Integrated Stormwater Management (iSWM) Implementation Subcommittee Virtual Meeting

January 29, 2025, 1:30 pm – 3:30 pm

iSWM

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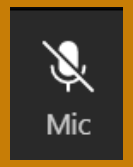
1. Welcome and Introductions

Meeting agenda, and presentation are located on the iSWM Implementation Subcommittee webpage: https://www.nctcog.org/envir/committees/public-works-council/iswm-implementation-subcommittee



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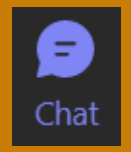

Please use the chat function to add your name and organization for attendance

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Action Items

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2. Approval of October 9, 2024, Meeting Summary

- The meeting summary is posted online. https://www.nctcog.org/getmedia/f88a1212-058a-4e97-865d-ed47ed2524cf/iSWM-Meeting-Agenda-Final-10092024.pdf?ext=.pdf

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Discussion Items

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3. FY25 Work Program Update

- Task Deliverables for FY25:

integrated Stormwater Management (iSWM) Subcommittee: The Subcommittee will focus on the following FY2025 tasks:

- iSWM Promotional Presentations
- iSWM Community Panel Workshop
- Compile iSWM Manual Changes; Publish Updated Manuals
- Guidance or Training on Temporary Sediment Basins
- Expanded use of Trees in Detention Ponds for Dual Purposes, Water Quality and Carbon Sequestration
- Stormwater Quality Monitoring of Existing iSWM BMPs
- Guidance on Pipe Utility Crossing
- Website Updates

NCTCOG iSWM Task Order Updates

January 29, 2025

TASK ORDER 2.2 PROGRESS

1. Project Management and Support Services
2. iSWM Implementation Guidance for Communities in Region
3. iSWM Promotional Presentations for Partnering Organizations
4. Stormwater Quality Monitoring Program Development for Existing iSWM BMPs
5. Develop Technical Case Studies
6. Website Updates
7. Guidance or Training on Temporary Sediment Basins
8. Guidance on Pipe Utility Crossings
9. Expanded Use of Trees in Detention Ponds

TASK ORDER 2.1 PROGRESS

- Task 2 – iSWM Implementation Guidance for Communities in Region
  - Session to be held on March 3rd
  - Dallas County and City of Frisco to present alongside Mansfield and City of Denton
  - More details to come soon
- Task 3 – iSWM Promotional Presentations for Partnering Organizations
  - Presentation organized with APA on February 19th
  - One more presentation to be organized

TASK ORDER 2.1 PROGRESS

- Task 4: Stormwater Quality Monitoring Program Development for Existing iSWM BMPs
  - No updates
- Task 5: Develop Technical Case Studies
  - Waiting for guidance from IIS and NCTCOG
- Task 6: Website Updates
  - After discussing with NCTCOG, holding on this task

TASK ORDER 2.1 PROGRESS

- Task 7: Guidance or Training on Temporary Sediment Basins
  - Halff working with BHB
- Task 8: Guidance on Pipe Utility Crossings
  - Memo nearly complete, will deliver findings soon to NCTCOG
- Task 9: Expanded Use of Trees in Detention Ponds
  - Research complete. Writing memo summarizing findings.

TASK 9 FINDINGS: PIPE UTILITY CROSSINGS GUIDANCE: PRE-CONSTRUCTION

- Intentional Site Selection
- Avoid Erosive Conditions

TASK 9 FINDINGS: PIPE UTILITY CROSSINGS GUIDANCE: PRE-CONSTRUCTION

Type of Channel Crossing	Minimum Cover	
	Water Supply Line	Sanitary Sewer Lines
Concrete Channel/Dry Ditch	4-feet	3-feet
Perennial Stream	5-feet	Greater of 3-feet or 1.5x pipe outside diameter

- Minimum depths sufficient for 12-inch pipes
- Larger pipes require more in-depth analysis of erosive conditions
- Flotation potential should be checked

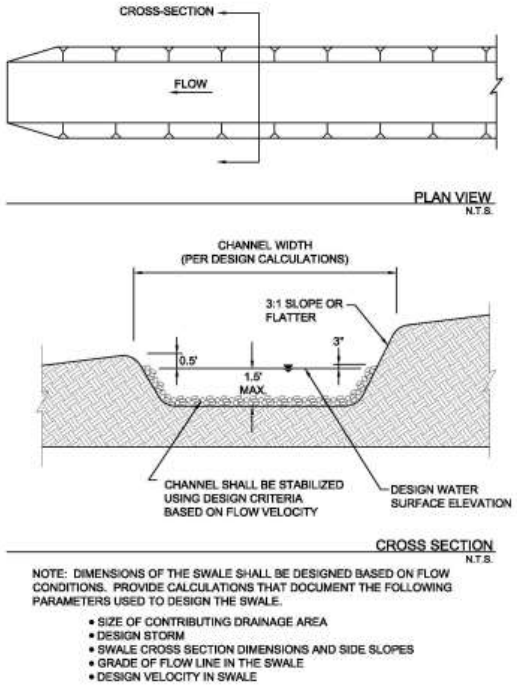
TASK 9 FINDINGS: PIPE UTILITY CROSSINGS GUIDANCE: POST-CONSTRUCTION

- Restore existing contours quickly
- Seeding, mulching, etc.
- Riprap, gabions, etc. – same general guidance applies for exposed pipelines
- Redirecting high velocity flows

TASK 9 FINDINGS: PIPE UTILITY CROSSINGS GUIDANCE: POST-CONSTRUCTION

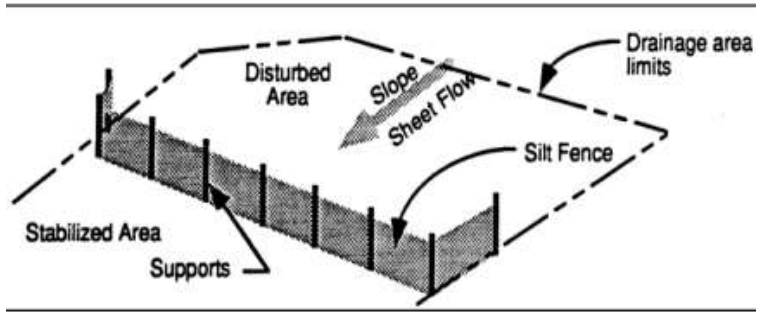
Use for temporary or permanent erosion control:

- Interception swales
- Geotextile blankets
- Energy dissipators



Use only for temporary erosion control:

- Wattles
- Brush Barriers
- Silt Fences



QUESTIONS?

halff

4. iSWM Manual Updates

- Content to update?
- Consider forming one complete iSWM Manual PDF
- Comparison of Manual and Addendum drawings

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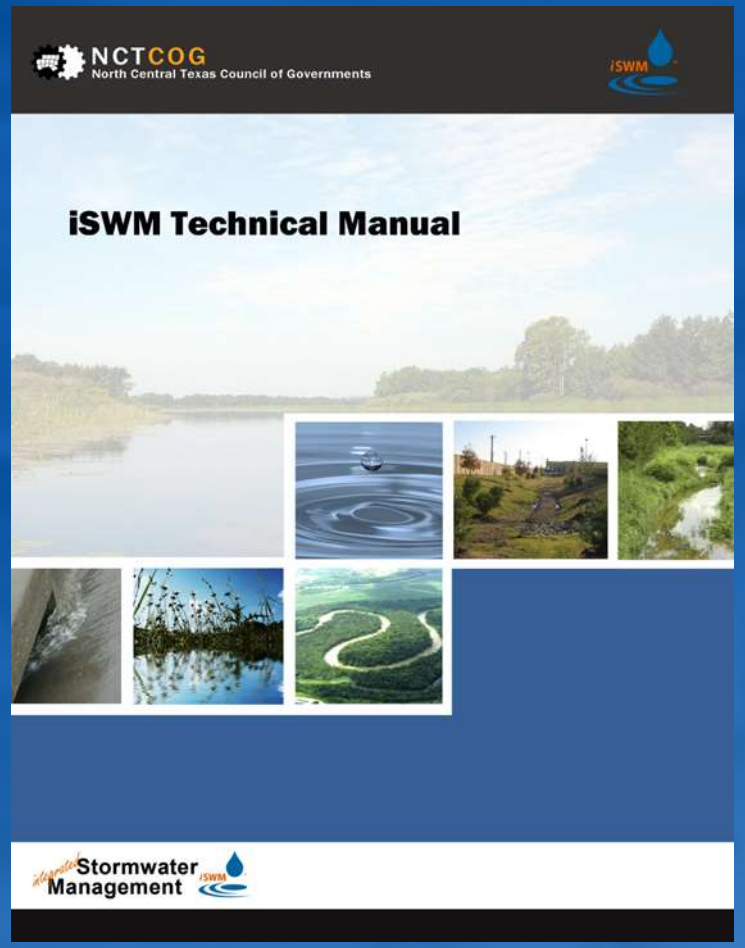
4. Combining All Sections of iSWM Technical Manual



