

Climate Change in NPDES Permitting

Heather Huddle

2024 Stormwater Roundtable

October 22, 2024

Agenda

- Training and Resources for implementing climate change into a NPDES permit
- Integrated Planning
 - Permitting Authority's Assistance
- Long Term Stormwater Planning
 - New Materials

Training & Resources

- EPA's resources
 - Creating Resilient Water Utilities (CRWU)'s Climate Resilience Evaluation and Awareness Tool (CREAT)**
 - Locating and Selecting Scenarios Online (LASSO)*
 - Low Flow Statistics Tools Handbook*
 - Thermal Discharges in NPDES Permits: Overview of Resources and Tools*
 - Climate Vulnerability Assessments*

* Training currently being developed and will be available

* Training available

* Technical Assistance available

EPA's Integrated Planning Technical Resources

Information Resources:

- [Integrated Planning Storymap](#)
- [Long-term stormwater planning](#)
- [Permitting Authority Toolkit](#)
- [Fact Sheet Series to develop an integrated plan](#)
- [2012 Integrated Planning Framework](#)
- [Sustainability planning guidance](#)
- [2021 Report to Congress Financial capability assessment guidance](#)

Recorded Webinars:

- [The Straight Scoop on Integrated Planning](#)
- [Introducing EPA's Integrated Planning Element Four](#)
- [Integrated Planning Peer-to-Peer Exchange for Municipalities](#)

Incorporating Workbook

Integrated Planning in Action Permitting Authority Toolkit: Module 3 Workbook	
Overview	This workbook was created as a companion to Module 3 of EPA's Integrated Planning Permitting Authority Toolkit to help permitting authorities facilitate an integrated plan review as part of the permit renewal process, determine if the plan contains all of the information necessary to inform the permit development, and align the integrated plan outcomes with permit requirements, permit issuance, and compliance schedules.
Sheet	Description
0. Plan Information	Enter basic information about the permittee, integrated plan submittal, and the relevant permits and enforcement actions.
1. Administrative Timeline	Displays plan review timeline against permit expiration dates to visualize the integrated plan review window and help you identify key dates.
2. Activity Log	Table to track different aspects of permitting authority review and document any follow up with the permittee.
3. Plan Review	Guides you through a completeness review of the integrated plan based on the six elements of the Integrated Planning Framework. Includes space for you to take notes on what is included in or missing from the plan.
4. Plan Completeness Summary	Output from the plan review sheet highlighting which elements are missing information. Includes space to document any follow-up communications with the permittee.
5. Adequacy Summary	Allows you to compare the original permit requirements with the proposed outcomes of the integrated plan. Guides you through documenting the water quality drivers and requirements as well as and non-CWA requirements and drivers to elaborate on the justification for an integrated approach.
6. Evaluation Summary	Output sheet summarizing the basic plan information, plan completeness, and adequacy from previous tabs. Includes space to document the final state decision regarding a permit revision and/or compliance schedule.
Key	
	Tool inputs are indicated in purple
	Tool outputs are indicated in orange and should not be edited
	General notes and answers are indicated in grey

- To watch the Integrated Planning Toolkit Incorporating Module 3 Workbook Instructional Video, go to <https://www.youtube.com/watch?v=hMS2OuOxfUk>

Integrated Planning in Action Fact Sheet Series

To view all fact sheets, go to <https://www.epa.gov/npdes/integrated-planning-implementation-documents#factsheets>

Integrated Planning in Action

The Basics

Integrated planning is a process for municipalities to achieve clean water and human health goals while addressing aging wastewater and stormwater infrastructure, changing population and rainfall patterns, and competing priorities for funding.

EPA developed the 2012 [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) to help municipalities maximize their benefits through integrated planning while meeting Clean Water Act requirements. The Framework describes six elements that should be included in any integrated plan.

Integrated Planning Framework Reinforced by Law
In 2010, Congress enacted the Water Infrastructure Improvement Act (WIIA), which officially recognizes the Framework as a voluntary path that municipalities can take to comply with the Clean Water Act. The WIIA also requires EPA to continue supporting communities as they apply the Framework to their stormwater and wastewater planning efforts.

