



**Agency of Commerce and
Community Development**

**Green Stormwater
Infrastructure (GSI)
Implementation
Work Plan**

2016 Update

This update of the Green Stormwater Infrastructure work plan reports on progress made in implementing the 2015 work plan by the Agency of Commerce and Community Development (ACCD) as of June 2016. Updated by the Community Planning and Revitalization Division of the Department of Housing and Community Development.

June 20, 2016.

Green Stormwater Infrastructure (GSI) Implementation Work Plan – 2016 Update

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Vermont has experienced flooding every year since 2007 and had at least one federally declared disaster in 21 of the past 25 years. Flooding represent one of the most significant and costly threats to our economy. The effects of damage to businesses, homes, roads and utilities ripple throughout all aspects of the economy of the communities, regions and states affected by natural disaster. For a business, the impacts range from the cost of building repairs, to service disruption, closures, the inability to move goods and services and temporary or permanent unemployment for workers.

Many communities respond to floods with expensive, engineered solutions, elevating buildings, constructing berms, floodwalls, and armoring banks and installing larger culverts or stormwater pipes. However, these solutions treat the symptom, not the disease: increased stormwater flows due to impervious cover. Rather than sending more stormwater directly into rivers and streams, communities can adopt policies, increase the use of green stormwater Infrastructure (GSI), and improve land management practices that help to slow stormwater, spread it out and allow it to infiltrate into the ground.

GSI relies on natural and semi-natural systems to infiltrate, treat and store water in dispersed locations throughout the landscape, and make our communities resilient. By using GSI strategies to keep stormwater close to where it falls and using it or letting it infiltrate into the ground rather than rushing it off property and into streams and rivers, flooding can be reduced and water quality in lakes and rivers can be improved. Less stormwater runoff helps reduce the cost of stormwater pipes, drains, ditches and treatment systems that are expensive to build and maintain, as well as to replace and upgrade. In places with combined stormwater and sewage treatment systems, less runoff can also prevent the polluting of sewer overflows during heavy storm events.

ACCD supports the increased use of GSI as an effective tool to make communities more resilient, mitigate flooding and manage stormwater. ACCD is proud of its flood resilience efforts and recognizes that GSI is an important tool to address stormwater and mitigate flooding to

make our downtowns and villages more resilient. The following work plan addresses many of the challenges of using GSI and examines at a variety of ways to address them in the future.

a. ACCD's Long-term Vision for GSI

GSI is an integral component of resilient communities, protecting people, buildings and facilities from future flooding events, and ensuring that our villages and downtowns remain economically, socially and environmentally viable places to live.

b. Current GSI Initiatives within ACCD

Integrating Green Stormwater Infrastructure into the guidance on flood resilience and disaster recovery

ACCD encourages and promotes the use of GSI in its flood resiliency programs and projects (i.e. the EPA – SGIA project in the Mad River Valley to inform the development of statewide guidance for municipalities and the Vermont Economic Resiliency Initiative).

Vermont Planning Information Center (VPIC) Publication on Green Infrastructure

ACCD worked with the Department of Forests and Parks and the Vermont League of Cities and Towns to produce a topic paper for municipal officials on Green Infrastructure. The Land Use Implementation Manual introduces GSI, provides an overview of implementation strategies, and recommends funding mechanisms.

Interagency GI Council

ACCD staff attends the Interagency GI Council – a group of interagency staff representing state agencies established by ANR. The GI Council assists ANR in moving specific GSI initiatives and strategies forward, including the development of the GSI Strategic Plan. The Council will continue to provide support as the Plan moves towards implementation.

Vermont Economic Resiliency Initiative (VERI)

ACCD, the Agencies of Natural Resources and Transportation and the Regional Planning Commissions recently completed the Economic Development Administration (EDA) funded VERI project to help ensure Vermont municipalities take steps to minimize rebuilding and recovery costs and keep businesses open when disaster strikes. The VERI project developed five community-tailored actions plans with specific recommendations, including incorporating GSI best practices to reduce future flood damages and disruptions to local businesses. In addition, the VERI project developed a [toolkit](#) on green stormwater infrastructure. ACCD is pleased to report that the local action plans did not sit on the shelf and all the communities are implementing the recommendations to make their communities more flood resilient.