Potential Benefits:

- Compressed Format to allow for less consumption on Server
- Smoother Transition between Searchable Content
- Easier Navigation for End-users in Field

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4. Combining All Sections of iSWM Technical Manual

Current Sections of the iSWM Technical Manual

- Planning
- Water Quality
- Hydrology
- Hydraulics
- Site Development Controls
- Construction Controls
- Landscape

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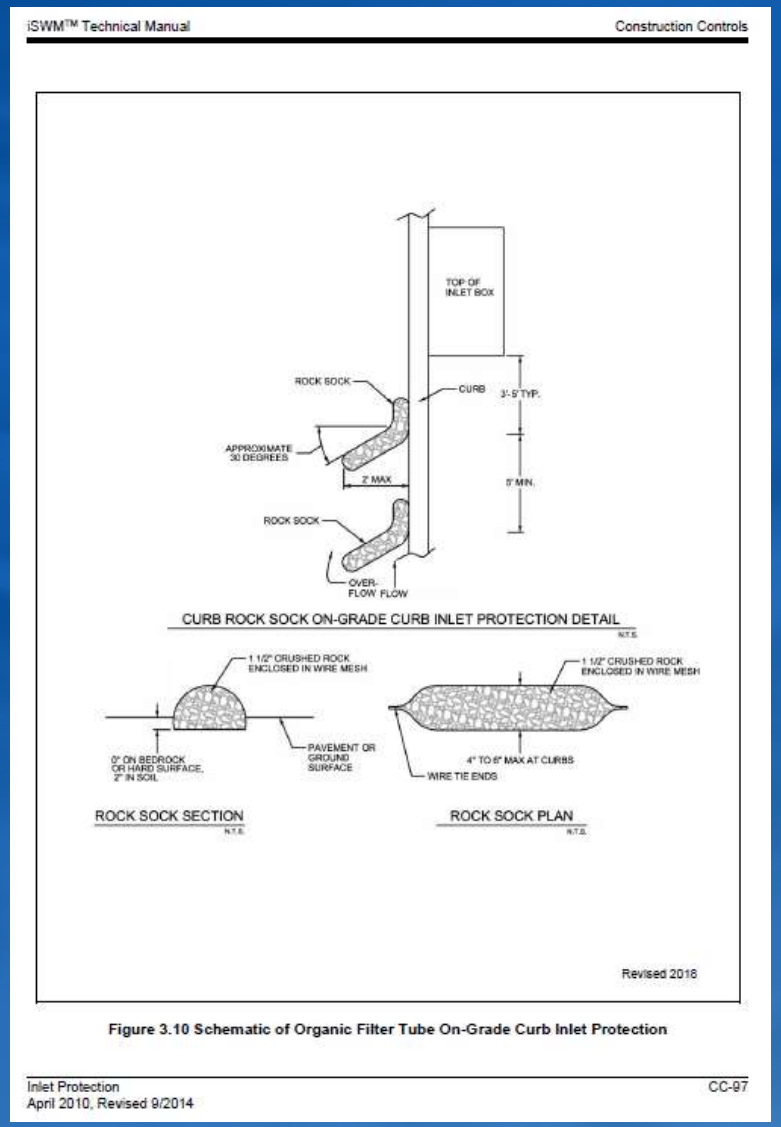
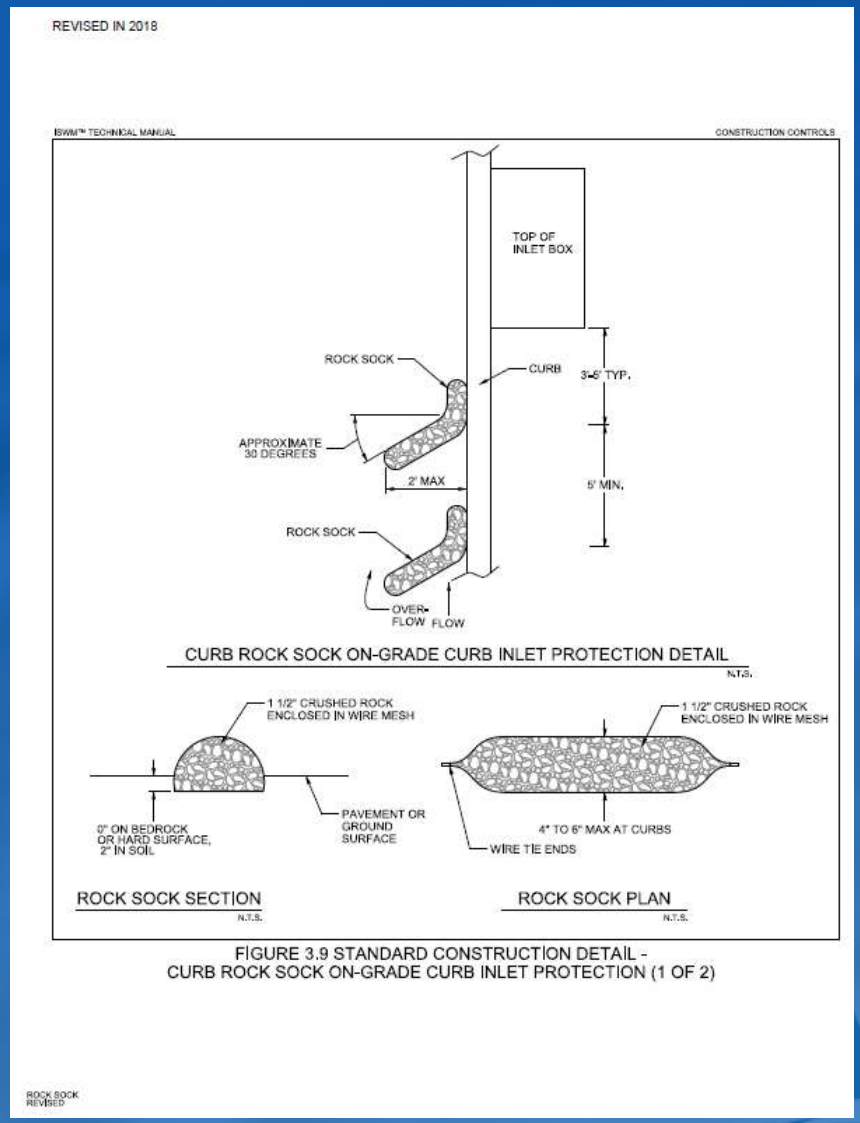
4. Comparison of Manual and Addendum Drawings





QA/QC needed – some drawings in Addendum duplicate those in Construction Controls except in name and/or number

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4. $50,000 Funding Approved by Public Works Council for Drawing Updates

- Tentatively planning interlocal agreement (non-competitive) with UTA engineering group
  - Assistance developing scope?
- .dwg files not always available
- Approximately 65 drawings from Construction Controls and Addendum require revisions; others need updated date
- Updates as needed to match Construction Standards

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Information Items

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5. ASTM/STEPP/EPA Centers of Excellence: Testing and Performance Standards

Testing and Performance Verification: ASTM E64, STEPP, and EPA Centers of Excellence

Craig Fairbaugh– Contech, Regulatory Manager

iSWM Implementation Subcommittee – January 29th, 2025

Craig Fairbaugh

- B.S. , M.S. Environmental Engineering (Portland State University)
- ASCE/EWRI: Urban Water Resources Research Council – Core Group Member
  - Chair – EWRI Stormwater Media Filtration Committee
  - BMP Database new home is ASCE/EWRI
- ASTM Committee E64 on SCMs
  - Chair of Subcommittee 03 – Components (media)
- Technical Advisory Committee (TAC) for EPA Cold Climate CESIT
- Contech – Regional Regulatory Manager

