
GREEN STORMWATER INFRASTRUCTURE ANNUAL REPORT

(July 1, 2015 to July 1, 2016)

VTrans Green Stormwater Infrastructure (GSI) Program

Submitted by: Jennifer Callahan, Operations Stormwater Technician & VTrans GSI Team Lead

As reported under the July 2013 VTrans GSI Implementation Work Plan in response to the March 2012 Executive Order, a short-term strategy was developed to continue and enhance what VTrans has been doing to incorporate GSI practices and systems into Agency Programs. A VTrans GSI Liaison has been charged with coordinating and tracking all internal GSI efforts and to sit on the joint State Agency GSI Council as the Agency's sole representative. An internal GSI Team representing each relevant program in VTrans was formed to address the following short-term objectives over the past year:

- A. Develop strategic policy recommendations and specific actions addressing the issues, barriers, questions, and opportunities put forth in the GSI Work Plan.
- B. Implement GSI Work Plan and prepare annual reports addressing accomplishments and challenges in that year and opportunities and strategies moving forward in the coming year.
- C. Identify training opportunities for VTrans staff.
- D. Support research and monitoring of new and innovative technologies.
- E. Support GSI initiatives at the local level (town road crews).
- F. Support development of technical guidance and standards.
- G. Review Better Back Roads Program for applicability of GSI components.

The third year's focus was to set a direction for the promotion and adoption of GSI in the years ahead. The VTrans GSI. Three workgroups met as needed throughout the year. The three workgroups are:

1. Design Standards and Checklist development Workgroup
 - a. Tasks – Design Standards, GSI Design Checklist for projects and facilities, and GSI Audits
2. Policy and Procedure Workgroup
 - a. Tasks – GSI Technical Assistance, Regulating “run-on’ & connections, Waste, Staging & Borrow – standard conditions, regional planning, surplus land holdings
3. Training, education, and research workgroup
 - a. Tasks – Training & Education, Research, Randolph Park & Ride, BGS Demonstration Site, Mapping

It was a successful year for a lot of great work on various initiatives that will continue in the years ahead.

Summary response to A through G above.

- A. A number of action items were put forth over the past year and are included on the pages that follow.

- B. We are working on implementing the GSI Work Plan, are preparing annual reports, and addressing challenges and opportunities. Educating VTrans GSI Team Members on GSI was the primary objective.
- C. Various trainings were attended by VTrans staff, those are listed under the Training and Education Action Item on the following pages.
- D. Plans have been developed for the Randolph Park and Ride site and accomplishments are reported on the following pages under Research.
- E. Discussions commenced with the VTrans Local Roads program on rolling GSI out at the local level, this will be built upon in the next year.
- F. Work continued to develop technical guidance and standards, this will continue into the next year.
- G. An audit was performed of the Better Back Roads Program, many ANR and VTrans staff were involved.

VTrans GSI Team Members include:

Division	Participant
Operations	Craig DiGiammarino, Env'l PM & Sub-group leader Jennifer Callahan, Stormwater GSI Team Lead & sub-group leader Tyler Hanson, Stormwater (HQ and District) Brad McAvoy, Facilities Kevin Gadapee, VTTC – Vermont Local Roads
Policy, Planning and Intermodal Development	Gina Campoli, Policy & Planning Amy Rast, Public Transit Dan Delabruere, Rail
Program Development	Jon Armstrong, Env'l SW Engineer & sub-group leader James Brady, Env'l Specialist Jeannine Russell-Pinkham, Archaeology Officer Jane Brown Env'l Landscape Design Craig Keller, Utilities & Permits Phil Peloquin, Highway Safety & Design Amos Kempton, Highway Safety & Design Brandon Kipp, Highway Safety & Design Mike Fowler, Pavement Management Jonathan Harrington, Pavement Management Hiram Salls, Structures Scott Roberston, Local Transportation Facilities Andrea Wright, Construction Vacant - tbd, Nina Safavi, Right-of-Way Vacant – tbd, Rachel Beauregard, MAB - Better Back Roads

GSI first year work plan action items, assignments and accomplishments are noted in the following table.