Element 6: Adapt for Success
Element 5: Funding the Development of an Integrated Plan
Element 4: Identify Clean Water Act (CWA) Requirements
Element 3: Identify Municipal Stormwater and Wastewater Planning Approach Framework
Element 2: Identify Requirements and Drivers
Element 1: Getting Started

Integrated Planning in Action

Funding the Development of an Integrated Plan

EPA's [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) helps municipalities meet clean water goals while prioritizing infrastructure investments with the greatest water quality improvements and community benefits. The Framework lays out a comprehensive, yet flexible planning process based on a set of overarching principles. EPA created a series of fact sheets—including this one—to inform municipalities interested in integrated planning.

Investing in integrated planning can lead to efficiencies. Investing in a comprehensive integrated planning process can lead to long-term cost savings, multiple community benefits, and efficiencies in meeting a municipality's Clean Water Act obligations. If a municipality plans for wastewater, stormwater, and other infrastructure needs separately, inefficiencies and redundancies could cost more money in the long term. Integrated planning allows the municipality to create a single plan to address varied infrastructure needs while addressing the most critical water quality issues first.

The cost of developing an integrated plan varies. The cost of developing an integrated plan depends on what a municipality already has done, such as recent asset management inventories, engineering designs, capital improvement plans, and master plans. Other factors such as the scope of infrastructure, the incorporation of a financial analysis, and the readiness of data also affect the budget. Early in the process, municipalities should look at options for streamlining the planning process for the plan's development. It typically takes 12 to 18 months to develop and implement the plan. Budget assumptions change, but overall municipalities can expect to see a 10% to 20% reduction in total project costs.

Timeline 1: plan typically completed by the end of the fiscal year.

Timeline 2: plan typically implemented by the end of the fiscal year.

Timeline 3: plan typically implemented by the end of the fiscal year.

Integrated Planning in Action

Determining Requirements and Drivers

EPA's [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) helps municipalities meet clean water goals while prioritizing infrastructure investments with the greatest water quality improvements and community benefits. The Framework lays out a comprehensive, yet flexible planning process based on a set of overarching principles. EPA created a series of fact sheets—including this one—to inform municipalities interested in integrated planning.

As the nation faces population growth, aging infrastructure, limited resources, and increasingly complex water quality issues, communities need new approaches to plan for and invest in infrastructure improvements. Municipalities managing wastewater treatment facilities (WWTs), sanitary sewers, and stormwater infrastructure typically prioritize their investments. Focusing on each infrastructure need individually could cause a municipality to not focus on addressing its most serious water quality issues first.

This fact sheet describes ways for a municipality to identify requirements and drivers as part of Element 1 of the Framework (see "The Basics" for more information). The outcomes of these actions should be summarized in a municipality's integrated plan.

Identify Clean Water Act (CWA) requirements.
The goal of integrated planning is to identify and consider all CWA requirements so that a community can address the highest priority water quality issues first. A municipality should identify and understand its CWA requirements—both existing and by the time the plan is implemented. It is important to identify the requirements early to inform future permit and construction work. Requirements include the CWA regulatory practices, WWT standards, or other applicable laws, rules, or orders.

While taking all of them, integrated planning allows for flexibility or prioritizing by the permitting agency.

Identify Clean Water Act (CWA) requirements.
The goal of integrated planning is to identify and consider all CWA requirements so that a community can address the highest priority water quality issues first. A municipality should identify and understand its CWA requirements—both existing and by the time the plan is implemented. It is important to identify the requirements early to inform future permit and construction work. Requirements include the CWA regulatory practices, WWT standards, or other applicable laws, rules, or orders.

While taking all of them, integrated planning allows for flexibility or prioritizing by the permitting agency.