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EWRI ASCE

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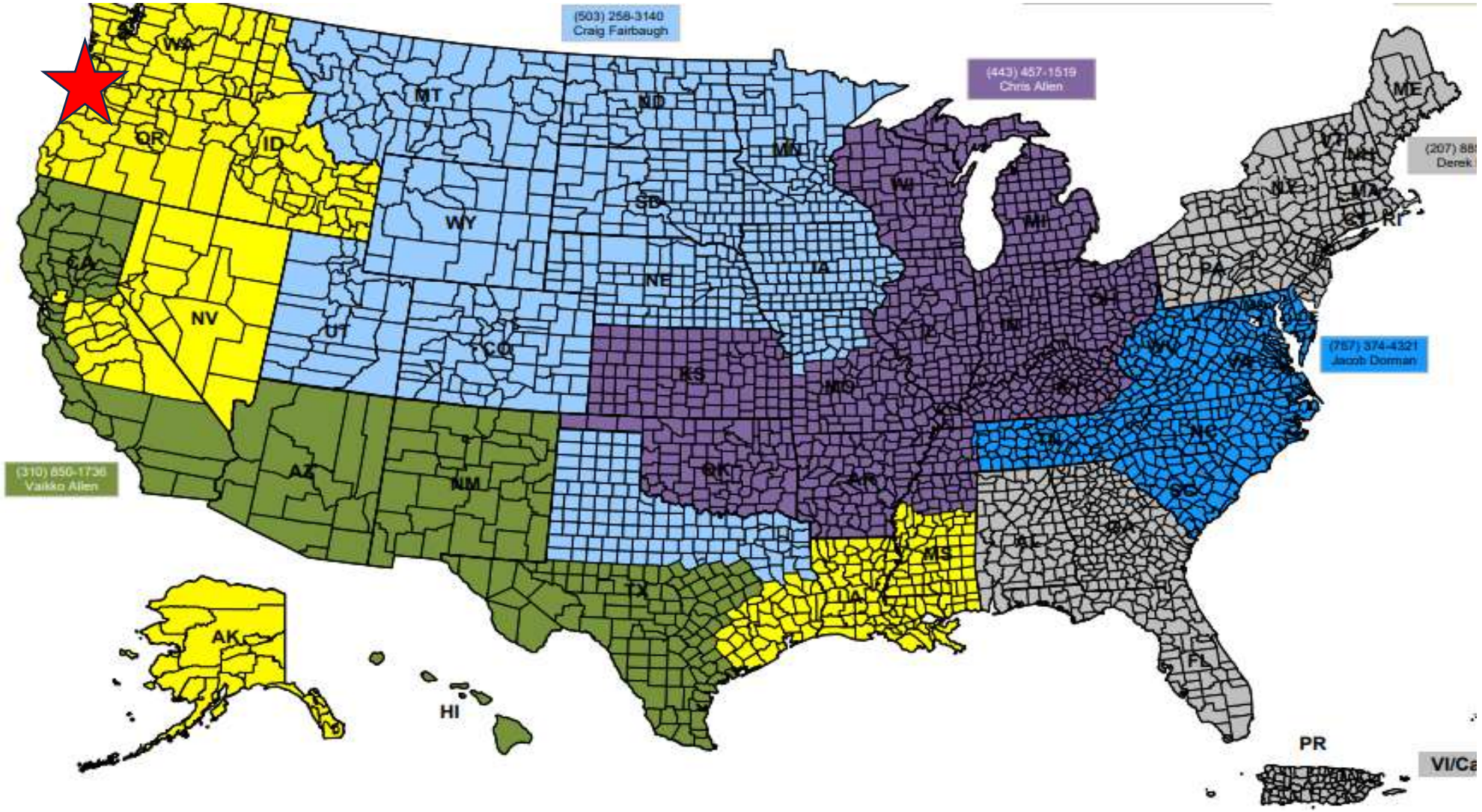
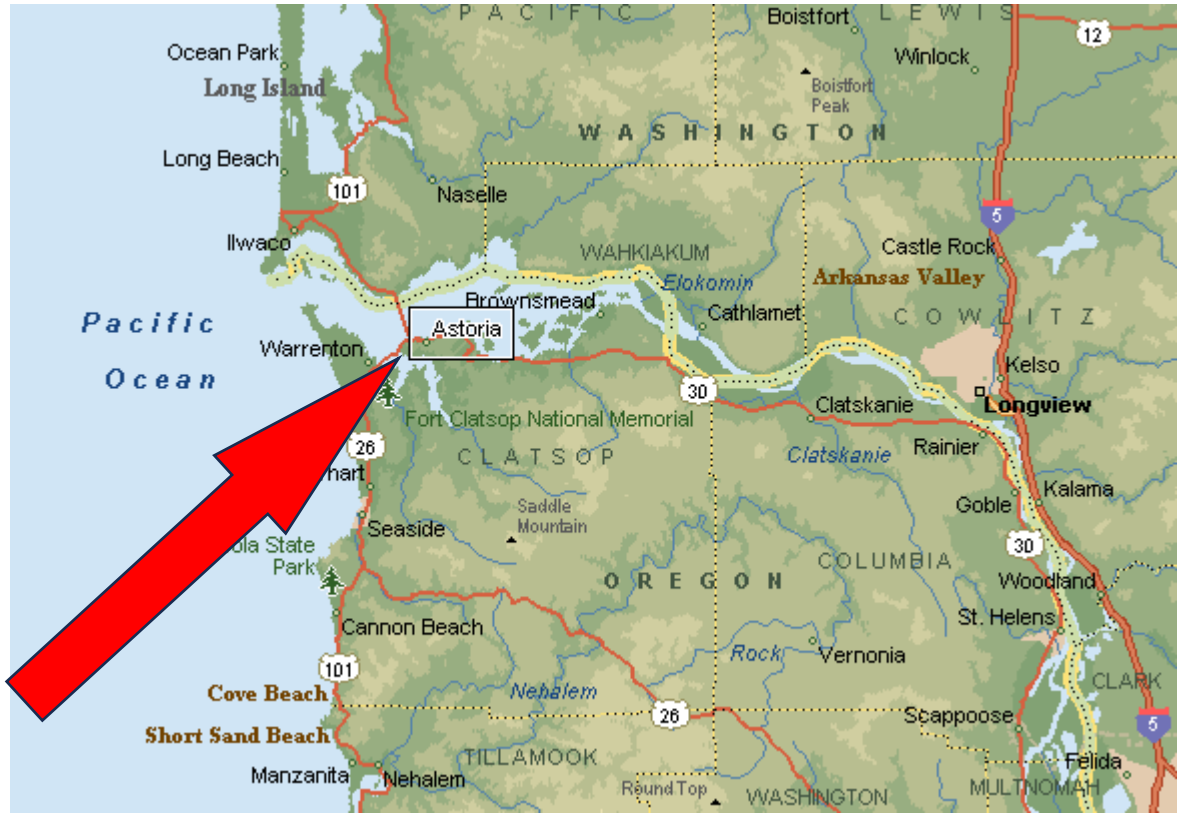
Regulatory Manager Coverage



Regulatory Manager Coverage



Research: Maintenance and Long-Term Performance

- Bioretention and high rate biofiltration

Research: Maintenance and Long-Term Performance

- Underground filter fabric and “iso rows”

Agenda

- **Background** – Stormwater Control Measure (SCM) Performance verification
- **ASTM E64** Committee on SCMs
- **STEPP**: Stormwater Testing and Evaluation of Products and Practices
- **EPA Centers of Excellence** for Stormwater Infrastructure Technology (CESITs)

Water Quality: SCM Performance Verification

- How well do treatment systems work?
- LID and Infiltration = Easy!
  - Pretreatment and clogging…
- Treatment…so many variables:
  - Varying flow (hydrograph)
  - Varying pollutant load (pollutograph)
  - Varying chemical speciation (particulate vs dissolved)
  - Varying concentrations and sources (land use, seasonality, etc)

Site Development Controls:

1.1 Stormwater Controls - Categories and Applicability

1.1.1 Introduction

Structural stormwater controls are engineered facilities intended to treat stormwater runoff and/or mitigate the effects of increased stormwater runoff peak rate, volume, and velocity due to urbanization. This section provides an overview of structural stormwater controls that can be used to address the minimum stormwater management standards outlined in *Section 1.1.2*.

In terms of the *Integrated* Design Focus Areas, a structural stormwater control, or set of structural controls, must:

- **Water Quality:** Remove pollutants in stormwater runoff to protect water quality;
- **Streambank Protection:** Regulate discharge from the site to minimize downstream bank and channel erosion; and
- **Flood Control:** Control conveyance of runoff within and from the site to minimize flood risk to people and properties.