Downtown Transportation Grants

ACCD funds Downtown Transportation Grants to help municipalities pay for transportation-related capital improvements within or serving a designated downtown district. Recent Downtown Transportation Grants funded green infrastructure projects in St. Albans, Hartford, Burlington, Barre and Poultney.

Work Group on Wastewater Treatment for Villages

A Work Group organized by ACCD with DEC staff and the regional planning commission, is working to address wastewater treatment needs of villages that lack a sewage treatment system. In most cases, decentralized wastewater treatment with in-ground disposal is the only option, so planning for wastewater needs to be coordinated with green stormwater infrastructure solutions. This is especially important for villages and downtowns where soils are impervious and sites for infiltrating stormwater or wastewater are limited or have combined sewer overflows (CSO).

Vermont Downtown Action Team (V-DAT)

ACCD led the [Vermont Downtown Action Team](#) (V-DAT) to speed the recovery of 8 communities impacted by the floods in 2011. The V-DAT team articulated the desires of the community and prioritized design improvements, including incorporating GSI best practices that connected the downtowns with the surrounding neighborhoods and significant natural resources, most notably its rivers. The V-DAT assisted these communities in their recovery, raised awareness of GSI, and provided ways to fund future improvements to improve the resiliency and vibrancy of the community.

Resilient Vermont

ACCD is working with the Institute for Sustainable Communities (ISC) on its [Resilient Vermont Initiative](#). Resilient Vermont's aim is to weave together the many initiatives currently underway and equip the state to prepare for, respond to and bounce back from future natural disasters.

Interagency Outreach and Training

ACCD in partnership with ANR FP&R and VTrans led a Municipal Day presentation on how green streets are complete streets. The outreach effort shared how communities across the state are making investments in green stormwater infrastructure to support mobility and economic development. Also, ACCD in partnership with ANR FP&R and UVM SeaGrant led a presentation on GSI at the inaugural Arbor Day Conference. The outreach effort shared how local planning efforts incorporate GSI best practices in local planning and implementation efforts.

Strong Communities, Better Connections Planning Grant Program

In collaboration with VTrans, ACCD developed and implemented a new and innovative multiagency grant program that aligns state and local investments to increase vitality in Vermont's community centers. This new program addresses a statewide issue of poor coordination of land use planning with transportation investments (including GSI practices) and serves as model to align state, regional and local policies and goals.

Interagency Coordination Initiative

ACCD executed a MOU with ANR and VTrans to target state programs and resources to support economic development, coordinate infrastructure investments, and build

resilience in Vermont designated community centers. The initiative will explore opportunities to reach out to communities where major infrastructure projects are planned to provide integrated, multiagency assistance and resources to ensure the public investments are comprehensive (and include GSI practices) and support and spark private investment.

Statewide Planning Manual

ACCD recently overhauled and updated the state planning manual that provides a guide for municipal planning commissions in developing municipal plans. The manual provides guidance to help citizen planners build consensus on the community's top priorities and develop concrete action steps that local leaders can achieve. The manual provides resources for implementing resilient and GSI best practices.

Resilient Right-of-Ways Green Streets Guide

ACCD has partnered with ANR Forest, Parks and Recreation and VTrans on the U.S. Forest Service Grant to develop Resilient Right-of-Ways for both urban and rural roadside environments. ACCD also serves on the Urban Working Group to guide the development of the Green Streets Manual. The project will create a comprehensive green street guidance document and training materials that provide practical information and advice on how to incorporate trees, landscaping and other green infrastructure techniques into downtown and village center streetscapes.

c. Existing Challenges to Widespread Utilization of GSI

In the past five years, ACCD made progress in the promotion and adoption of GSI practices. However, in order to fully integrate GSI into agency processes and programs, a number of existing challenges must be addressed.

