



# NCTCOG iSWM 5-Year Outreach and Implementation Strategy

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Produced by:



## Table Of Contents

Introduction .....	2
Why iSWM.....	2
iSWM Overview .....	3
iSWM Certified Communities .....	4
Objectives & Goals .....	5
Challenges & Evaluation of Outcomes.....	5
Implementation Strategies .....	6
iSWM Promotion .....	7
Community Engagement.....	9
Technical Support and Training .....	12
Technical Content.....	15
References .....	19

## List of Appendices

Appendix A: Implementation Strategies Matrix

Appendix B: Potential Interest Groups for Developer Outreach

## INTRODUCTION

This 5-Year Outreach and Implementation Strategy is a result of a collaboration between the North Central Texas Council of Governments (NCTCOG), consultants, and the iSWM Implementation Subcommittee with the intent to:

- Increase awareness of iSWM and iSWM principals.
- Identify key agencies, personnel and stakeholders (staff, leadership, elected officials) that need to be engaged through community outreach and with what level of frequency.
- Plan for continuous improvement to the program's technical content and training program.
- Refine the vision and messaging plan to be implemented over the next 5 years.

In order to achieve these goals, the implementation plan outlines specific tasks in the attempt to reach target audiences in multiple ways at different times to engage decision makers at cities in North Texas primarily through staff, elected and appointed officials, and the real estate development community.

### Why iSWM

The North Central Texas region has been experiencing rapid growth for decades and it continues at a record pace. This rapid growth throughout the region must be supported by a water supply that is completely reliant on the storage and treatment of stormwater runoff to drinking water standards. Challenges arise as development leads to the loss of more pervious and stormwater runoff limiting natural areas that are replaced by pavement and rooftops. This alteration of natural hydrology leads to more frequent flooding, exacerbated erosion in natural channels, and higher pollutant and sediment loadings flowing into our water supply reservoirs and riverine systems.

Legislative requirements related to stormwater management are constantly evolving at both the State and National levels. The iSWM program seeks to evolve with these changes and provide the tools and resources for North Texas counties and cities to be prepared for compliance with these changes now and into the future.

## **State Requirements and Local Criteria**

The iSWM program is a valuable resource for communities to help meet Texas Commission on Environmental Quality (TCEQ) requirements and also provides local guidance beyond compliance with legislative and funding requirements for stormwater management. It also helps communities plan for and implement local stormwater management ordinances and strategies that will serve to mitigate some of the many challenges associated with development and the consequential impacts on valuable natural systems and water resources in our region including:

- Localized and riverine flooding
- Streambank erosion
- Water quality concerns
- Loss of and damage to natural systems and ecosystems
- Regional consistency

The criteria and guidance manuals developed through the iSWM program and coupled with continuing outreach and education initiatives are geared to focus on helping communities effectively address and mitigate these impacts. Specific initiatives and community support programs provide the necessary tools to:

- Address stormwater early in the development process
- Design for multiple storm events
- Use integrated Site Design Practices
- Reduce downstream impacts
  - Water quality
  - Streambank erosion
  - Flooding
- Protect water quality during construction activities

## **iSWM Overview**

The core resources provided by the iSWM program include the following items that are continuously improved and updated to reflect current best practices in our region:

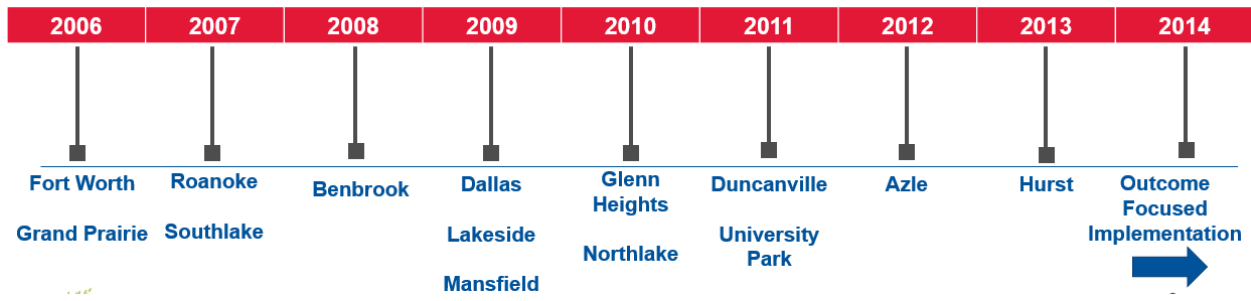
- Criteria Manual - Municipalities apply at local level
- Technical Manuals - Equations and methods for design
- Tools and Training - Archived training resources
- Program Guidance - Supplemental documents

The program supports and facilitates the utilization of these resources with a robust catalog of outreach and education materials that are developed and updated annually. Through collaboration with the regional iSWM committee, the outreach and educational needs along with updates to the criteria manual and technical manuals are prioritized and programmed on a year to year basis.

## iSWM Certified Communities

The iSWM program began in 2006. In 2014 the iSWM program moved to an outcome focused implementation process where communities become iSWM certified through the iSWM implementation process. Communities that participated in the program between 2006 and 2014 are considered Founding Members.