1.2 Suitability of Stormwater Controls

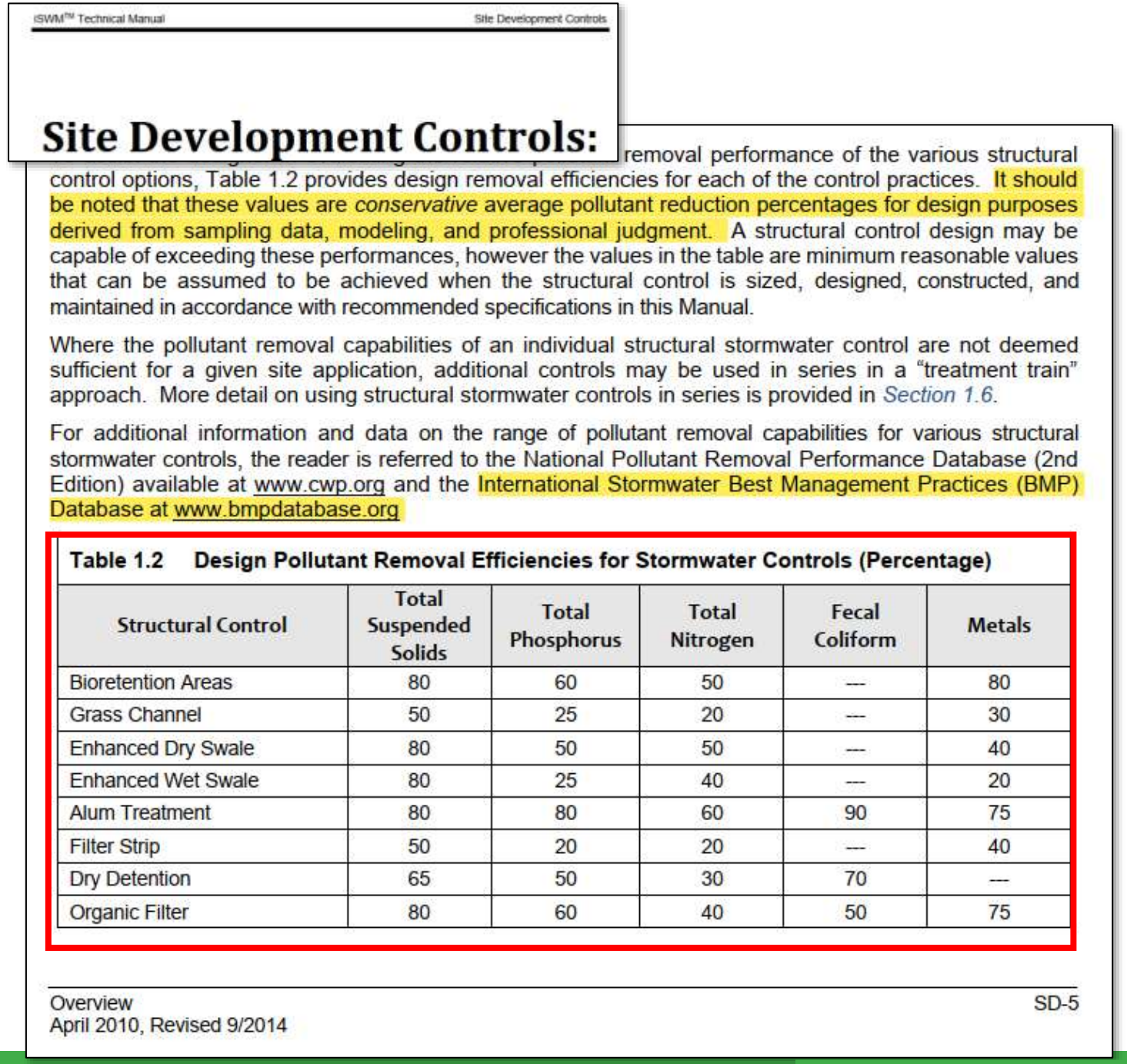
Some structural stormwater controls are intended to provide water quality treatment for stormwater runoff. Though most of these structural controls provides pollutant removal capabilities, the relative capabilities vary between structural control practices and for different pollutant types.

1.2.1 Water Quality

Pollutant removal capabilities for a given structural stormwater control practice are based on a number of factors including the physical, chemical, and/or biological processes that take place in the structural control and the design and sizing of the facility. In addition, pollutant removal efficiencies for the same structural control type and facility design can vary widely depending on the tributary land use and area, incoming pollutant concentration, flow rate, volume, pollutant loads, rainfall pattern, time of year, maintenance frequency, and numerous other factors.

Performance Verification – Water Quality

- How do we assess treatment currently?
  - BMP database
  - Academic studies
  - Peer reviewed journals, etc
- Agency Programs
  - WA Ecology TAPE (field)
  - NJDEP/NJCAT (lab)



Site Development Controls:

removal performance of the various structural control options, Table 1.2 provides design removal efficiencies for each of the control practices. It should be noted that these values are *conservative* average pollutant reduction percentages for design purposes derived from sampling data, modeling, and professional judgment. A structural control design may be capable of exceeding these performances, however the values in the table are minimum reasonable values that can be assumed to be achieved when the structural control is sized, designed, constructed, and maintained in accordance with recommended specifications in this Manual.

Where the pollutant removal capabilities of an individual structural stormwater control are not deemed sufficient for a given site application, additional controls may be used in series in a "treatment train" approach. More detail on using structural stormwater controls in series is provided in *Section 1.6*.

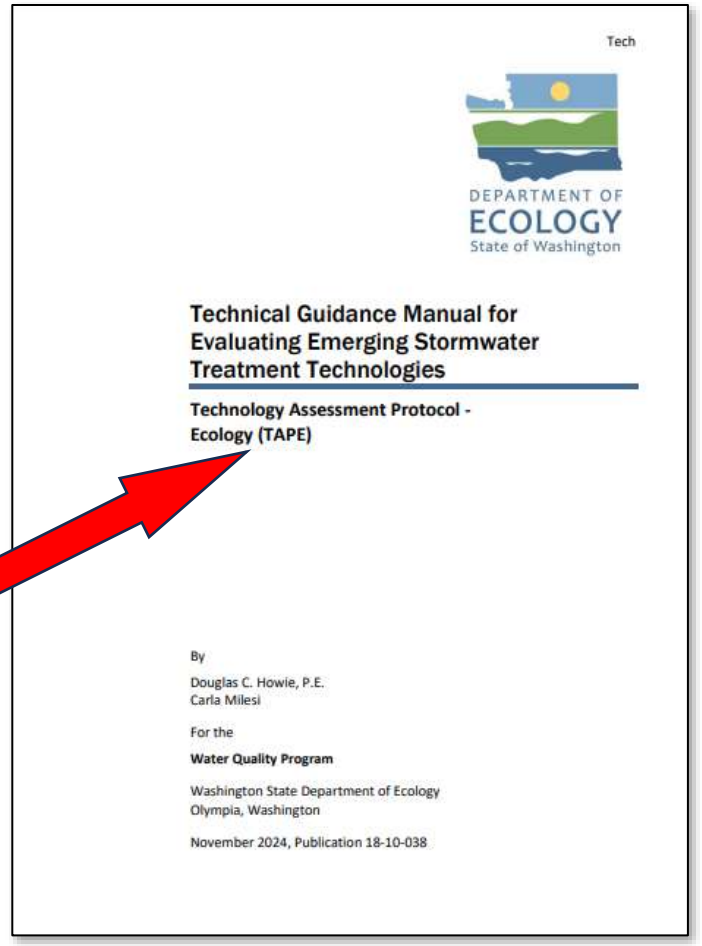
For additional information and data on the range of pollutant removal capabilities for various structural stormwater controls, the reader is referred to the National Pollutant Removal Performance Database (2nd Edition) available at www.cwp.org and the International Stormwater Best Management Practices (BMP) Database at www.bmpdatabase.org

Table 1.2 Design Pollutant Removal Efficiencies for Stormwater Controls (Percentage)

Structural Control	Total Suspended Solids	Total Phosphorus	Total Nitrogen	Fecal Coliform	Metals
Bioretention Areas	80	60	50	---	80
Grass Channel	50	25	20	---	30
Enhanced Dry Swale	80	50	50	---	40
Enhanced Wet Swale	80	25	40	---	20
Alum Treatment	80	80	60	90	75
Filter Strip	50	20	20	---	40
Dry Detention	65	50	30	70	---
Organic Filter	80	60	40	50	75

Performance Verification – Water Quality

- How we collect data matters:
  - Storm coverage
    - Grab vs automated samplers
  - Storm volume
  - Concentrations of pollutants
  - "Qualifying Storms"
  - # of qualifying storms/samples
  - Analytical methods
- Quality Assurance Project Plan (QAPP)?



Performance Verification – Water Quality

What are the issues/gaps?

- Most conventional practices lack adequate testing protocols
- Results likely not representative
- Making policy recommendations with inadequate data?
- Difficult/impossible to compare performance of SCMs without same testing protocols
- SW is historically underfunded…help!

What are the solutions?