Integrated Planning in Action

Adapting for Success

EPA's [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) helps municipalities meet clean water goals while prioritizing infrastructure investments with the greatest water quality improvements and community benefits. The Framework lays out a comprehensive, yet flexible planning process based on a set of overarching principles. EPA created a series of fact sheets—including this one—to inform municipalities interested in integrated planning.

This fact sheet provides recommendations for developing a process to adapt for success. Adapting is critical for any infrastructure investment in an integrated plan—particularly investments that span a long period during which a municipality may encounter changing conditions such as population growth, increased storm intensity and frequency, sea-level changes, or new permit requirements. Through adaptive management, a municipality evaluates progress regularly and can pivot if projects are not performing as expected or circumstances change.

Each integrated plan should describe how adaptive management will be used during implementation, as described in Elements 5 and 6 of the Framework. Integrated plans should be assessed at a predetermined frequency to ensure that the selected projects continue to align with overall community goals and achieve the desired water quality and human health benefits.

Determine performance metrics.
Early in the integrated planning process, the municipality should develop objectives that describe how it will achieve broader plan goals within a particular timeframe and the metrics to assess those objectives. These objectives should be SMART—specific, measurable, attainable, realistic, and time-based. Developing SMART objectives will help the municipality achieve infrastructure and water quality goals to be addressed through integrated planning.

The municipality should also develop SMART metrics to track progress over time. Examples of SMART metrics include:

- Annual pollutant load reductions from installed combined sewer control structures.
- Percentage or volume of combined sewer overflow (CSO) reduction.

Integrated Planning in Action

Adapting for Success

EPA's [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) helps municipalities meet clean water goals while prioritizing infrastructure investments with the greatest water quality improvements and community benefits. The Framework lays out a comprehensive, yet flexible planning process based on a set of overarching principles. EPA created a series of fact sheets—including this one—to inform municipalities interested in integrated planning.

This fact sheet provides recommendations for developing a process to adapt for success. Adapting is critical for any infrastructure investment in an integrated plan—particularly investments that span a long period during which a municipality may encounter changing conditions such as population growth, increased storm intensity and frequency, sea-level changes, or new permit requirements. Through adaptive management, a municipality evaluates progress regularly and can pivot if projects are not performing as expected or circumstances change.

Each integrated plan should describe how adaptive management will be used during implementation, as described in Elements 5 and 6 of the Framework. Integrated plans should be assessed at a predetermined frequency to ensure that the selected projects continue to align with overall community goals and achieve the desired water quality and human health benefits.

Determine performance metrics.
Early in the integrated planning process, the municipality should develop objectives that describe how it will achieve broader plan goals within a particular timeframe and the metrics to assess those objectives. These objectives should be SMART—specific, measurable, attainable, realistic, and time-based. Developing SMART objectives will help the municipality achieve infrastructure and water quality goals to be addressed through integrated planning.

The municipality should also develop SMART metrics to track progress over time. Examples of SMART metrics include:

- Annual pollutant load reductions from installed combined sewer control structures.
- Percentage or volume of combined sewer overflow (CSO) reduction.

Integrated Planning in Action

Getting Started

EPA's [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) helps municipalities meet clean water goals while prioritizing infrastructure investments with the greatest water quality improvements and community benefits. The Framework lays out a comprehensive, yet flexible planning process based on a set of overarching principles. EPA created a series of fact sheets—including this one—to inform municipalities interested in integrated planning.

Johnson County, Kansas
"We pursued integrated planning because we wanted a transparent strategic approach that included some regulatory certainty while allowing for continued advancement in all of our systems. We had the integrated planning approach available allow us to address investments with the greatest water quality benefit while also focusing on stakeholder priorities and customer affordability."
—Neil Cavonius, Account Chief Engineer

Plan ahead.
Because investing in reliable stormwater and wastewater infrastructure can be a complex and long-term undertaking, municipalities should begin planning for resilient infrastructure that can withstand the impacts of climate change.

Get informed.
Learn how to create an integrated plan and how it can help your municipality meet your clean water goals. Integrated plans can be especially useful when planning for resilient infrastructure that can withstand the impacts of climate change.