### iSWM Founding Member Timeline



iSWM Certified Communities are communities that have documented and adopted iSWM practices. iSWM implementation is the process by which a community can become an iSWM Certified Community. iSWM Certified Communities criteria or ordinances have been reviewed and approved by the iSWM Implementation Subcommittee. In order to find out more about the implementation process please read the iSWM Implementation Review Process Guide (Reference 1).

Depending on the iSWM practices adopted in the community, the community receives bronze, silver, or gold certification status. Please review the iSWM Program Implementation Tiered Measurement (Reference 2) to find out more about the different levels of iSWM implementation.

### iSWM Silver Certified Communities



## Objectives & Goals

This strategic plan provides a roadmap to guide the selection, scheduling, and funding forecasting for future updates to the criteria and technical manuals, planning and promotion of training and outreach programs, and recommendations for the establishment of collaborative partnerships with a wide variety of community stakeholder groups and the development community. Key objectives and goals that are established with this plan include:

- Increase awareness of iSWM and iSWM principals.
- Refine the vision and messaging plan to be implemented over the next 5 years.
- Identify key levels (staff, leadership, elected officials) that need to be engaged and with what level of frequency.
- Influence decision makers at cities in North Texas primarily through staff, elected and appointed officials, and the real estate development community.
- Encourage participation and use of Site Development Controls manual and increase in water quality criteria standards throughout the region.

## Challenges & Evaluation of Outcomes

While it is important to set specific goals and strategies for a specific timeline, it is equally important to be cognizant of the challenges that exist that must be addressed to optimize the impact and effectiveness of the iSWM program. Regulation and development priorities within our region will always be changing. These changes will directly impact the community's inclination and motivation to modify and update development requirements particularly as they relate to management of stormwater. What will not change is that our region will continue to expand with new development and infill development albeit at fluctuating rates as dictated by economic conditions. As our area continues to grow the stressors on our natural resources, our water resources, and our recreational areas will expand. The complexity and expense required to mitigate these impacts will also expand as these stressors continue to accumulate. Some of the specific challenges that should be consistently evaluated and strategies to track progress include:

### **Challenges**

- Lack of regional consistency in requirements. Differing levels of implementation of stormwater strategies within shared watersheds leads to inequities between communities. (e.g. If upstream communities don't manage floatable debris, downstream communities are impacted)
- Retiring advocates of iSWM
- Constant turnover in leadership within communities requires constant advocacy for the program. It is imperative to communicate the value of the program in a common language. Emphasize the financial implications of the program as they relate to economic development, quality of life, and environmental and natural resources stability.

## **Evaluation of outcomes**

- Participation - # of iSWM communities, # of subcommittee participants
- Identification of community advocates and consistent collaboration and outreach.
- Evaluation of community participation based on spatial distribution within major sub-watersheds of the Trinity River, Elm Fork, East Fork and water supply reservoirs.
- Tracking of initiatives approved in ongoing and completed watershed management programs.
- Tracking of not only GSI implementation sites but quantification of water quality volume treated versus untreated.
- Development of an annual Trinity River Watershed 'Report Card' that highlights successes and areas in need of improvement.

## **IMPLEMENTATION STRATEGIES**

The implementation strategies of the iSWM 5-year strategy are specific tasks intended to be executed by the iSWM Implementation Subcommittee. These tasks are intended to meet the objectives and goals mentioned in the previous sections. As these tasks are implemented it will be important to ensure they overcome the challenges and meet the intended outcomes outlined previously. The implementation strategies are broken up into four key categories:

- iSWM Promotion
- Community Engagement
- Technical Support and Training
- Technical Content

An overview of each category and their potential tasks are discussed in the following sections. A title, description, and recommended implementation timeline are provided for each task. These tasks are prioritized based on their recommended implementation timelines. Implementation timelines for each task are either noted as:

- Short Term (Next 1-3 years)
- Mid-Term (Next 3-5 years)
- Long Term (Beyond 5-years)

The Implementation Strategies Matrix found in Appendix A is a summary table of implementation strategies. This matrix also includes a summary of the implementation plans, frequency of need for each task, potential implementation team, and an indication of level of effort (labor and budget) that would be required. Each task could be implemented by the subcommittee volunteers, NCTCOG staff, or a consultant team. In Appendix A, the level of effort indicator uses a range of one to three dollar signs (\$). One dollar sign indicates the task would require the least amount of labor and budget when compared to the other implementation strategies. Two dollar signs indicates a medium amount of effort and three dollar signs indicate the most level of effort. The estimations of level of efforts are based on the scope of each implementation strategy that is described in this strategy document. Since these implementation strategies are conceptual the scope of each individual task is subject to change either expanding or reducing the level of effort required for each task.

The purpose of the tasks within this category is to enhance iSWM marketing content to be used during community engagement to explain the environmental, economic, and community benefits of implementing and utilizing iSWM. These tools include case studies, videos, website enhancements, and visuals so that all members of the community can understand importance and purpose of the iSWM program.

### 1 **Case Studies**

Enhance the current archive of iSWM case studies with focus on the iSWM program from the perspective of an iSWM Certified Community or construction project utilizing iSWM standards. Case studies should be documented using preferably a video format.