- ASTM E64
  - Implementing existing TAPE and NJDEP protocols
- STEPP
  - National verification program
- EPA Centers of Excellence
  - Identify/fill knowledge gaps

ASTM E64 Committee on SCMs

- **E64.01 – Lab Evaluation**
  - NJDEP HDS and filter protocols
- **E64.02 – Field Evaluation**
  - WA Ecology TAPE protocols
- **E64.03 – Component Evaluation**
  - Media testing (bioretention, sand, compost, etc)
- **E64.04 – Nonpoint Control Measures**
  - Street sweeping, etc.
- **E64.09 - Terminology**

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ASTM E64 Committee on SCMs: Example of Passed and In-progress Standards

- E3332-23 Standard Test Method for Determining Trash and/or Debris Capture Performance of Stormwater Control Measures
- C1745/C1745M-24 Standard Test Method for Measurement of Hydraulic Characteristics of Hydrodynamic Stormwater Separators and Underground Settling Devices
- C1746/C1746M-19 Standard Test Method for Measurement of Suspended Sediment Removal Efficiency of Hydrodynamic Stormwater Separators and Underground Settling Devices
- 79850 - WK86873 - Laboratory Assessment of Hydraulic Conductivity of stormwater filtration media

Performance Verification – TAPE and NJDEP

- MTDs are ahead of the pack!
  - Manufactured treatment devices
- TAPE
  - 31 MTDs verified
  - 2 Public Domain SCMs verified
  - Herrera presentation: https://socwisconsin.org/wp-content/uploads/2019/02/Herrera-TAPE-presentation-021319.pdf
- NJDEP
  - 13 Green Infrastructure MTDs
  - 21 non- GI MTDs
  - Public Domain SCMs not verified ☹

DEPARTMENT OF ECOLOGY
State of Washington

STEPP – Stormwater Testing and Evaluation of Products and Practices

- National Performance Verification Program
  - Started by WEF in 2012, picked up by National Municipal Stormwater Alliance (NMSA) in 2020
- "Products and Practices"
- Verifies testing to ASTM standards
  - A national version of TAPE/NJDEP protocols
- Now verifying trash removal systems

STEPP
Stormwater Testing and Evaluation for Products and Practices

EPA Centers of Excellence for Stormwater Infrastructure Technology (CESITs)

- Funded through the Bipartisan Infrastructure Law
- 4 CESITs:
  - Univ. of New Hampshire, Univ. of Minnesota, NMSA (Cold Climate)
  - University of Oklahoma, Oklahoma State Univ. (Great Plains)
  - SCWWRP, UCLA, Stanford, Nevada Board of Reagents (Arid Southwest)
  - Center for Watershed Protection (Coastal and Southeast)
- $5M grant, EPA contracts in progress…

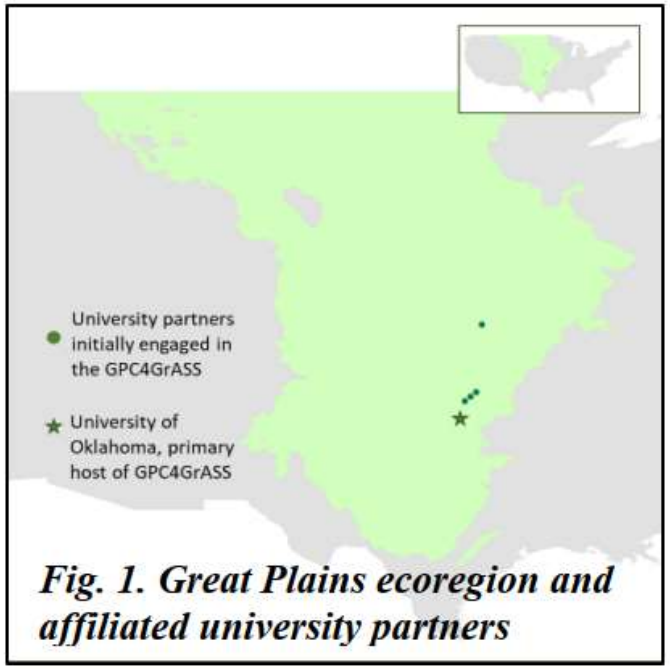
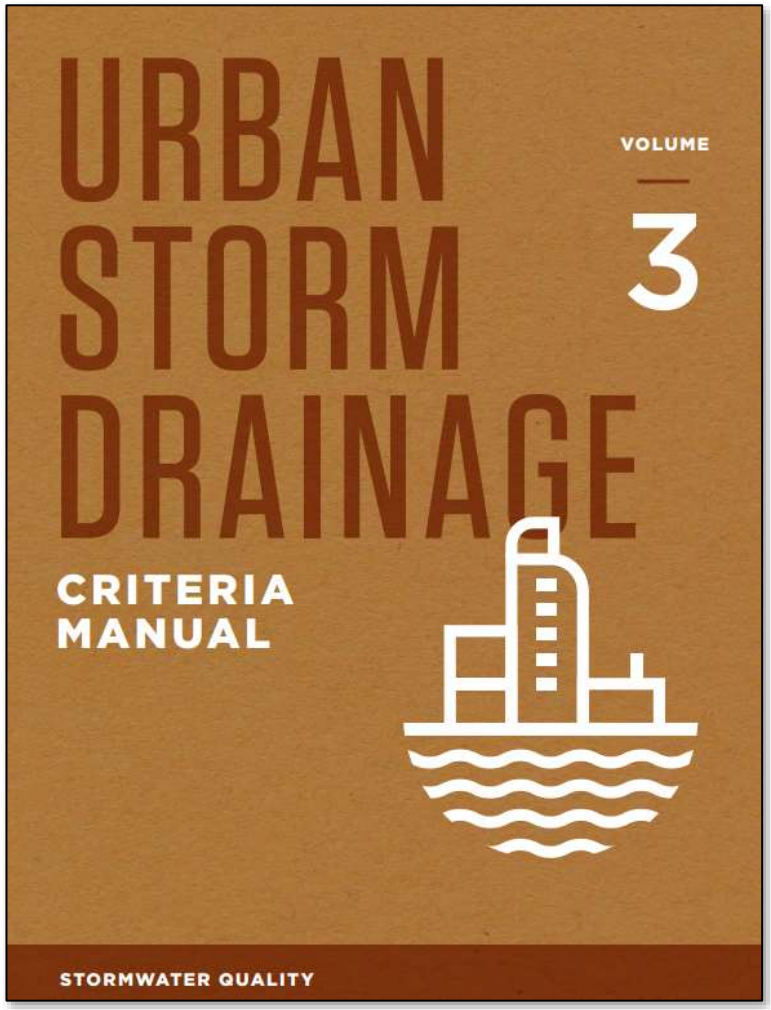


Fig. 1. Great Plains ecoregion and affiliated university partners

Next Steps – Is there new information for the iSWM Technical Manual?

- **Last major update 2014?**
  - Some updates in 2021
  - Section 1 "Overview" which includes performance verification data and selection processes?
- **BMP Database Summary Statistics update in 2020**
  - Likely another update soon from ASCE/EWRI
- **Mile High Flood District (Colorado)**
  - Updates from the **Urban Storm Drainage Criteria Manual Volume 3 – Stormwater Quality**
  - Chapter 4 – Treatment SCMs



Thank you!

Craig Fairbaugh

Regulatory Manager

Craig.Fairbaugh@ContechES.com

(503) 995-3650

6. New Equipment Standard Ensures Construction Workers' Safety

OSHA issued a final rule on the Personal Protective Equipment (PPE) https://blog.dol.gov/2024/12/11/right-fit-right-protection

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6. New equipment standard ensures construction workers safety

Clarifies (PPE) must fit to protect workers from workplace hazards.

7. Celebrating Leadership in Development Excellence (CLIDE) Awards.

CLIDE

Celebrating Leadership In Development Excellence

Awards 2025

Applications accepted Feb. 3 – Feb. 28, 2025

www.developmentexcellence.com

Celebrating Leadership in Development Excellence (CLIDE) Awards honors development and planning projects that exemplify the region's Principles of Development Excellence which outline a vision for sustainable, livable communities in North Texas.

The North Central Texas Council of Governments (NCTCOG) is looking for projects and programs in North Texas that exemplify these principles.

