GSI can reduce overall runoff volume, thereby lowering costs (such as construction and maintenance of pipes and outfalls) associated with pumping runoff to a treatment plant or discharge area.

Flood damage

The integrated stormwater approach reduces peak runoff flow by infiltrating and retaining stormwater to mitigate downstream flood damage. The more stormwater that is allowed to infiltrate (or be harvested for reuse) upstream close to the source, the less the impact downstream will be. Therefore, targeted applications dispersed throughout the community add up to protect from serious damage, on top of the added social benefits of having neighborhood green space.

Energy costs

Energy costs can be lowered with green infrastructure applications.

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Stormwater Management

Public Health

Well-integrated green infrastructure can be a positive contributor to public health. Improved air and water quality, moderated climates, reduced stress levels from exposure to greenery and the noise reduction provided by vegetation, and increased opportunities for recreation all have an impact on long-term illness and cost to health services and the public.

Impervious surface reduction

In urbanized settings, impervious surface poses a threat to water and air quality, and it worsens the urban heat island effect. Green infrastructure reverses the trend, making urban environments safer and healthier.

- Research shows that water quality becomes degraded when an area's impervious surface exceeds 10 percent.
- GSI helps manage pollution from runoff in a less costly and more cost-effective manner, while allowing cities to minimize impervious surface and boost vegetation.

Urban heat

Buildings, rooftops, and pavement absorb heat from solar radiation and release it continuously, so that air temperatures are elevated day and night. In summer, heat waves are exacerbated, causing stroke and even death among more vulnerable individuals. More people die yearly from heat waves than any other extreme weather event.

High air temperatures can accelerate smog and ozone formation, which can damage the lungs, trigger asthma attacks, and lead to the development of asthma in children.

- Studies show even small temperature reductions a positive impact on human health in urban environments.
- Vegetation cools the surrounding air through evapotranspiration. Shade from trees keeps surface temperatures lower; on a 100-degree day, unshaded blacktop can reach 160 degrees.
- Vegetation cleans the air, removing air pollutants such as nitrogen dioxide, sulfur dioxide, ozone, and even particulate matter. These pollutants contribute to and worsen respiratory diseases.

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Stormwater Management

Climate

Green infrastructure is vital to both mitigating and adapting to the worst effects of climate chaos, which intensify weather patterns and threaten local resources and human health.

Heat

Investing in large-scale, high-quality GSI can produce a kind of natural air conditioning for urban area, which suffer from heat island effects due to extensive pavement, which absorbs heat more readily than any natural landscape.

- The microclimate control benefits—due to both shade and evaporative cooling—from trees and green space can be significant in developed areas, and can contribute lower energy use for heating and cooling for residents and businesses.
- Street trees cool and clean the air and cools pavement that would otherwise be absorbing direct sunlight and radiating heat day and night.
- Reducing urban air temperatures also decreases smog; a 1-degree temperature decrease can make the air 3 percent less smoggy.

Flooding

Heavy downpours have increased in both frequency and intensity over the past half century, and this trend is predicted to continue as global temperatures rise. Cities of all sizes are perpetually at risk for extreme flooding, as the average 100-year floodplain is expected to grow by 45% by the end of this century.

- At a large scale, integrated stormwater management reduces stormwater runoff and preserves floodplain, helping protect surrounding areas from localized and river flooding.
- Restoring and preserving natural stormwater flow reverses the trend of pushing the worst effects downstream.

Drought

Climate change is stressing fragile local water supplies as drought intensifies. When it does rain, impervious surfaces carry this scarce resource away, discharging directly into water bodies and storm drains. Worsening heat also contributes to large increases in evapotranspiration.

- Rain gardens, green streets, and other GSI types let rainwater soak into the ground, replenishing local groundwater and storing it for when it is most needed.
- At a smaller scale, rainwater can be harvested for reuse, saving the need for water brought in from offsite for irrigation or potable uses. As much as 75 percent of the rain that falls on a rooftop can be captured and reused.
- Steady groundwater supplies are necessary for drinking water and irrigation; they also provide essential baseflow for rivers and help maintain water levels in wetlands and lakes.

Carbon

Extensive green infrastructure networks can provide carbon storage and sequestration through soil and biomass. The greatest contributors are intact natural systems such as grasslands, woodlands, and wetland networks, but even smaller installed applications provide significant benefits over grey infrastructure.

- One study found significant carbon footprint mitigation from bioretention basins (70%), green roofs (68%), and vegetated swales (45%).

DISCUSSION OF OUTCOME NO. 17 - WATER QUALITY

Background: In 2014, the iSWM contractor was tasked with meeting with community members. NCTCOG learned that communities did not like the point system, and that the pass/fail grade was perceived as a barrier to communities becoming certified. The subcommittee determined that the point system would not be used moving forward. It was recommended that the water quality option 1 be revised or replaced.