#### **Focus on Communities:**

- Add iSWM case studies documenting communities' experience with the iSWM program.
- Case studies should identify features related to iSWM certification. Potential topics are:
  - Lessons learned or success stories in regards to streambank protection, flooding protection, or water quality
  - iSWM implementation into the Community's design criteria or ordinances
  - Staff expectations during the design and construction of projects utilizing iSWM criteria

#### **Focus on Projects:**

- Develop best practice videos of recent projects utilizing iSWM criteria.
- Promote developer-submitted best practices videos of recent projects. Though case study projects could be documented and presented from the private or public perspective.
- Encourage 2 minute maximum video with recommended highlights:
  - project stats and location
  - significant iSWM implementation strategies
  - implementation impact metrics
  - data on project's increased value, other benefits
  - lessons learned, best practices
- Submission should include 30 second snippet for social media plugs.
- Upload full-length version to iSWM website Case Studies page along with any additional information
- Post short snippet to a relevant NCTCOG social media account & tag the developer, project, or city. Send links to city and whoever submitted to repost and build promotion.



	<ul style="list-style-type: none"> <li>• Send snippet and link to full-length video on iSWM website to news sources as a press release, including a few sentences about the significance of this particular project, framing a compelling news story.</li> <li>• <b>Implementation Plan:</b> Short Term (next 1-3 years) new case studies to be solicited biannually</li> </ul>
2	<p><b>Website Updates</b></p> <ul style="list-style-type: none"> <li>• Add images and visual cues to help people navigate website certification guidance page.</li> <li>• Clusters of images with callout text allow visual cues to hook the target user with a large number of resources in a small space</li> <li>• Utilize the long scroll layout to offer increasing depth of content as users scroll</li> <li>• Audience: General Public, Students, Community Partner Organizations <ul style="list-style-type: none"> <li>◦ Embed, link, and include existing resources and organizations for individuals to become more educated or involved in general stormwater management or iSWM. For example see Reference 3.</li> <li>◦ Include calls to action such as template letter to city leader about adopting iSWM</li> </ul> </li> <li>• Audience: City Staff <ul style="list-style-type: none"> <li>◦ Downloadable handouts, FAQ pages, or resources to share with city leaders (potentially the same resources offered at engagements)</li> <li>◦ Quick links to most frequently accessed documents or pages (by assessing website usage data)</li> <li>◦ Template slideshow to present iSWM to fellow staff and city leaders</li> </ul> </li> <li>• Audience: Private development community <ul style="list-style-type: none"> <li>◦ Links to iSWM policy &amp; guidance resources for each iSWM municipality</li> <li>◦ Quick links to best practices, case studies</li> <li>◦ Simple submission request for assistance finding qualified engineering &amp; design professionals in the NCTCOG region.</li> </ul> </li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence in the next 5-years.</li> </ul>
3	<p><b>Economic Benefits of iSWM</b></p> <ul style="list-style-type: none"> <li>• A basic summary of existing data and analysis on economic benefits of projects and techniques related to iSWM implementation to demonstrate value potential for public sector and private sector.</li> <li>• Highlight a few specific examples of economic benefits to municipalities and economic benefits to developers and property owners</li> <li>• Focus on Triple Bottom line metrics that include the total costs of financial, social, and environmental performance.</li> <li>• Focus on impacts of meeting specific metrics and specific infrastructure designs, such as streambank protection and the savings in hard armoring in the future.</li> <li>• May include real estate value of recreational greenspace as stormwater management infrastructure.</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Implementation Plan:</b> To be implemented in the mid-term (next 3-5 years) as a single occurrence in the next 5-years.</li> </ul>
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## Community Engagement

The purpose of the tasks within this category is to gain awareness, energy, and involvement in the iSWM program throughout the NCTCOG region. Through this engagement, the intent and purpose of the iSWM program should be understood by not only designers, city staff, and contractors, but by the general public, elected officials, real estate and development community, etc. The ultimate intent of these tasks is increase participation of communities within the North Texas Region.

4	<p><b>Developer Outreach</b></p> <ul style="list-style-type: none"> <li>• Partner with industry and interest groups to present at events to promote iSWM and share best practices and successful projects</li> <li>• These events or presentations can be tailored to each organization’s membership objective or multiple organizations together.</li> <li>• Highlight the Redevelopment Guidance document (Reference 4)</li> <li>• Highlight Best Practices and newest Case Study projects in the NCTCOG region. Many of these groups enjoy promoting new development projects to keep their membership informed on the latest trends. Topics may be tailored further to most interesting topics, well-known developers, or specific cities.</li> <li>• See list of potential groups to partner with in Appendix B.</li> <li>• From these events the hope is more developers and people from the Real Estate community learn about iSWM and get involved in the IIS.</li> <li>• More in-depth questions and topics should be gathered for future NCTCOG trainings for developers, builders, etc. See Task 12.</li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) annually over the next 5-years.</li> </ul>
5	<p><b>City Council Outreach &amp; Training</b></p> <ul style="list-style-type: none"> <li>• Identify Communities for outreach and training. <ul style="list-style-type: none"> <li>○ Targeted outreach and education for council members and communities within watershed management planning areas with at-risk and impacted waterbodies.</li> <li>○ Identify stakeholder municipalities along sensitive corridors or areas with specific issues that iSWM could impact such as Downstream Assessment, MS4 requirements, or water quality issues.</li> <li>○ Identify council members with water quality issues in their districts</li> <li>○ Identify bodies of water or streams that do not meet or barely meet state requirements.</li> </ul> </li> </ul>