Applications accepted Feb. 3 – Feb. 28, 2025
www.developmentexcellence.com

CATEGORIES FOR SUBMITTAL

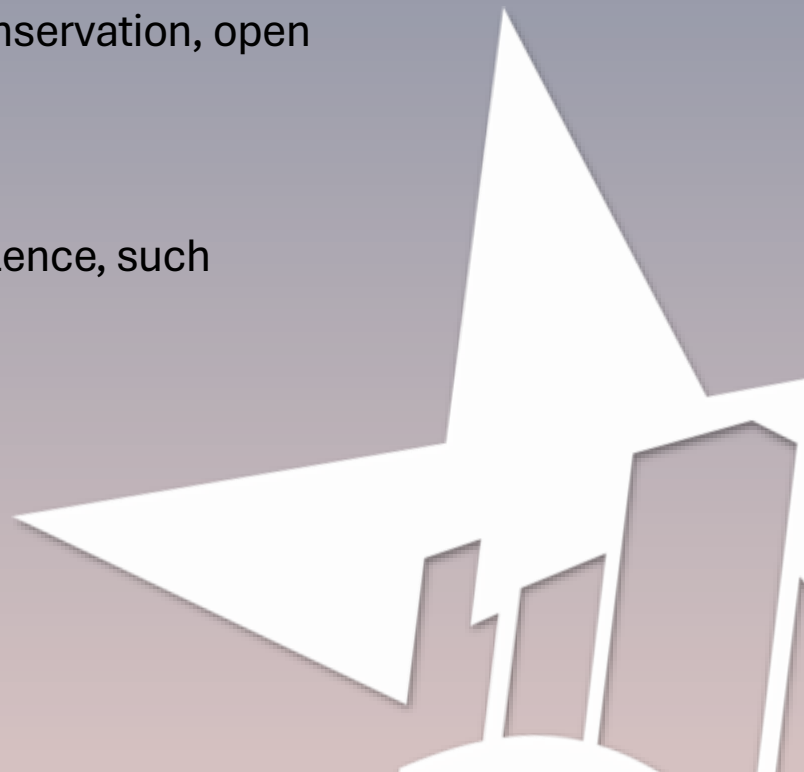
New Development
Projects on previously undeveloped sites exemplifying many Principles of Development Excellence.

Redevelopment
Projects that reuse or rebuild existing structures, exemplifying many Principles of Development Excellence.

Special Development
Projects that excel in promoting one or two Principles of Development Excellence, which could include Environmental Stewardship. Examples include sustainable infrastructure, energy conservation, open space or trail projects, and low-impact development.

Raising Public Awareness
Organizations or individuals that have educated the public about development excellence, such as through media stories or public education campaigns.

Public Policy and Planning
Entities that have adopted policies or programs related to Principles of Development Excellence. Examples include mixed-use policies, open space protection, historic preservation, design standards, and comprehensive plans.



8. iSWM Interest Survey Results

integrated Stormwater Management (iSWM) Program Subcommittee: Feedback

Initially sent survey to 329 members on 12/10/2024. Re-sent (219 members who received prior survey; but didn't open/respond) survey on 12/17/2024; 12 responses as of 01/03/2025

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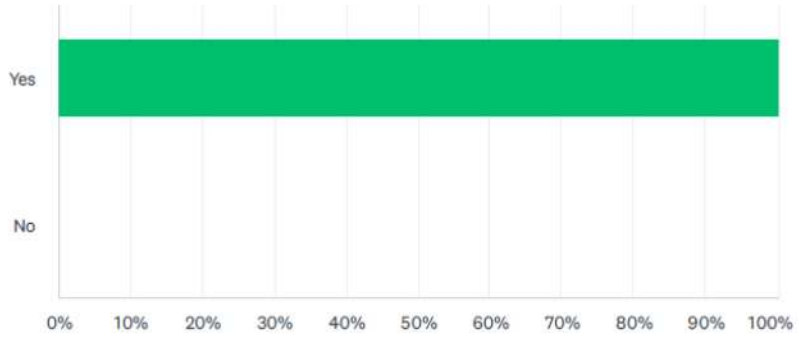
8. iSWM Interest Survey Results

integrated Stormwater Management (iSWM) Program Subcommittee: Feedback

Q1 Do you still have interest in the program?

Answered: 12 Skipped: 0



QUIZ STATISTICS			
Percent Correct 100%	Average Score 1.0/1.0 (100%)	Standard Deviation 0.00	Difficulty 1/2

ANSWER CHOICES	SCORE	RESPONSES	
✓ Yes	1/1	100.00%	12
✓ No	1/1	0.00%	0
TOTAL			12

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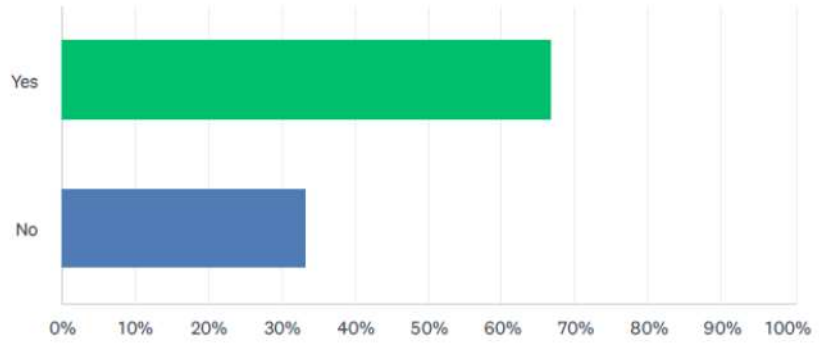
8. iSWM Interest Survey Results

integrated Stormwater Management (iSWM) Program Subcommittee: Feedback

Q2 Would you like to serve or continue serving on the subcommittee? Please Note: Meetings are held quarterly alternating virtually and in-person.

Answered: 12 Skipped: 0



QUIZ STATISTICS			
Percent Correct 100%	Average Score 1.0/1.0 (100%)	Standard Deviation 0.00	Difficulty 1/2

ANSWER CHOICES	SCORE	RESPONSES	
✓ Yes	1/1	66.67%	8
✓ No	1/1	33.33%	4
TOTAL			12

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8. iSWM Interest Survey Results

integrated Stormwater Management (iSWM) Program Subcommittee: Feedback

Q3

Is there a topic you would like the iSWM subcommittee to discuss over the next year?

Answered: 6 No Recommendations: 3 Skipped: 3

How to implement large regional detention to minimize flooding per a drainage basin area, minimize construction cost, and maximize development.

8. iSWM Interest Survey Results

integrated Stormwater Management (iSWM) Program Subcommittee: Feedback

Q3

Is there a topic you would like the iSWM subcommittee to discuss over the next year?

Answered: 6 No Recommendations: 3 Skipped: 3

Hydraulics, stormwater control and management, water quality

8. iSWM Interest Survey Results

integrated Stormwater Management (iSWM) Program Subcommittee: Feedback

Q3

Is there a topic you would like the iSWM subcommittee to discuss over the next year?

Answered: 6 No Recommendations: 3 Skipped: 3

construction standards (curb inlets - not allowing filter tube/rock socks),(grate inlets - discuss alternatives to filter fabric), etc.

8. iSWM Interest Survey Results

integrated Stormwater Management (iSWM) Program Subcommittee: Feedback

Q3

Is there a topic you would like the iSWM subcommittee to discuss over the next year?

Answered: 6 No Recommendations: 3 Skipped: 3

Performing a monitoring study of existing BMPs designed and built to iSWM criteria to show actual real world performance data and the benefits that can be achieved.

8. iSWM Interest Survey Results

integrated Stormwater Management (iSWM) Program Subcommittee: Feedback

Q3

Is there a topic you would like the iSWM subcommittee to discuss over the next year?

Answered: 6 No Recommendations: 3 Skipped: 3

Review and bring the iSWM manual up to date with current practices.

8. iSWM Interest Survey Results

integrated Stormwater Management (iSWM) Program Subcommittee: Feedback

Q3

Is there a topic you would like the iSWM subcommittee to discuss over the next year?

Answered: 6 No Recommendations: 3 Skipped: 3

BMPs and funding sources for NAs and nonprofits.

9. Regional Public Works Program Update

- Virtual Sustainable Public Rights of Way Subcommittee (SPROW) meeting, February 5, 2025, with presentation by Smart Surfaces Coalition https://www.nctcog.org/envir/committees/public-works-council/sustainable-public-rights-of-way-subcommittee
- In Person Public Works Council (PWC) meeting, February 20, 2025, www.nctcog.org/envir/committees/public-works-council
- Workshop: Multiple Perspectives on iSWM, Hybrid (Teams and NCTCOG Transportation Council Room), Monday March 3, 2025, from 2-4 p.m. https://www.addevent.com/event/Kx24684360
- Save the date for the 26th Annual Public Works Roundup, September 4, 2025, Hurst Conference Center https://www.nctcog.org/envir/public-works/annual-public-works-roundup

For more information on the Public Works program, please contact Carl Singleton at csingleton@nctcog.org or (817) 458-4768

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10. NCTCOG TMDL Program Update

- Joint TMDL Stormwater & Wastewater Subcommittee Meeting
  - Next Joint Stormwater and Wastewater Technical Subcommittee meeting is tentatively scheduled for February 2025 via Microsoft Teams.
  - More information available online.
- Upper Trinity River Basin Coordinating Committee
  - Next UTRB-CC meeting is (In-person) tentatively scheduled for February 2025. The location for this meeting is to be determined.
  - More information available online.