1. Lack of Awareness, Information and Understanding of GSI

A major challenge is the general lack of understanding, appreciation and knowledge regarding GSI among agency staff and local and regional partners. To date, much of ACCD's GSI-related work focuses on the larger issues of flood resilience and disaster recovery. There is also a perception that GSI is a natural resource issue, in ANR's mission, not ACCD's. We need better awareness that GSI is an essential component of downtowns, villages and neighborhoods. Insufficient information about GSI and its benefits exacerbates this problem. We need additional research and data to prove GSI is a viable, cost effective, and permanent solution. Local and regional partners must provide outreach and resources to promote and encourage the development of GSI.

2. Lack of Understanding of GSI in a rural context

In rural settings, forests, fields and other open spaces can capture and slow the flow of stormwater, particularly when combined with smaller scale GSI techniques. Farm and

forest managers often engage in practices to convey stormwater away from those lands for economic or aesthetic reasons. They could design these lands to accommodate occasional inundation with rain gardens, depressions, ponds, swales, and plants that can tolerate occasional inundation, and by improving the porosity and water-retaining capability of the soils. Using these techniques helps reduce damage from flooding and recharges aquifers. Increasing knowledge of how GSI applies in rural settings to mitigate flooding and build resilient communities is vital.

3. The need to explore watershed-wide stormwater management

Flood damage mitigation measures, such as constructing levees or armoring banks, implemented in one jurisdiction within a watershed can have unintended consequences for other communities in that watershed. Recognizing this fact, some communities are taking a regional and watershed-wide approach to stormwater management. Communities can develop stormwater master plans for their watersheds and use river science and watershed modeling to understand what actions will absorb and slow down stormwater across the watershed to reduce or mitigate flooding. These stormwater master plans should incorporate GSI strategies.

4. The need to adopt stormwater management regulations that include green stormwater infrastructure best practices

In Vermont, the state regulates stormwater for developments exceeding one acre of impervious surface. However, stormwater runoff from smaller developments also contributes to flooding problems. To meet regulations, developers often use “Hard” engineering solutions. Projects should consider “softer” green infrastructure (GSI) approaches as an alternative or supplement to structural solutions in both small and larger scale developments.

5. Consider GSI early in the planning process

ACCD and local municipalities need to better integrate GSI and stormwater concerns early in the planning process for capital improvements, public and private facilities, and residential and commercial development. ACCD with ANR’s lead needs to improve capacity building to increase local knowledge and awareness of stormwater management issues and GSI.

6. Lack of incentives and awareness of agricultural and other land owners to implement stormwater mitigation measures

Agricultural land in floodplains provide flood storage capacity and absorb stormwater runoff during heavy rain events, reducing flood-related damage and associated losses. Local communities should collaborate with conservation organizations and the agricultural community to reduce flood risk through the purchase of conservation

easements on farmland or by providing other incentives to agricultural landowners to implement stormwater mitigation measures and GSI strategies.

7. Limited development and lack of awareness of GSI projects in Vermont

There are currently limited GSI built projects across the state. We must work to promote more projects that highlight the benefits of GSI and test their effectiveness in Vermont. Without real world built GSI projects that are time tested, developers and municipal officials are hesitant to incorporate GSI into new construction and redevelopment projects. The perceived risk associated with a new or untested design is simply too great to take in many cases.

8. Lacking incentives and lack of funding to incorporate GSI into projects

One way to increase implementation of GSI is through incentive-based programs and additional funding. Unfortunately, very few GSI incentive and funding programs exist in Vermont. Much of the state funding used to implement GSI projects comes from either ANR's Ecosystem Restoration Program (ERP) Grants (Clean Water Initiative) or Watershed Grants. ACCD provides priority consideration for Municipal Planning Grants projects that deal with flood resiliency and the Downtown Transportation Grant Program provides limited funding for GSI projects in Designated Downtowns. Grants, rebates, recognition programs, discounts, and development incentives (expedited permitting, decreased fees, zoning upgrades, and reduced stormwater requirements) have not yet been used on a large scale to promote GSI. Use of these tools will result in greater adoption of GSI throughout the state.