- Identify overtaxed stormwater pipes and areas to concentrate drainage retrofits to support flood mitigation
- Reach out on multiple related issues separately, throughout the year to maximize number of times elected representative hears about iSWM benefits in their district. Target multiple officials within a single city.
- Volunteers from IIS could present about iSWM at city council meetings
- Expand Benefits and Incentives list (Reference 5) into a graphic flier and include benefits such as an impact on stormwater systems, water bodies, and long-term consequences.
- Consultant could develop resources for presentations to city councils that could be presented or shared by iSWM implementation subcommittee members, NCTCOG staff, consultant, or other volunteers.
  
- **Training:**
  - Develop training session for City Council retreats in non-participant or participating cities.
  - "Does your city want cleaner water? Worried about flooding and erosion? Your best line of defense is iSWM."
  - Develop 30 min workshop
  - Request retreat scheduler contact from city secretary
  - Develop relationships with individual elected officials who can lobby for this short addition to council retreat.
  - Assist staff in participating cities to prepare a brief overview of iSWM for council retreats to continue promotion of iSWM program.
  - Promotion of iSWM through city council work sessions or strategic planning
- **Implementation Plan:** To be implemented in the midterm (next 3-5 years) biannually over the next 5-years.

- 6 **Non-profit Outreach Plan**
- Develop outreach plan for regional non-profit groups education, implementation, and PPP opportunities discussion and identification.
  - Partner with private institutions interested in their environmental impact and also interested in being a leader in their field, to collaborate and coordinate ongoing, new construction, and redevelopment projects and resilience initiatives: Universities, Nonprofits, Hospitals, Museums and cultural institutions, etc.
  - Work with nonprofit groups seeking opportunities to give-back to the community and meaningful projects to participate in, whose mission aligns with healthy rivers and streams:
    - Master Naturalists
    - Trinity Coalition and Trinity Paddle Trail group
    - Trinity Park Conservancy (Dallas): internship program (in partnership with Groundwork Dallas) for high-school age students to work with underserved communities and incorporate education about river restoration.
    - Groundwork Dallas

	<ul style="list-style-type: none"> <li>○ Fort Worth Rowing Club</li> <li>• iSWM manual and program can be a teaching tool and compendium document for these groups to see how their work compliments other regional stormwater initiatives.</li> <li>• Coordinate with Dallas CECAP (Comprehensive Environmental Climate Action Plan) other related municipal programs (with participating cities and non-participating cities) to work strategies in synergy with iSWM goals.</li> <li>• <b>Implementation Plan:</b> To be implemented in the midterm (next 3-5 years) biannually over the next 5-years.</li> </ul>
7	<p><b>Education Outreach Plan</b></p> <ul style="list-style-type: none"> <li>• Develop outreach plan for regional school districts for education and implementation.</li> <li>• Contact school districts in growing communities where new campuses will impact ecology.</li> <li>• Partner with local high school and college architecture and engineering programs to design a simple hands-on, STEM-based project promoting the benefits of iSWM. Example: Integrate drainage and flow calculations and hands-on water quality testing.</li> <li>• Preliminary List of local high school architecture and urban planning programs: CityLab HS (Dallas ISD), Molina HS (Dallas ISD), Richardson High School (Richardson ISD), Gilbreath Reed Career and Technical Center (Garland ISD), Career Center East (Lewisville ISD), Dubinski Career Center (Grand Prairie ISD), Rockwall CTE Center (Rockwall ISD), Mac Arthur HS (Irving ISD).</li> <li>• Preliminary List of NCTCOG region university architecture and urban planning degree programs: UTA - College of Architecture, Planning, and Public Affairs, SMU Lyles School of Engineering, UNT - Urban Policy and Planning.</li> <li>• <b>Implementation Plan:</b> To be implemented in the long term (beyond 5 years).</li> </ul>
8	<p><b>Stormwater Awards Program</b></p> <ul style="list-style-type: none"> <li>• Stormwater Awards Program with press releases and engaging project narrative.</li> <li>• Awards Program designed to give accolades to high achievers, create a reason for press about stormwater, and to promote a benchmark of success for others.</li> <li>• Could include a participating city, and one public and one private development project.</li> <li>• Present awards at an iSWM Subcommittee meeting (to promote this body which has a great impact on the program).</li> <li>• Consider live video documentation on a NCTCOG social media platform with a similar mission and large following.</li> <li>• Send a press release with images and a few sentences about the significance of these particular projects, framing a compelling news story.</li> <li>• <b>Implementation Plan:</b> To be implemented in the long term (beyond 5 years).</li> </ul>