For more information on the TMDL program please contact Casey Cannon at ccannon@nctcog.org or (817) 608-2313

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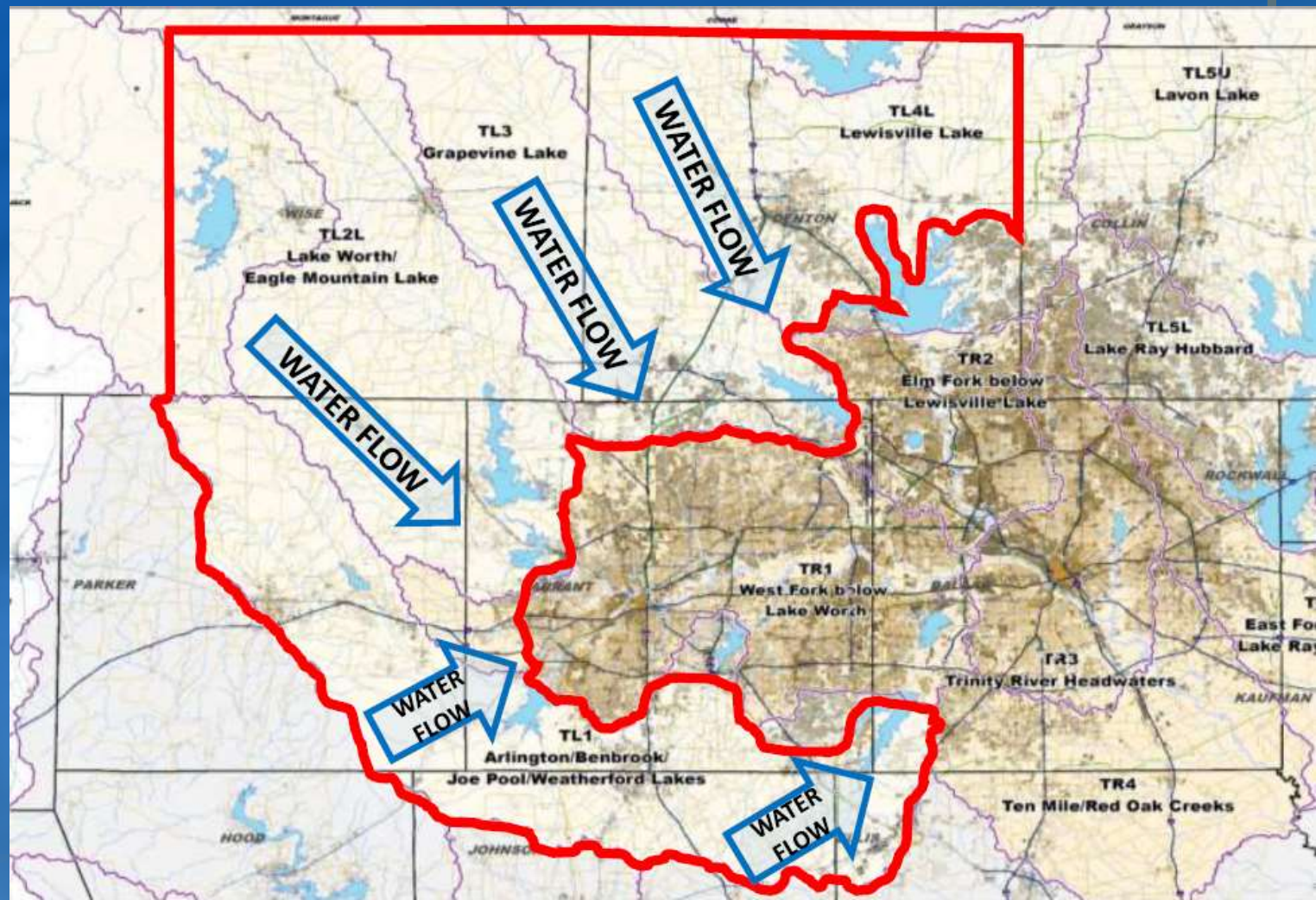
11. Integrated Transportation and Stormwater Infrastructure Study

- Integrate stormwater management, urban development, transportation, and environmental planning
- Identify impacts and alleviate risks from flooding
- Get ahead of growth
- Reduce costs



Project Area Details

- 85 cities and portions of 8 counties
- 126% increase in population (2020 – 2045)
- 60% undeveloped (2015)
- 19% growth in impervious surface (2006 – 2016)
- > 7,000 miles of streams and > 274,000 acres of 100-year floodplain

Photo courtesy of City of Newark

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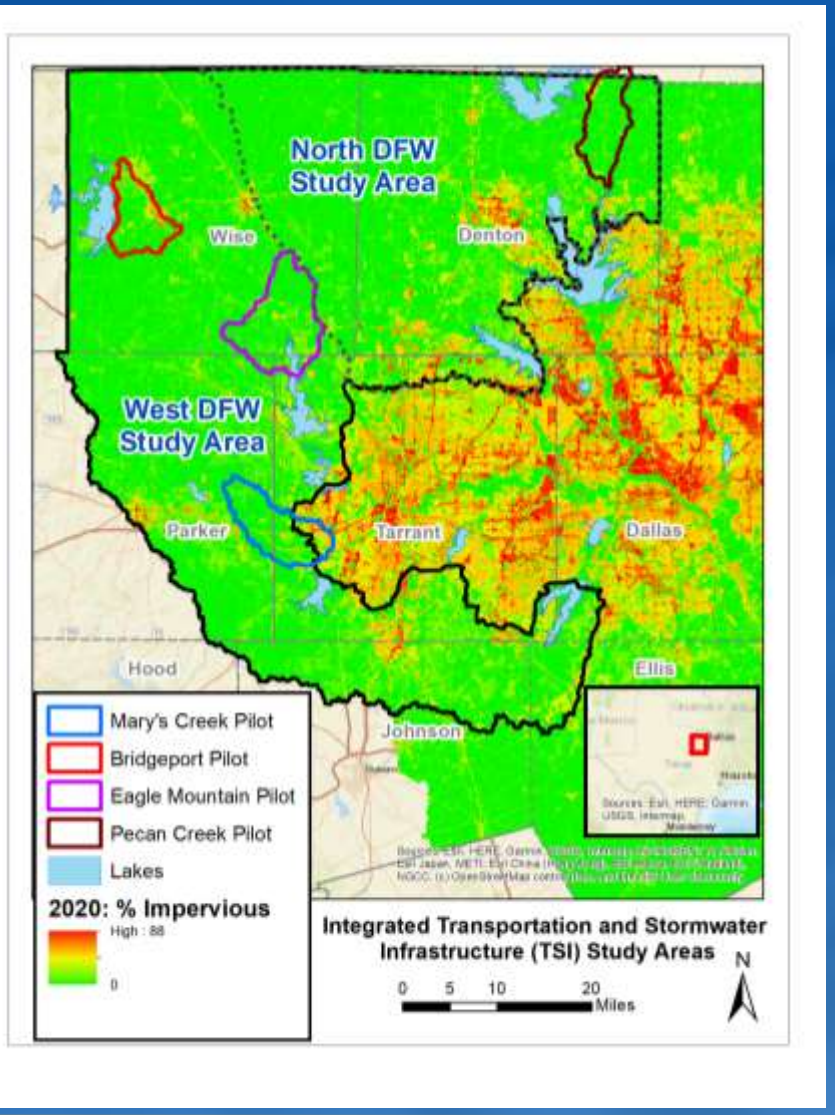
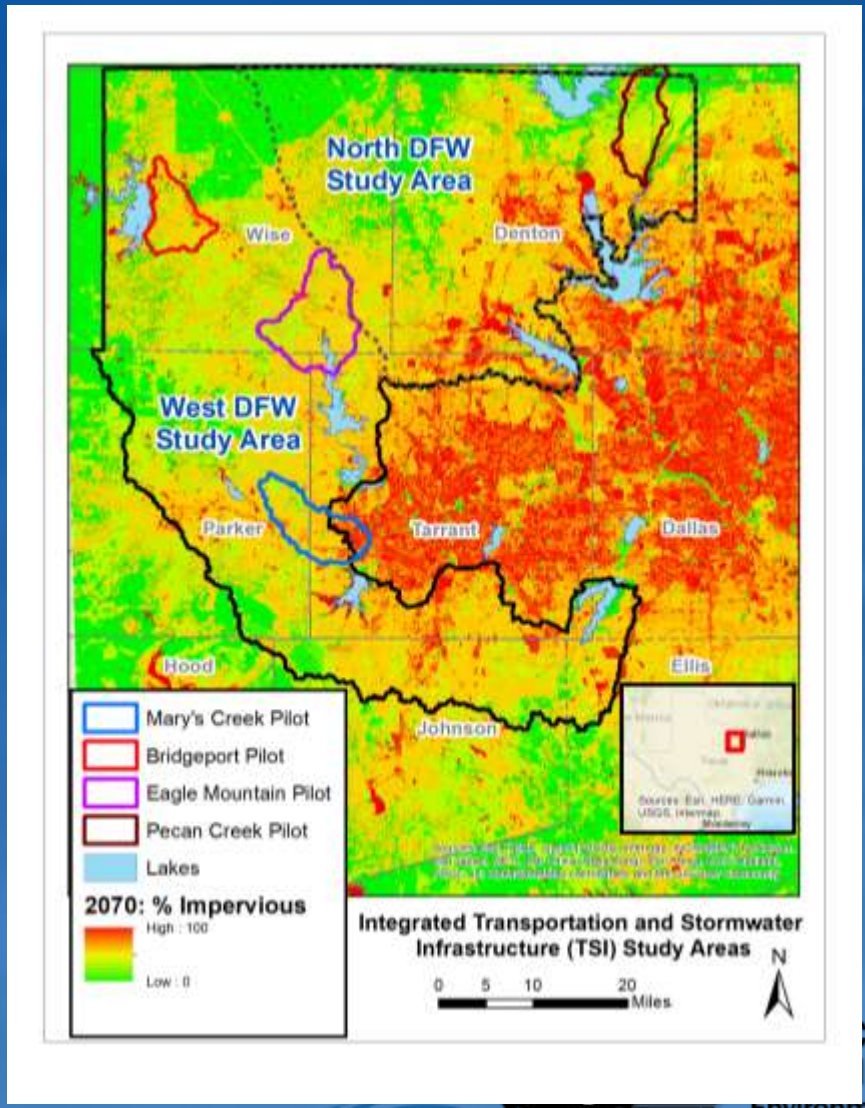
Typical Urbanization Adds Impervious Surfaces