EPA resources to help you get started with integrated planning:

- Examples that show the different municipal planning processes
- Examples of completed plans
- EPA's 2012 [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#)
- "The Strategic Section on Integrated Planning" (video)
- "Integrated Planning: Design-Free Pathways for Multi-jurisdictional Investing"

Define the planning scope.
Define the infrastructure to be included in the effort. Typically, clean water infrastructure includes collection systems, treatment plants, and stormwater systems. Determine if the infrastructure is owned and operated by different entities, such as regional offices, different municipalities, or different departments within a municipality. If the integrated plan includes non-Clean Water Act priorities, identify additional entities to involve (e.g., the local drinking water utility).

Integrated Planning in Action

Funding Integrated Plan Implementation

EPA's [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) helps municipalities meet clean water goals while prioritizing infrastructure investments with the greatest water quality improvements and community benefits. The Framework lays out a comprehensive, yet flexible planning process based on a set of overarching principles. EPA created a series of fact sheets—including this one—to inform municipalities interested in integrated planning.

After developing and finalizing an integrated plan, a municipality will likely need to make a significant financial investment to complete the planned projects on schedule. This fact sheet provides basic guidance on determining the total cost of plan implementation and finding funding sources.

Identify and budget for full infrastructure project costs.
A municipality must be able to finance the infrastructure investments needed to meet the Clean Water Act, other local, state, and federal regulations. A comprehensive integrated plan budget should include all life cycle costs (i.e., labor, equipment, and material) as well as long-term operations and maintenance.

Assess options for funding integrated plan projects.
Wastewater and stormwater capital projects are often funded from wastewater funds derived from sewer or stormwater utility fees or tax revenues. Through the financial capabilities analysis process (see EPA's [Determining Requirements and Drivers](#) fact sheet for more information), a municipality can identify a more affordable schedule for system improvements—that is, a way to increase fees more gradually than it might need to under a traditional planning approach.

Columbia, Missouri
Columbia's wastewater and stormwater management plan included a budget of \$100 million for 10 years for wastewater improvements and \$22 million for stormwater improvements.

Federal and state grants and low-interest loans can also be used to fund infrastructure projects. Grants will often program priorities over the integrated planning approach. Many current EPA grant and loan priorities, such as improving water quality, support low-income communities, and resilience. For example, the Water Infrastructure Finance and Innovation Act loan program supports projects that protect communities against extreme weather events and prioritize projects that serve underserved communities with water resilience challenges.

Integrated Planning in Action

Determining Requirements and Drivers

EPA's [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) helps municipalities meet clean water goals while prioritizing infrastructure investments with the greatest water quality improvements and community benefits. The Framework lays out a comprehensive, yet flexible planning process based on a set of overarching principles. EPA created a series of fact sheets—including this one—to inform municipalities interested in integrated planning.

As the nation faces population growth, aging infrastructure, limited resources, and increasingly complex water quality issues, communities need new approaches to plan for and invest in infrastructure improvements. Municipalities managing wastewater treatment facilities (WWTs), sanitary sewers, and stormwater infrastructure typically prioritize their investments. Focusing on each infrastructure need individually could cause a municipality to not focus on addressing its most serious water quality issues first.

This fact sheet describes ways for a municipality to identify requirements and drivers as part of Element 1 of the Framework (see "The Basics" for more information). The outcomes of these actions should be summarized in a municipality's integrated plan.

Identify Clean Water Act (CWA) requirements.
The goal of integrated planning is to identify and consider all CWA requirements so that a community can address the highest priority water quality issues first. A municipality should identify and understand its CWA requirements—both existing and by the time the plan is implemented. It is important to identify the requirements early to inform future permit and construction work. Requirements include the CWA regulatory practices, WWT standards, or other applicable laws, rules, or orders.

While taking all of them, integrated planning allows for flexibility or prioritizing by the permitting agency.