9	<h3><b>Real Estate &amp; Developer Community Task Force</b></h3> <ul style="list-style-type: none"> <li>• Task Force could support the development of a guidance document for non-technical users about iSWM.</li> <li>• Additional subcommittee members would need to be added to support a subgroup, however the intention of this task is to give developers and other non-technical members a place in the iSWM program.</li> <li>• Develop Real Estate Community Task Force as a subgroup within the iSWM subcommittee to guide creation of iSWM Adoption Best Practices Handbook</li> <li>• Set up the Task Force: target prominent local developers in all industry sectors as well as regional developers familiar with constructing within iSWM regulations, who could be attracted to build in target iSWM member cities. <ul style="list-style-type: none"> <li>○ Gather a list from each member city of the projects and developers that have adhered to the iSWM regulations since iSWM adoption.</li> </ul> </li> <li>• Explain the Tiers as well as Guidance for Partial Application of Outcomes (Reference 6)</li> <li>• Explain the benefits to property owners &amp; developers: detail &amp; promote the long-term benefits that outweigh the upfront costs and relate to big-picture goals and long-term impacts.</li> <li>• Explain the benefits to the region: the impacts iSWM Certified cities have made, which policies they've adopted, and examples from their best compliant projects.</li> <li>• Develop list of potential incentives for developers, such as: <ul style="list-style-type: none"> <li>○ monetary (discount on stormwater utility fee, etc.)</li> <li>○ other (expedited permit applications, developable land waivers, etc.)</li> </ul> </li> <li>• Develop the specific ordinance language (Reference 7)</li> <li>• <b>Implementation Plan:</b> To be implemented in the long term (beyond 5 years).</li> </ul>
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## Technical Support and Training

The purpose of the tasks within this category is to engage with communities interested in or involved with the iSWM program so they have the support, training, and assistance they need to understand and implement the iSWM program.

10	<h3><b>iSWM Implementation Training</b></h3> <ul style="list-style-type: none"> <li>• Hold workshops or trainings for communities interested in implementing iSWM</li> <li>• Review their current ordinances and regulations to see where they qualify for iSWM Credit. Identify opportunities to incorporate iSWM criteria into current ordinances.</li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) annually over the next 5-years.</li> </ul>
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11	<p><b>BMP Design and Maintenance Training</b></p> <ul style="list-style-type: none"> <li>• Continue training communities on engineering design or maintenance of BMPs</li> <li>• Gather recommended training topics from IIS members and communities.</li> <li>• Suggested Topics: <ul style="list-style-type: none"> <li>○ iSWM requirements for developers and the additional costs to comply</li> <li>○ Guidance for developers and engineer's on managing multiple projects with varying local criteria requirements across the communities in the NCTCOG region.</li> <li>○ Design of storm drain pipe systems using iSWM manual for engineers</li> </ul> </li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) annually over the next 5-years.</li> </ul>
12	<p><b>Developer Training</b></p> <ul style="list-style-type: none"> <li>• As more developers, builders, etc. learn about iSWM educational webinars could be held geared towards this community. Developers see firsthand the many benefits to building to iSWM standards.</li> <li>• Potential topics: <ul style="list-style-type: none"> <li>○ Benefits of iSWM to different types of real estate development projects. How can developers participate?</li> <li>○ Examples of common iSWM applications (Redevelopment Guidance document)</li> <li>○ Case studies and locations for individual follow up visits (map)</li> <li>○ Participating cities and Non-participating cities in NCTCOG region. iSWM can be applied in any city, even without municipal participation</li> <li>○ Guest developers who have completed a recent project (especially if high-profile) would add an interesting expert perspective to the conversation. Questions for guest(s) could be used to convey key concepts of the iSWM program adding depth and value after a quick overview presentation of the program and their specific project</li> </ul> </li> <li>• As trainings are scheduled, they could be advertised with partner organizations such as The Real Estate Council (TREC), Urban Land Institute (ULI) Dallas-Fort Worth, and US Green Building Council (USGBC) North Texas.</li> <li>• <b>Implementation Plan:</b> To be implemented in the mid-term (next 3-5 years) or long term (beyond 5 years) annually over the next 5-years depending on need and involvement.</li> </ul>
13	<p><b>Watershed Management Plan Community Outreach</b></p> <ul style="list-style-type: none"> <li>• Outreach and education for communities within watershed management plan areas. Outreach could include: <ul style="list-style-type: none"> <li>○ Connect with staff and city leaders developing and administering plans</li> <li>○ Events could include NCTCOG staff-led activities</li> <li>○ Events could include pre-recorded webinars, videos, or handouts available on website for local staff to lead with NCTCOG staff present to answer questions.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Reach out on multiple related issues separately, throughout the year to maximize number of times individual hears about iSWM benefits in their community. Target multiple individuals within a single city.</li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) biannually over the next 5-years.</li> </ul>
14	<p><b>iSWM Assistance Contact List</b></p> <ul style="list-style-type: none"> <li>• Develop a comprehensive list of engineer or city staff contacts for assistance working in any of the iSWM certified communities. Contacts should be able to share appropriate iSWM documents and guidance to developers.</li> <li>• This contact list can be a resource for developers or engineers assessing projects across the NCTCOG region. Could also be utilized by non-participating cities to enable quick comparable searches for local information when considering the options for iSWM adoption.</li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence over the next 5-years.</li> </ul>
15	<p><b>iSWM Designer Recognition Program</b></p> <ul style="list-style-type: none"> <li>• Develop an iSWM recognition program for engineers/planners/designers.</li> <li>• Certified individuals comprise a database of qualified professionals</li> <li>• Database list can be provided to participating cities for assistance to project applicants and to developers who are requesting assistance from NCTCOG</li> <li>• <b>Implementation Plan:</b> To be implemented in the long term (beyond 5 years).</li> </ul>

## Technical Content

The purpose of the tasks within this category is to enhance the technical materials of the iSWM program and make sure they remain current. These materials include the design criteria manual, technical manuals, and new materials as needed to allow communities to understand and implement the iSWM program.