9. Uncertainty about how to incorporate GSI concepts into existing programs

The GSI Strategic Plan identifies strategies at the state level to promote GSI but does not detail specific actions. In order to move this initiative forward, we need to work out additional details. For example, Vermont's Village Greens are a perfect place to display GSI in action. Yet before that can happen, we must outline the process to assess village green infrastructure, determine how to prioritize projects and identify funding sources.

10. Need for stronger leadership and implementation of GSI

Finally, we need stronger leadership. It is unreasonable to expect people to deviate from traditional development and stormwater management practices without significant support, encouragement, and resources. ANR has made significant progress we must continue to demonstrate the use of GSI on state lands, develop and disseminate a consistent message, and promote the use of GSI in both urban and rural settings. Because GSI is a fairly new concept, this type of leadership is needed at all levels, from field staff directly involved in implementation to upper level managers looking at the benefits of GSI on a statewide scale.

d. Opportunities and Strategies

ACCD intends to improve its ability to promote and support GSI utilization. In conjunction with implementation of the GSI Strategic Plan, ACCD will undertake the following tasks:

Task	Task Description	Executive Order Items Addressed	Challenges Addressed
1.	Review existing agency processes and programs and develop a plan for incorporating GSI concepts. Pay particular attention to the following: <ul style="list-style-type: none"> • Flood Resilience and Hazard Mitigation Planning • Land Use Planning and Regulation • Growth Center Designation • Downtown/Village Center Designation and Revitalization • Downtown/Village Center Master Planning and Design 	A	C8, C9
	<ul style="list-style-type: none"> • <i>Promoted GSI (slow it, spread it, sink it) as one of four flood resilience objectives for outreach to municipalities through the EPA funded Smart Growth Implementation Project.</i> • <i>Statutory change made in 24 VSA §2793c, added stormwater facilities to the list of necessary infrastructure to support growth center development as a part of the Capital budget requirement for designated Growth Centers. See Act 146.</i> 		
2.	Consider incorporation of GSI concepts as appropriate when developing and implementing new programs and projects.	A	C1, C8, C9
3.	Provide and/or Promote training opportunities to ACCD staff and local and regional partners to increase knowledge of GSI.	A, D	C1, C2
	<ul style="list-style-type: none"> • <i>Phase 2 of the Planning Manual will involve developing guidance on implementation including a focus on capital improvement planning and bylaws. DHCD staff will assemble and develop tools for financing public improvements including GSI solutions.</i> 		
4.	Investigate the modification and development of funding sources to support the utilization of GSI. Consider adding priority consideration for GSI into Municipal Planning Grant and Downtown Transportation Grant selection criteria.	A, F	C6, C7
	<ul style="list-style-type: none"> • <i>The FY17 Municipal Planning Grants will give priority to infrastructure planning projects in designated centers.</i> • <i>The VTrans/ACCD planning grant program, Strong Communities, Better Connections provides resources to incorporate GSI planning and best practices in transportation and land use plans.</i> 		
5.	Seek opportunities for greater interagency and intra-agency collaboration and cooperation.	A, D	C2
	<ul style="list-style-type: none"> • <i>The Interagency Coordination Initiative will improve effectiveness of state agency programs by delivering better and more integrated services to plan and build infrastructure (including GSI) to spark private investment in communities.</i> 		

6.	Assist external partners in efforts to provide GSI assistance, outreach, and training to municipal entities, private landowners, and design professionals. Determine specific funding needs.	F	C1, C4, C9, C10
7.	Revisit the GSI Implementation Work Plan and review progress. Add additional challenges and opportunities as necessary. Continue to assume leadership role on the Interagency GSI Council.	A,B,C,D,E,F	C10
<ul style="list-style-type: none"> • ACCD continues to participate in the GSI Council and continues to look for opportunities to address GSI in its programs. 			