Integrated Planning in Action

Adapting for Success

EPA's [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) helps municipalities meet clean water goals while prioritizing infrastructure investments with the greatest water quality improvements and community benefits. The Framework lays out a comprehensive, yet flexible planning process based on a set of overarching principles. EPA created a series of fact sheets—including this one—to inform municipalities interested in integrated planning.

This fact sheet provides recommendations for developing a process to adapt for success. Adapting is critical for any infrastructure investment in an integrated plan—particularly investments that span a long period during which a municipality may encounter changing conditions such as population growth, increased storm intensity and frequency, sea-level changes, or new permit requirements. Through adaptive management, a municipality evaluates progress regularly and can pivot if projects are not performing as expected or circumstances change.

Each integrated plan should describe how adaptive management will be used during implementation, as described in Elements 5 and 6 of the Framework. Integrated plans should be assessed at a predetermined frequency to ensure that the selected projects continue to align with overall community goals and achieve the desired water quality and human health benefits.

Determine performance metrics.
Early in the integrated planning process, the municipality should develop objectives that describe how it will achieve broader plan goals within a particular timeframe and the metrics to assess those objectives. These objectives should be SMART—specific, measurable, attainable, realistic, and time-based. Developing SMART objectives will help the municipality achieve infrastructure and water quality goals to be addressed through integrated planning.

The municipality should also develop SMART metrics to track progress over time. Examples of SMART metrics include:

- Annual pollutant load reductions from installed combined sewer control structures.
- Percentage or volume of combined sewer overflow (CSO) reduction.

Integrated Planning in Action

Adapting for Success

EPA's [Integrated Municipal Stormwater and Wastewater Planning Approach Framework](#) helps municipalities meet clean water goals while prioritizing infrastructure investments with the greatest water quality improvements and community benefits. The Framework lays out a comprehensive, yet flexible planning process based on a set of overarching principles. EPA created a series of fact sheets—including this one—to inform municipalities interested in integrated planning.

This fact sheet provides recommendations for developing a process to adapt for success. Adapting is critical for any infrastructure investment in an integrated plan—particularly investments that span a long period during which a municipality may encounter changing conditions such as population growth, increased storm intensity and frequency, sea-level changes, or new permit requirements. Through adaptive management, a municipality evaluates progress regularly and can pivot if projects are not performing as expected or circumstances change.

Each integrated plan should describe how adaptive management will be used during implementation, as described in Elements 5 and 6 of the Framework. Integrated plans should be assessed at a predetermined frequency to ensure that the selected projects continue to align with overall community goals and achieve the desired water quality and human health benefits.

Determine performance metrics.
Early in the integrated planning process, the municipality should develop objectives that describe how it will achieve broader plan goals within a particular timeframe and the metrics to assess those objectives. These objectives should be SMART—specific, measurable, attainable, realistic, and time-based. Developing SMART objectives will help the municipality achieve infrastructure and water quality goals to be addressed through integrated planning.

The municipality should also develop SMART metrics to track progress over time. Examples of SMART metrics include:

- Annual pollutant load reductions from installed combined sewer control structures.
- Percentage or volume of combined sewer overflow (CSO) reduction.

- The Basics
- Getting Started
- Funding the Development of an Integrated Plan
- Funding Integrated Plan Implementation
- Determining Requirements and Drivers
- Adapting for Success

Kentucky Energy
and
Environmental
Cabinet (KEEC)
Permitting
Authority Toolkit
Trainings

- Target Audience is permit writers
- 4 – 2 hr sessions:
 - Introduction to IP and the Permittee Landscape
 - Supporting Permittees in IP Development including CSOs
 - Reviewing an Integrated Plan and Anticipated Outcomes
 - Evaluating Modeling and Estimating Methods

Integrated Planning Technical Assistance

- **Two state technical assistance trainings are available for FY 2025**

Long-Term Stormwater Planning

Part of the Suite of Integrated Planning Resources

Using an integrated approach to reduce stormwater impacts over time

Stormwater managers across the country oversee stormwater infrastructure to protect people and property, reduce flooding and pollution, and enhance local economies. Integrated planning can help communities achieve these objectives.