<h3>Site Development Controls Technical Manual Updates</h3>	
16	<p>The following tasks are based on feedback received in a series of workshops held in October 2019 and February 2020. The goal of these workshops was to meet with technical members of the IIS to discuss modifications that could be made to the Technical Manual to ensure the document is easier to use.</p> <ul style="list-style-type: none"> <li>• Update remaining BMP summary pages in Site Development Controls manual.               <ul style="list-style-type: none"> <li>○ The update should reduce the amount of detail on the current summary pages and be more readable/appealing.</li> </ul> </li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence in the next 5-years.</li> </ul>
17	<ul style="list-style-type: none"> <li>• Reorganization of Site Development Controls manual with categories.               <ul style="list-style-type: none"> <li>○ Reduce the number of categories. The categories could be potentially broken up into categories such as: water quality, stream protection, and flood control.</li> </ul> </li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence in the next 5-years.</li> </ul>
18	<ul style="list-style-type: none"> <li>• Add a comprehensive acceptable vegetation list to Site Development Controls manual.               <ul style="list-style-type: none"> <li>○ The Technical Manual needs a more simplified approach that helps make the decision for the engineer/designer.</li> <li>○ Potentially a small picture could be provided of each plant.</li> <li>○ It could be stated how many cycles it takes to establish and if it is dependent on native vs. non-native soils.</li> </ul> </li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence in the next 5-years.</li> </ul>
19	<ul style="list-style-type: none"> <li>• Addition of new specifications and design check lists to Site Development Controls manual.</li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence in the next 5-years.</li> </ul>
20	<ul style="list-style-type: none"> <li>• Add emerging BMPs into Site Development Controls manual.</li> <li>• <b>Implementation Plan:</b> To be implemented in the long term (beyond 5 years).</li> </ul>



21	<ul style="list-style-type: none"> <li>• Rework introduction of Site Development Controls manual. <ul style="list-style-type: none"> <li>○ The first pages of the manual could be replaced so the reader better understands the integrated design approach.</li> <li>○ Reduce the length of the introduction to 1-3 pages of high-level introduction and explanation and go into more details throughout the rest of the document and in appendices</li> <li>○ Clearly state in bold font that goal is 70% to 80% TSS removal (currently stated on page SD-8)</li> <li>○ Include specific statements in intro about compliance with MS4 requirements</li> <li>○ Move suitability (1.2) forward of description table (1.7)</li> <li>○ Design efficiencies table should be moved to the front</li> <li>○ Provide better guidance for situations where each device or category are most appropriate</li> </ul> </li> <li>• <b>Implementation Plan:</b> To be implemented in the long term (beyond 5 years).</li> </ul>
22	<p><b>Construction Controls Technical Manual Updates</b></p> <ul style="list-style-type: none"> <li>• Update Section 3.9 Sediment Basin design section based on feedback documented in Recommendations for Technical Feedback from iSWM Adopters memorandum to iSWM Implementation Subcommittee dated April 20, 2020 <ul style="list-style-type: none"> <li>○ Correct the wording to require a minimum dewatering time of 36 hours. To correct this in the Construction Controls technical manual, this will require a revision to the wording on page CC-135 Step 14 (a). The wording will be needed to change from a 6-hour drawdown time to 36 hours. Also, the 21,600 seconds representing 6 hours will need to be increased to 129,600 seconds representing 36 hours.</li> <li>○ Remove the reference to Section 3.8 of the criteria manual and replace with a reference to Section 1.0 or Table 1.1 in the Hydrologic Technical Manual to determine which hydrologic method is appropriate for their site.</li> <li>○ Add wording to Section 3.9.3 on page CC-118 that surface skimmers may be reusable. Also change the wording on the last bullet point of page CC-118 to "A perforated riser can be used as an outlet only when surface discharge is not feasible."</li> </ul> </li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence in the next 5-years.</li> </ul>
	<p><b>Hydrology and Hydraulics Technical Manual Updates</b></p> <p>Update technical manual based on feedback documented in Recommendations for Technical Feedback from iSWM Adopters memorandum to iSWM Implementation Subcommittee dated April 20, 2020.</p>