17	Water Quality Protection				Require integrated site design practices; treat the water quality volume; and/or enact regional water quality programs	Section 1.3, Table 1.3; Section 3.2

Status of Review

- Staff and a volunteer subcommittee met to discuss possible options for moving forward
- Volunteer members recommended asking the consultants, Halff, to review and come up with one or two options for their review.
- Halff has been reviewing options and will bring potential language forward to the volunteer members for discussion and review.

Documents being considered

- Outcome 17 - Criteria manual, Section 1.3 page 4, 3.2 page 18 and, table 1.3 page 6
- iSWM Implementation Tiered Measurement Form
- Certified iSWM community's implementation of outcome 17

DISCUSSION OF OUTCOME NO. 17 - WATER QUALITY

Goal: Specific goal is to clarify language and to define what is required to qualify for each tier.

Status of Update

- Halff has reviewed options and discussed with volunteer group.
- Volunteer members to review and provide any feedback on general proposed direction.
- Initial draft will be made available for review by the end of January 2022.
- Intent is to finalize language before the April 2022 meeting.

ISWM PROGRAM UPDATES

Virtual BMP Training

- On December 9th, 2021, Halff hosted a Virtual BMP Training on Permeable Pavement Design, Construction, Inspection, and Maintenance. The presentation slides will be uploaded to the iSWM website.

Volunteers for Potential Certification Review

- Please let us know if you are interested in volunteering for potential iSWM certification reviews this year.

PUBLIC WORKS PROGRAM UPDATE

- Sustainable Public Rights-of-Way Subcommittee (SPROW), February 8h 1:30pm
  - Discussing utility BMPs for the Utility Coordination chapter of the BMP Guidebook

- Standard Drawings Subcommittee, January 10th , 10am
  - Reviewing Division 4000 and 5000

- Public Works Council (PWC), February 17th, 9:30am
  - Cost share invoices were mailed to all cities in the NCTCOG region
  - Reviewing Divisions 2000 and 6000 of the Standard Drawings

For more information on the Public Works program please contact Olivia Kale at okale@nctcog.org or (817) 695-9213.

PUBLIC WORKS PROGRAM UPDATE

- Upcoming trainings and event:
  - Planning for Public Works Roundup, New Inspector Training, and Construction Contracts Administration Workshop is underway.

For more information on the Public Works program please contact Olivia Kale at okale@nctcog.org or (817) 695-9213.

TMDL PROGRAM UPDATE

- New Available Resources:
  - *"What is a Total Maximum Daily Load?"* educational explainer video,
  - On-Site Sewage Facility (OSSF) Social Media Toolkit,
  - *"What is a Total Maximum Daily Load? A guide for understanding TMDLs and their importance to the North Central Texas Region"* tri-fold brochure,
  - Door hanger for apartment complexes that details common wastewater issues and how to protect your pipes
- Resources Under Development:
  - "*Septic System Maintenance for Homeowners*" educational explainer video,
  - "*Industrial Facilities and MSGPs: What You Need to Know*" FAQ document

TMDL PROGRAM UPDATE

- Upcoming Meetings:
  - **Joint TMDL Stormwater & Wastewater Technical Subcommittee:** January 27, 2022 at 9:30 am via Microsoft Teams
  - **Upper Trinity River Basin Coordinating Committee:** February 15, 2022 at 9:30 am via Microsoft Teams
  - **TMDL Monitoring Coordination Forum Subcommittee:** March 3, 2022 at 9:30 am via Microsoft Teams

For more information on the TMDL program please contact Hannah Allen at hallen@nctcog.org or (817) 695-9215.

UPCOMING EVENTS, CONFERENCES AND OPPORTUNITIES

- American Meteorological Society Annual Meeting
  - January 23-27, 2022 in Houston, Texas
  - Hybrid option available at registration

ROUNDTABLE DISCUSSION

UPCOMING NCTCOG MEETINGS

Next iSWM Meeting: April 6, 2022 at 9:30 a.m.

- Public Works Council Standard Drawings Subcommittee, **January 10, 2022**
- Joint TMDL Stormwater and Wastewater Technical Subcommittee, **January 27, 2022**
- Public Works Council Sustainable Public Rights of Way, **February 8, 2022**
- Upper Trinity River Basin Coordinating Committee, **February 15, 2022**
- Public Works Council Meeting, **February 17, 2022**

Meeting Information at:

https://www.nctcog.org/envir/committees

UPCOMING NCTCOG MEETINGS

Next iSWM Meeting: April 6, 2022 at 9:30 a.m.

- Regional Stormwater Management Coordinating Council, **February 23, 2022**
- TMDL Monitoring Coordination Forum Subcommittee, **March 3, 2022**

Meeting Information at:

https://www.nctcog.org/envir/committees

UPCOMING iSWM Agenda Topics

Next iSWM Meeting: April 6, 2022 at 9:30 a.m.

- Discussion of the proposed new iSWM contract Scope of Work and the expected need for volunteers for the review and scoring committee
- Timeline for process
- Budget: The Public Works Council approved a 3 year, with an option of 2 1-year extensions, with a maximum budget of $80,000 per year.

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