Leader & Support	Task/Action ANNUAL STATUS REPORT – July 2014 - July 2015
Craig DiGiammarino Supported by: GSI Team	INFORMATION SHARING & ANNUAL REPORTING GOAL: Set up and maintain Agency GSI SharePoint page. Annual Reporting due in July to include: <ul style="list-style-type: none"> σ Strategic policy recommendations and actions σ Program changes, resource needs, funding needs, and timing σ Long-term Vision and adaptive management approach σ Accomplishments, challenges, opportunities, etc... ACCOMPLISHMENTS: Established and maintained internal Agency SharePoint Page for GSI efforts Established and facilitate GSI Team and held 2 meetings over the year Develop annual report for submittal in July 2016
Jon Armstrong Supported by: C. DiGiammarino J. Callahan Andrea Wright Tyler Hanson	TRAINING & EDUCATION GOAL: Educate VTrans staff, consulting engineers, project managers, & Ex. Staff about GSI. <ul style="list-style-type: none"> σ Develop and maintain list of current and upcoming relevant trainings using SharePoint/Web/Other σ Partner and collaborate with sister state agencies and other DOTs to develop and deliver relevant trainings through the VTrans Training Center or other venue σ Develop tracking systems for annual reporting ACCOMPLISHMENTS: Trainings (some coordinated with ANR) attended by various VTrans staff, including but not limited to: <ul style="list-style-type: none"> CPEESC Erosion Control Training Maine Stormwater conference Rivers and Roads Training Tier 2 Better Back Roads site visits and town meetings UNH Stormwater Tour GSI Presentation by Becky Tharp Webinar “The importance of Trees in SW Management GSI Roundtable meetings Webinar: A Sampling of Winter Maintenance Best Practices in Europe Stormwater Manual Revision -Presentation to the public
Leader & Support	Task/Action ANNUAL STATUS REPORT – July 2013 - July 2014
Phil Peloquin Supported by:	DESIGN STANDARDS GOAL:

<p>James Brady Jon Armstrong Mike Fowler Jenn Callahan Jane Brown Tyler Hanson</p>	<p>Promote the modification of existing procedures, protocol, design standards, and specifications to include elements of the GSI. Build consensus around definitions and characteristics of GSI in the transportation sector.</p> <p>Review existing design standards for opportunities to incorporate GSI, looking for opportunities that can be put into place over the short-term and will hold off from full review of design standards or even developing a full set of new GSI specific standards until after ANR has updated its Stormwater Design Manual.</p> <p>ACCOMPLISHMENTS: The major focus under this action item was to develop an understanding of what GSI is and how it can be applied to transportation projects. In the past two years a consultant team has been hired and begun work on reviewing and developing new design standards. We expect this to be completed and rolled out in the fourth year</p>
<p>Phil Peloquin</p> <p>Supported by: Jon Armstrong Jenn Callahan Mike Fowler Patti Coburn Tyler Hanson</p>	<p>GSI DESIGN CHECKLIST FOR PDD LINEAR PROJECTS</p> <p>GOAL: Develop a stronger vision for GSI in highway design with specific goals and targets including consideration of stormwater early on in project scoping/design, even when a state stormwater permit is not required. Draft a checklist of GSI opportunities to consider in project design (PDD and LTF).</p> <p>ACCOMPLISHMENTS: VTrans will be using the “Complete Streets” checklist as template which will likely refer out to a set of GSI practices or even GSI database of practices available and suitable for transportation projects. This checklist will not only be used on VTrans projects, but also be used by Municipalities proposing projects within the State ROW.</p> <p>In the past two years a consultant team has been hired and begun work on developing a design protocol. We expect the protocol to be completed and rolled out in the fourth year</p>
<p>Jenn Callahan</p> <p>Supported by: Amy Rast Jon Armstrong Brad McAvoy James Thompson Tyler Hanson</p>	<p>GSI DESIGN CHECKLISTS FACILITIES</p> <p>GOAL: Develop a stronger vision for GSI in facility design processes with specific goals and targets including consideration of stormwater early on in project scoping/design, even when a state stormwater permit is not required. This effort includes Public Transit, Highway Maintenance, and Aviation Facilities. Draft a checklist of GSI opportunities to consider in project design.</p> <p>ACCOMPLISHMENTS: In the past two years a consultant team has been hired and begun work on developing an audit protocol. Audits are being delayed until the protocol is completed. We expect audits to get underway in the fourth year</p>
<p>Leader & Support</p>	<p>Task/Action ANNUAL STATUS REPORT – July 2013 - July 2014</p>
<p>Jenn Callahan</p> <p>Supported by:</p>	<p>GSI TECHNICAL ASSISTANCE</p> <p>GOAL:</p>