2020 (6.4% Impervious) → 2070 (35.2% Impervious)





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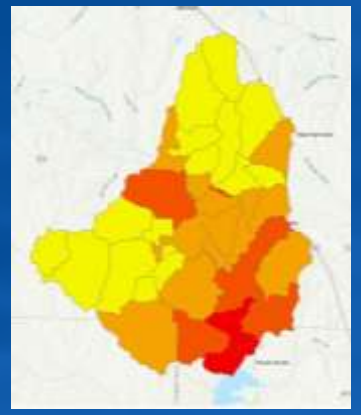
GSI-Related Products

- Menu of green stormwater infrastructure (GSI) strategies
- GSI suitability index
- Online map of high flood risk and high opportunity for GSI
- Cost-benefit analyses of GSI
- Hydrologic and hydraulic modeling pre- and post-GSI
- Documentation of methodology

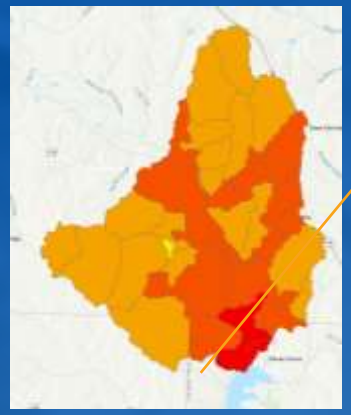
TSI Optimization for Regional Detention

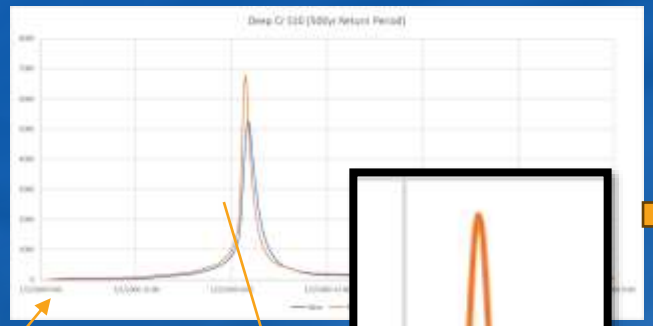
2020

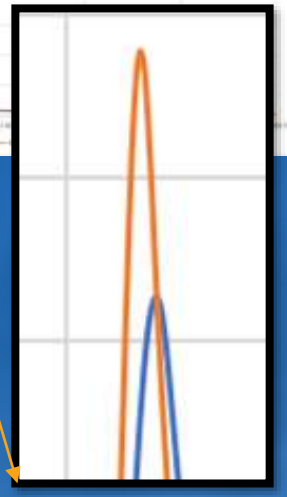


Increased Imperviousness

2070

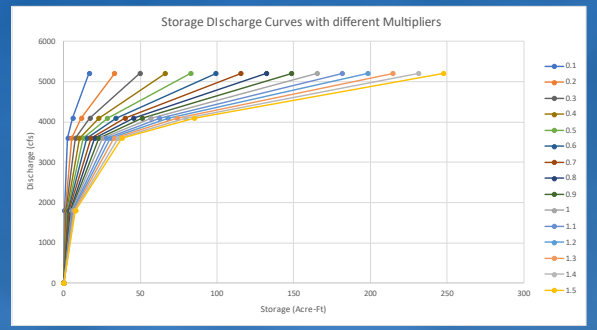






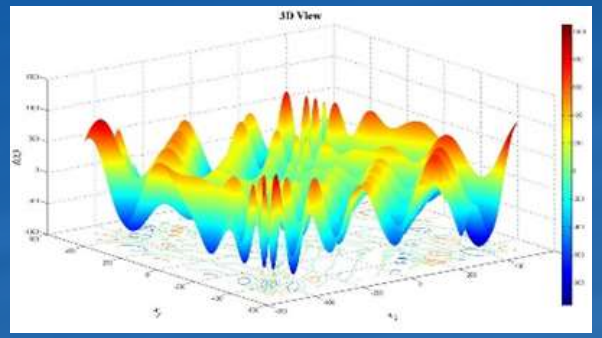
Increase in Flow

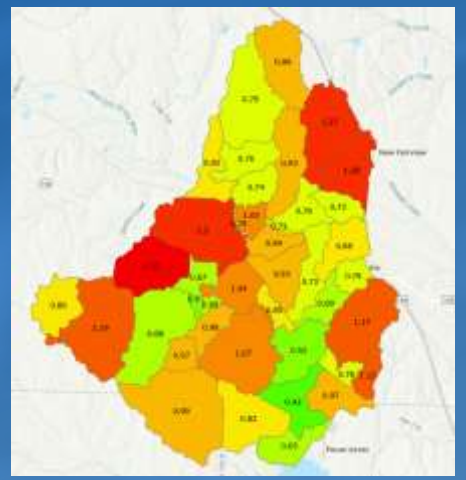
Setting Up HEC HMS Model with Reservoirs at Each Subbasin



Varying Storage Values to Best Reduce the Peak Flow

Optimized Storage Values generated from HMS Runs





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Estimated Study Timeline

Through Fall 2025
Continue training workshops and site visits to individual communities

Winter 2025/2026
Complete H&H modeling and identify transportation, environmental and other policy recommendations

March 2026
Conduct project update meeting to present findings and seek stakeholder feedback

June 2026
Conduct project update meeting to present final products incorporating stakeholder feedback

July 2026
Submit deliverables to funding agencies

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Funding Partners

Texas General Land Office / Department of Housing and Urban Development

Texas Water Development Board

Texas Department of Transportation / Federal Highway Administration

US Army Corps of Engineers

Federal Emergency Management Agency

NCTCOG Public Works Council

NCTCOG Trinity River COMMON VISION Steering Committee

Project Partners

North Central Texas Council of Governments

US Army Corps of Engineers

University of Texas at Arlington

Texas A&M AgriLife Extension Service

Tarrant Regional Water District

Upper Trinity Regional Water District

Halff Associates, Inc.

Freese and Nichols, Inc.

Highland Economics, LLC

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More Information on TSI

Website:
www.nctcog.org/tsi

StoryMap:
https://geospatial.nctcog.org/portal/apps/storymaps/stories/6b73437fc69643cb9b6f239831706191

12. General Information Items

Upcoming Events, Conferences, and Opportunities

- TFMA 2025 Annual Meeting
  - Denton, TX
  - March 25 – 28, 2025
  - More information available online.

Upcoming NCTCOG Meetings

- Public Works Council, February 20, 2025
- Regional Stormwater Management Coordinating Council, February 26, 2025
- Next iSWM Meeting (in person): April 2025
- TSI Technical Advisory Group Meeting
  - Virtual
  - TBD April 2025
  - Email Jai-W Hayes-Jackson (jhayes-jackson@nctcog.org) if you would like to participate

Environment & Development Committees Information Available at nctcog.org/envir/committees

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Roundtable Discussion

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13. Schedule for the Next Meeting

Thank you all for your participation today!

Our next iSWM Meeting will be held in-person week of April 28, 2025

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Contact & Connect

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