23	<ul style="list-style-type: none"> <li>• Correct error found in the frustrum of a pyramid formula in the Hydraulic Technical Manual.</li> <li>• Add guidance for calculations for an on-grade inlet for a parabolic crowned street.</li> <li>• Revise wording in Section 1.3.7 Simplified SCS Peak Runoff section to refer to TR 55 for full description.</li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence in the next 5-years.</li> </ul>
24	<ul style="list-style-type: none"> <li>• Reformat detention sizing sections in Hydrologic Technical Manual to be clearer and more concise.</li> <li>• <b>Implementation Plan:</b> To be implemented in the mid-term (next 3-5 years) as a single occurrence in the next 5-years.</li> </ul>
25	<p><b>Forebay Design Guidance</b></p> <ul style="list-style-type: none"> <li>• Provide recommendation for additional design guidance for forebays.</li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence in the next 5-years.</li> </ul>
26	<p><b>Hydrologic Mimicry Research</b></p> <ul style="list-style-type: none"> <li>• Research hydrologic mimicry cases studies and guidance on greenfield/greyfield development scenarios in surround communities. Provide recommendation for mimicry guidance and target goals for volume management. This could be complimentary or perhaps an alternative to 85th percentile storm event.</li> <li>• <b>Implementation Plan:</b> To be implemented in the short term (next 1-3 years) as a single occurrence in the next 5-years.</li> </ul>
27	<p><b>Pipe utility crossings BMP guidance.</b></p> <ul style="list-style-type: none"> <li>• Provide recommendations for pipe utility crossing design for BMPs.</li> <li>• <b>Implementation Plan:</b> To be implemented in the mid-term (next 3-5 years) as a single occurrence in the next 5-years.</li> </ul>
28	<p><b>iSWM Project Signage Recommendations</b></p> <ul style="list-style-type: none"> <li>• Develop recommendations for public signage when a project is constructed utilizing iSWM design criteria, including the availability of the iSWM logo in high-resolution.</li> <li>• <b>Implementation Plan:</b> To be implemented in the mid-term (next 3-5 years) as a single occurrence in the next 5-years.</li> </ul>
29	<p><b>MS4 Permit Design Guidance for LID/GSI</b></p> <ul style="list-style-type: none"> <li>• Develop guidance document regarding the use of Low Impact Development (LID) BMPs and Green Stormwater Infrastructure (GSI) to comply with MS4 permit requirements.</li> <li>• <b>Implementation Plan:</b> To be implemented in the long term (beyond 5 years).</li> </ul>

30	<p><b>Review of iSWM Design &amp; Criteria Manual</b></p> <ul style="list-style-type: none"> <li>• Set up committee to review and rewrite Design Criteria manual.</li> <li>• <b>Implementation Plan:</b> To be implemented in the long term (beyond 5 years).</li> </ul>
31	<p><b>Design &amp; Criteria Manual Visual Companion</b></p> <ul style="list-style-type: none"> <li>• Develop a visual companion to represent the application and implementation process. This could be a flow chart that explains the process and purpose of implementing the iSWM program for people of all positions and technical abilities. Include images that demonstrate project examples/case studies.</li> <li>• <b>Implementation Plan:</b> To be implemented in the long term (beyond 5 years).</li> </ul>

## REFERENCES

1. iSWM Implementation Review Process Guide  
[http://iswm.nctcog.org/Documents/iSWM\\_Implementation\\_Review\\_Process.pdf](http://iswm.nctcog.org/Documents/iSWM_Implementation_Review_Process.pdf)
2. iSWM Program Implementation Tiered Measurement  
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3. Stormwater Management in North Central Texas  
[https://www.youtube.com/watch?v=1L\\_4suLO-wo](https://www.youtube.com/watch?v=1L_4suLO-wo)
4. Redevelopment Guidance document  
<http://iswm.nctcog.org/Documents/iSWM-Redevelopment-Guidance.pdf>
5. iSWM Benefits and Incentives  
[http://iswm.nctcog.org/Documents/iSWM\\_Benefits\\_and\\_Incentives.pdf](http://iswm.nctcog.org/Documents/iSWM_Benefits_and_Incentives.pdf)
6. iSWM Implementation Guidance for Partial Outcomes  
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7. integrated Site Design Practices Sample Ordinance Language  
<http://iswm.nctcog.org/Documents/Sample-Ordinance-Language-for-Integrated-Site-Design-Practices.pdf>