<p>Gina Campoli Craig Keller</p>	<p>NPDES Municipal Separate Storm Sewer System (MS4) General Permit requires the development of a GSI technical assistance program targeting VTrans “Public”. For VTrans, a designated MS4, this means targeting Municipalities, VTrans Staff and users of the Highway system. The VTrans compliance program under the MS4 could be applied statewide and could include GSI. Implement MS4 Technical Assistance program statewide; report annually under GSI. Enhance the VTrans web site to better provide technical guidance on GSI.</p> <p>ACCOMPLISHMENTS: Working with Utilities and Permits and Districts on GSI educational flyer to accompany Section 1111 application materials and to be posted on Utilities and Permit web serving as technical assistance flyer will be developed as an educational tool for those considering altering flow of stormwater entering the State ROW. In the past year a consultant team has been hired and begun work on developing the flyer, we expect the flyer to be completed and rolled out in the fourth year</p> <p>Working with Agency of Agriculture on providing technical assistance to the farm community and participated in Agency of Agriculture sponsored training for technical assistance providers to the farm community.</p>
<p>Craig DiGiammarino</p> <p>Supported by: Craig Keller Andrea Wright Jenn Callahan Jon Armstrong VTrans Legal Right-of-Way</p>	<p>REGULATING “RUN-ON” & CONNECTIONS – POLICY & PROCEDURE</p> <p>GOAL: Develop a consistent approach addressing “run-on” (altered discharge) from adjacent properties, requests to connect to the State stormwater system, connections discovered during construction and enforcement of all the above. Develop and adopt a policy statement and procedure addressing “run-on”, illegal connections, illicit (non-stormwater) discharges entering, directed at or connected to the State ROW and the stormwater system within the State ROW.</p> <p>ACCOMPLISHMENTS: A “draft” policy and procedure is being drafted and internal meetings are being held.</p>
<p>James Brady</p> <p>Supported by: Craig DiGiammarino</p>	<p>WASTE, STAGING & BORROW – STANDARD CONDITIONS</p> <p>GOAL: Consider opportunities to better manage waste, staging and borrow sites approved for use in VTrans ROW or on VTrans land to include GSI concepts. Update existing waste site approval process such that areas providing natural stormwater treatment (GSI) are preserved and not filled with waste materials.</p> <p>ACCOMPLISHMENTS: A draft policy and procedure is being discussed and will likely be in place for the use during the 2016 construction season. We will also look to identify, map and preserve areas permitted and currently treating stormwater.</p>
<p>Leader & Support</p>	<p>Task/Action ANNUAL STATUS REPORT – July 2013 - July 2014</p>
<p>Materials & Research</p>	<p>RESEARCH</p> <p>GOAL:</p>