9

New Materials

www.epa.gov/npdes/stormwater-planning

Overarching Documents

Final Guide, including lessons learned

10 Editable Worksheets

Site Suitability Analysis Document (Coming soon)

Site Suitability Analyses

Burlington, Iowa

Hattiesburg, Mississippi

Rochester, New Hampshire

Long-Term Stormwater Plans

Hattiesburg, Mississippi

Rochester, New Hampshire

Santa Fe, New Mexico

Santa Fe, New Mexico Documents

Incorporating Green Infrastructure into Roadway Projects in Santa Fe

Government Funding Opportunities for Stormwater Management in Santa Fe

Final Guide

Available directly at: www.epa.gov/system/files/documents/2024-01/long-term-stormwater-planning-guide-communities.pdf

- ◆ Applies the integrated planning approach to stormwater assets, concepts, and resources.
- ◆ Emphasizes stakeholder input and involvement from community members most affected by stormwater.
- ◆ Highlights how to incorporate green infrastructure into community stormwater management to support local jobs, improve community assets, and strengthen climate resilience.
- ◆ Strategically addresses stormwater needs, even if not developing an integrated plan or do not have stormwater systems regulated under the Clean Water Act.

Long-Term Stormwater Planning: A Voluntary Guide for Communities

Part of the Suite of Integrated Planning Resources



Next >

Final Guide (Cont'd)

Organized under simple sections

Introduction
Overarching Tips as You Get Started
Assess Where You Are Now
Analyze Your Opportunities
Move Toward Implementation
Resources
Conclusion

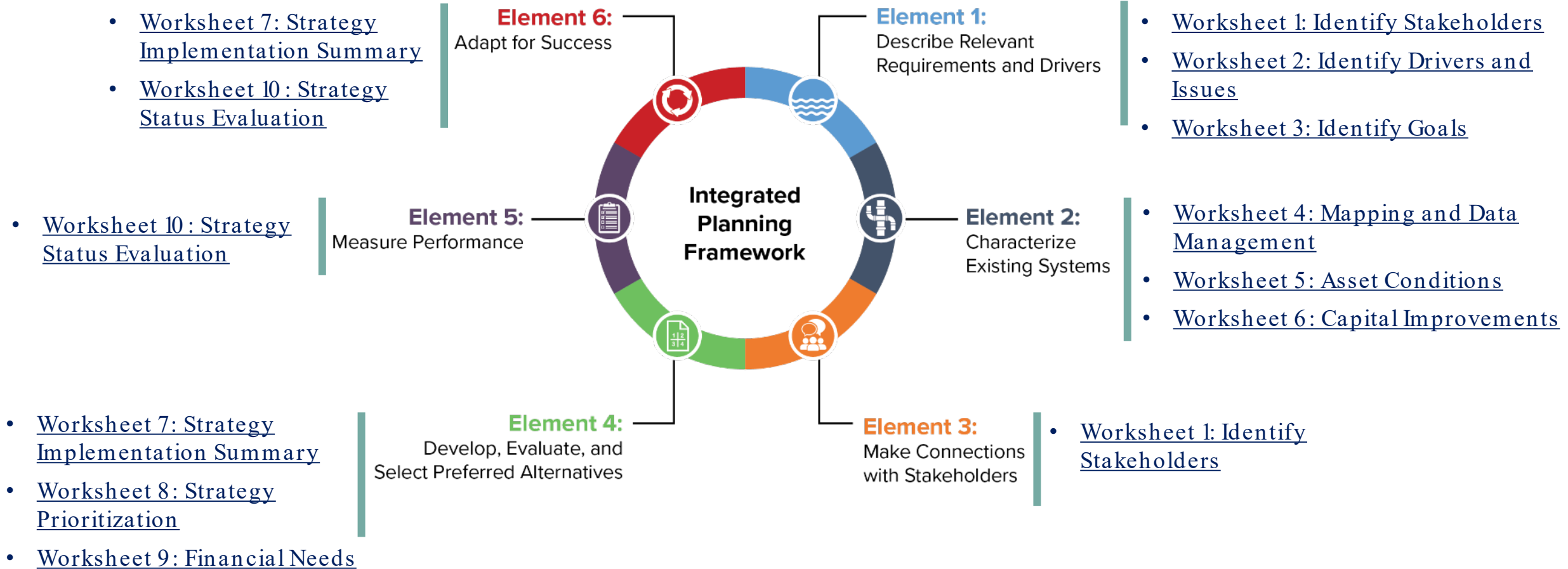
Formatted in landscape to easily fit on screen