## **APPENDIX A: IMPLEMENTATION STRATEGIES MATRIX**

Task	Implementation Timeline			Frequency of Need	Implementation Team	Level of Effort *
	Short Term (Next 1-3 Years)	Mid-Term (Next 3-5 Years)	Long Term (Beyond 5 Years)			
<b>iSWM Promotion</b>						
1 Case Studies	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Biannually	NCTCOG & Consultant Team	\$\$
2 Website Updates	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG & Consultant Team	\$\$
3 Economic Benefits of iSWM		<input checked="" type="checkbox"/>		Single Occurrence	Consultant Team	\$\$
<b>Community Engagement</b>						
4 Developer Outreach	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Annually	NCTCOG & Consultant Team	\$
5 City Council Outreach & Training		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Biannually	NCTCOG & Consultant Team	\$\$
6 Non-profit Outreach Plan		<input checked="" type="checkbox"/>		Biannually	NCTCOG & Consultant Team	\$\$
7 Education Outreach Plan			<input checked="" type="checkbox"/>	Single Occurrence	NCTCOG & Consultant Team	\$\$
8 Stormwater Awards Program			<input checked="" type="checkbox"/>	Single Occurrence	NCTCOG & Consultant Team	\$\$
9 Real Estate & Developer Community Task Force			<input checked="" type="checkbox"/>	Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$
<b>Technical Support and Training</b>						
10 iSWM Implementation Training	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Annually	NCTCOG & Consultant Team	\$
11 BMP Design and Maintenance Training	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Annually	NCTCOG & Consultant Team	\$
12 Developer Training		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Annually	NCTCOG & Consultant Team	\$
13 Watershed Management Plan Community Outreach	<input checked="" type="checkbox"/>			Biannually	NCTCOG & Consultant Team	\$\$
14 iSWM Assistance Contact List	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG & Consultant Team	\$
15 iSWM Designer Recognition Program			<input checked="" type="checkbox"/>	Single Occurrence	NCTCOG & Consultant Team	\$\$
<b>Technical Content</b>						
16 Site Development Controls Technical Manual Updates Update remaining BMP summary pages in Site Development Controls manual.	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$
17 Reorganization of Site Development Controls manual with categories.	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$
18 Add a comprehensive acceptable vegetation list to Site Development Controls manual.	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$
19 Addition of new specifications and design check lists to Site Development Controls manual.	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$
20 Add emerging BMPs into Site Development Controls manual.			<input checked="" type="checkbox"/>	Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$\$
21 Rework introduction of Site Development Controls manual.			<input checked="" type="checkbox"/>	Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$\$
22 Construction controls Technical Manual Updates	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$
23 Hydrology and hydraulic Technical Manual Updates Correct frustum of a pyramid formula, additional on-grade inlet guidance, and TR-55 rewording	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$
24 Reformat detention sizing sections in Hydrologic Technical Manual		<input checked="" type="checkbox"/>		Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$
25 Forebay Design Guidance	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$
26 Hydrologic Mimicry Research	<input checked="" type="checkbox"/>			Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$
27 Pipe Utility Crossing Design Guidance		<input checked="" type="checkbox"/>		Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$
28 iSWM Project Signage Recommendations		<input checked="" type="checkbox"/>		Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$
29 MS4 Permit Design Guidance for LID/GSI			<input checked="" type="checkbox"/>	Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$
30 Review of iSWM Design & Criteria Manual			<input checked="" type="checkbox"/>	Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$\$
31 Design & Criteria Manual Visual Companion			<input checked="" type="checkbox"/>	Single Occurrence	NCTCOG, Subcommittee, Consultant Team	\$\$\$
<p>* Level of effort indicator uses a range of one to three dollar signs (\$) to indicate the level of effort (labor and budget) when compared with other implementation strategies.  \$ = Implementation strategy would require the least amount of effort when compared to the other implementation strategies  \$\$ = Implementation strategy would require medium amount of effort when compared to the other implementation strategies  \$\$\$ = Implementation strategy would require the most level of effort when compared to the other implementation strategies  The estimates of level of efforts are based on the scope of each implementation strategy that is described in this strategy document. Since these implementation strategies are conceptual the scope of each individual task is subject to change either expanding or reducing the level of effort required for each task.</p>						

## **APPENDIX B: POTENTIAL INTEREST GROUPS FOR DEVELOPER OUTREACH**

- **Urban Land Institute (ULI):**  
Development professionals primarily including planners, designers and developers but also including banking and finance. Organization supports 30 Councils (specific national or local groups) for various product types (e.g. - University Development, Public Development & Infrastructure, Redevelopment & Reuse, etc.) Dallas-Fort Worth Chapter.
- **The Real Estate Council (TREC):**  
Local real estate professionals from a variety of industries especially including construction and finance. NCTCOG region only.
- **American Institute of Architects (AIA):**  
Architects and Interior Design professionals interested in best practices and lessons learned in design. Dallas Chapter.
- **American Planning Association (APA):**  
Urban planners primarily from the public sector interested in best practices for policy and project design. Texas Chapter, North Central Section.
- **American Society of Landscape Architects (ASLA):**  
landscape designers interested in best practices for project design. DFW Chapter.
- **US Green Building Council (USGBC):**  
Organization overseeing LEED Certification (Leadership in Energy Efficiency and Design) for projects and individual practitioners. Interested in eco-friendly design and best practices especially as related to LEED Certified (New Construction or Redevelopment Buildings, Site planning, and Neighborhood projects. North Texas Chapter.
- **Greater Dallas Planning Council (GDPC):**  
Membership of design professionals and civic leaders interested in staying abreast of regional and local planning initiatives and weighing in on local and regional planning projects. NCTCOG region only.
- **Congress for the New Urbanism (CNU):**  
Organization for individuals interested in promoting walkable urbanism from any industry or walk of life. Members range from real estate professionals including small developers pushing the envelope, to concerned citizens and activists. North Texas Chapter.
- **Dallas Builders Association (DBA):**  
Trade association representing all segments of the residential building industry in the Dallas Metropolitan area. Its mission is to enhance its members' ability to provide safe, affordable, quality housing to the citizens of the local communities. Dallas only.