	<p>Continue ongoing research on GSI techniques tailored for the linear nature of most transportation infrastructure and conduct research/literature search regarding benefits of GSI in the Transportation sector and prioritize GSI life-cycle cost data collection. There is some work that can be done by M&R to support our need to understand what other DOTs are doing for GSI and what the next steps are for past GSI BMP research VTrans has conducted.</p> <p>ACCOMPLISHMENTS: It was agreed to hold off on this until after ANR has issued its updated Stormwater Design Manual.</p>
<p>Craig DiGiammarino</p> <p>Supported by: Jon Armstrong Materials & Research FHWA UVM TRC</p>	<p>GSI PRACTICE RESEARCH @ RANDOLPH PARK & RIDE</p> <p>GOAL: Continue with ongoing research on porous pavement at Randolph Park & Ride. Continue to work with M&R on the resurfacing of this park & ride and continued cooperative research with UVM TRC.</p> <p>ACCOMPLISHMENTS: In the past year VTrans hired an expert in the field of porous pavements to help with design options for the Randolph Park and Ride. Many meetings were held and attend by various VTrans staff, a layout was chosen and is currently in scoping.</p>
<p>Gina Campoli</p> <p>Supported by: tbd</p>	<p>REGIONAL PLANNING</p> <p>GOAL: Identify on-going and sustainable funding sources to support regional planning, coordination and implementation efforts involving GSI and LID. Consider opportunities to integrate GSI and LID into Regional Planning and Funding.</p> <p>ACCOMPLISHMENTS: This effort has been put on hold pending the outcome of other efforts and gaining further insight as to its applicability to VTrans.</p>
<p>Jenn Callahan</p> <p>Supported by: Brad McAvoy James Thompson Amy Rast Tyler Hanson</p>	<p>DISTRICT MAINTENANCE FACILITIES GSI AUDITS</p> <p>GOAL: Conduct buildings/facilities audits and develop/update/maintain Stormwater Pollution Prevention Plans (SWPPP) for each site. This effort includes Public Transit, Highway Maintenance, and Aviation Facilities. List all sites and propose realistic/achievable strategy for undertaking this audit.</p> <p>ACCOMPLISHMENTS: In the past two years a consultant team has been hired and begun work on developing an audit protocol. Audits are being delayed until the protocol is completed. We expect audits to get underway in the fourth year.</p>
<p>Leader & Support</p>	<p>Task/Action</p> <p>ANNUAL STATUS REPORT – July 2013 - July 2014</p>
<p>Craig DiGiammarino</p>	<p>SURPLUS LAND HOLDINGS</p>

<p>Supported by: ROW</p>	<p>GOAL: Play a role in reviewing designation for State and Federal “Surplus” Landholdings and ROW land. Undeveloped land holdings treating stormwater naturally (GSI) are a valuable “transportation use” and thus should not be designated as surplus.</p> <p>Regarding land purchased with State funds – get involved in the review and designation process.</p> <p>Regarding land purchased with Federal funds – get involved in the review and designation process – have coordinated with ROW and am waiting to be added to their SharePoint review process. Will also need to educate DTA’s on this effort as they see requests for surplus designations very early in the process.</p> <p>ACCOMPLISHMENTS: These goals have been accomplished and VTrans Operations is now reviewing surplus land designations early in the process. The Task Leader is a member of the Surplus Property Committee which meets monthly to discuss surplus designations. This new membership solidifies the process in which Surplus Landholdings will be reviewed for potential GSI.</p>
<p>Craig DiGiammarino</p> <p>Supported by: OPS Asset Management ROW</p>	<p>MAPPING</p> <p>GOAL: Develop GIS layer of VTrans land holdings. Work with ROW on mapping surplus land. Work with OPS Asset Management on mapping lands preserved for stormwater treatment (GSI) in its natural state.</p> <p>ACCOMPLISHMENTS: The lengthy mapping project is now underway and may span many annual reports.</p>
<p>Jenn Callahan</p> <p>Supported by: BGS</p>	<p>BGS GSI DEMONSTRATION SITES</p> <p>GOAL: Collaborate with BGS on installing demonstration GSI practices at Welcome Centers. <u>As time, funding and opportunity allow</u>, work with BGS on demonstration sites.</p> <p>ACCOMPLISHMENTS: There are no accomplishments to report this year.</p>