Easy to navigate using linked jumps throughout



< Previous | Next >

Editable Worksheets



Site Suitability Analyses for Green Infrastructure

Site Suitability
Assessment for
Stormwater Management

Burlington, Iowa

Guides users through a geographic information system (GIS) based analysis to help identify opportunities to improve stormwater management by implementing green infrastructure.

These documents serve two purposes:

- It **provides a methodology** for using GIS to assess the suitability of sites.
- It **demonstrates the use** of this methodology, providing results based on currently available information for three communities.



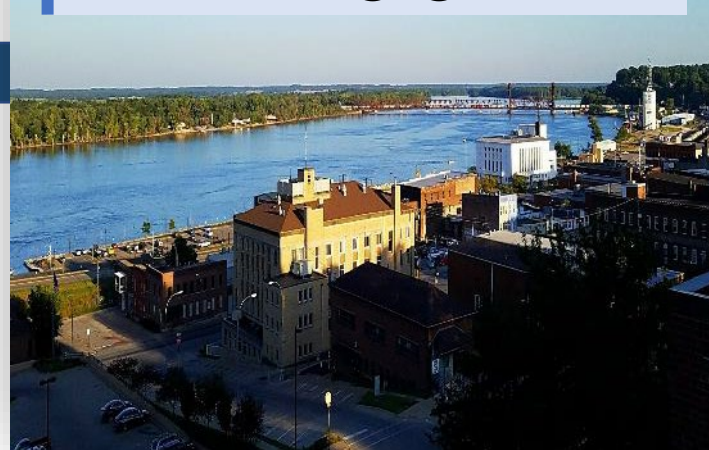
Community Pilots

Topics Covered

- 1 Asset management
- 2 Stormwater infrastructure opportunities
- 3 Stakeholder involvement
- 4 Financing/funding
- 5 Development and redevelopment policies

Burlington, Iowa

Explored Topics 2 3



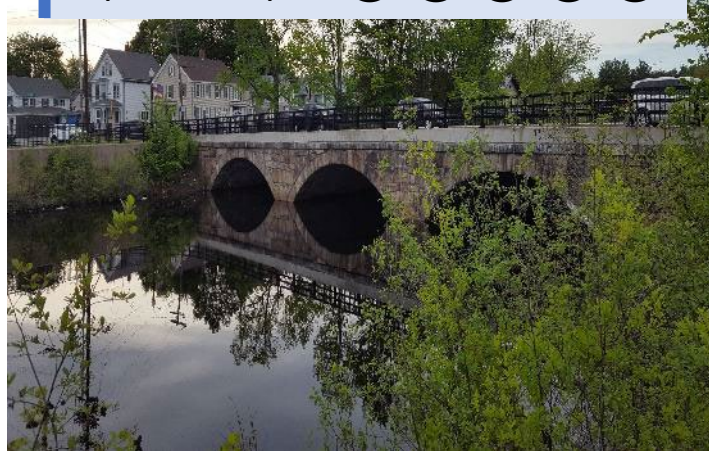
Hattiesburg, Mississippi

Explored 1 2 3 4



Rochester, New Hampshire

Explored Topics 1 2 3 4 5



Santa Fe, New Mexico

Explored Topics 1 2 3 4 5



Questions?

- Robyn DeYoung
deyoung.robyn@epa.gov
- Rachel Urban
urban.rachel@epa.gov
- Heather Huddle
huddle.heather@epa.gov
- Lily Michaud
michaud.lillian@epa.gov