

Dawson County Green Infrastructure / Low Impact Development Program

PREPARED FOR: Georgia Environmental Protection Division
 PREPARED BY: Bryan Young, Storm Water manager
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Background

Small Phase II Municipal Separate Storm Sewer System (MS4) along with the National Pollutant Discharge Elimination System (NPDES) permits were issued to Dawson County in 2014, and reissued in 2017. Dawson County Public Works Department implements most stormwater management efforts within the MS4 area, Dawson County is responsible for regulating, enforcing land disturbance permits, sedimentation and erosion control inspections, and enforcement within the MS4 area. The stormwater system serves all developed and undeveloped properties within the designated MS4 area. The geographic area of Dawson County is detailed in the following exhibit (Exhibit 1). In compliance with the Phase II MS4 permit effective December 17th 2017, permittees are required to develop a Green Infrastructure (GI) / Low Impact Development (LID) Program.

EXHIBIT 1
 Geographic Area of Dawson County
Green Infrastructure / Low Impact Development Program

Jurisdiction	Size of MS4 (sq/mi)
Designated MS4 Area	13.4

The predominant soil type within Dawson Counties MS4 area is Hydrologic Soil Group B which indicates the Soil having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep, or deep, and moderately well drained, or well drained soils that have moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission. Appendix A displays a map of the soils, within Dawson County.

Purpose

The Purpose of the GI/LID Program is to further encourage, track the use of, inspect, and maintain GI/LID best management practices (BMPs) in Dawson County for commercial development. The objectives of the program are to:

1. Evaluate the feasibility and site applicability of various GI/LID BMPs (practices and structures) that best support the overall stormwater management
2. Develop an inventory of GI/LID BMPs within the Dawson County’s designated MS4 area, and identify procedures to track the addition of future applicable GI/LID BMPs
3. Identify the most effective approach for integrating GI/LID into the Dawson County’s current stormwater and development review programs, including developing an inspection and/or maintenance program, as applicable

While Dawson County encourages the use of GI/LID, the ultimate intent of establishing a GI/LID program is to ensure these practices and structures are designed, implemented, and maintained by their respective owners for improved watershed protection

As outlined in the Phase II permit, the GI/LID Program Document includes the following sections related to the GI/LID elements above:

1. GI/LID Program
2. GI/LID Structure Inventory
3. GI/LID Inspection Program
4. Program Review

GI/LID Program

Permit Requirement

Per Phase II MS4 permit requirements, existing permittees must have a program describing the GI/LID techniques and practices to be implemented by the permittee by February 15, 2020. The program shall include procedures for evaluating the feasibility and site applicability of different GI/LID techniques and practices, and various structures and practices to be considered.

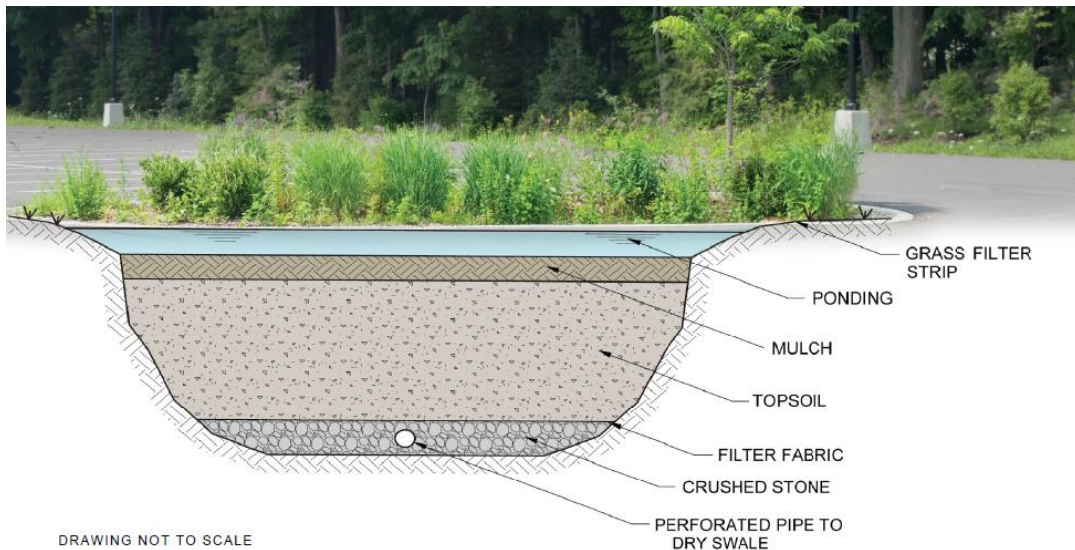
Definition of GI/LID

GI/LID refers to a broad range of stormwater practices and structures for a variety of purposes including water quality improvement and combined sewer overflow reduction. It includes a diverse set of site planning techniques (i.e. protection of conservation areas), site design techniques (i.e. reducing impervious surface), and LID structures (i.e. bio-retention areas, enhanced swales, pervious pavement).

The Georgia Environmental Protection Division (GAEPD) define GI/LID as including the following:

- Better Site Planning Techniques (i.e. protection of conservation areas)
- Better Site Design Techniques (i.e. reducing roadway lengths and widths, reducing parking lot footprints)
- Low Impact Development Structures (i.e. bioretention areas, permeable pavement, vegetated filter strips, rain gardens)

Example of Green Infrastructure/LID Bioretention Area



GI/LID BMPs in Dawson County

In an effort to promote the use of GI/LID where it is feasible, Dawson County will allow the use of all GI/LID structures, better site planning techniques, and better site design techniques that are included in the 2016 GSMM Volume 2, Dawson County will focus on utilizing the following structures outlined in Appendix B (Exhibit B.1) including:

1. Bioretention Area
2. Enhanced Dry Swales
3. Enhanced Wet Swales
4. Filter Strips
5. Infiltration Practices
6. Permeable Paver Systems

Appendix B provides a summary of structures categorized as GI/LID (Exhibit B.1) and a summary of better site planning and design techniques (Exhibit B.2). The detailed descriptions in Volume 2 of the GSMM provide information related to design criteria, advantages/disadvantages, maintenance needs, pollutant removal calculations, stormwater management suitability, implementation considerations, runoff reduction credits and other useful information.

Dawson County understands that the feasibility and successful utilization of individual structures and techniques is site-dependent and therefore uses the information provided in Exhibits B.1 and B.2 to determine specific procedures that may be included on a development or re-development site. As part of the plan review process (outlined in subsequent sections of this document), Dawson County works with applicants to determine appropriate features based on the characteristics of a site.

Example of Vegetative Filter Strip



GI/LID Structure Inventory

Dawson County Current GI/LID Inventory

Currently there are 4 documented GI/LID structures in Dawson County. However, Dawson County will maintain list of completed inventory of stormwater structures that was developed after the date of designation. This new inventory will be documented in Dawson County's 2020 annual report

Permit Requirements

Per Phase II MS4 permit requirements, permittees must develop an inventory of privately owned non-residential and publicly owned water quality-related GI/LID structures located within the permittee's jurisdiction, and at a minimum, constructed on or after March 7th 2015, including the total number of each type of structure (e.g., bioswales, pervious pavement, rain gardens, cisterns, and green roofs).

Permittees must also track the addition of new water quality-related GI/LID structures through the plan review process and ensure the structures are added to the inventory.

Existing Plan Review Process

Dawson County is the local permit issuing authority for any Land Disturbing Activities (LDA). The local issuing authority is responsible for processing LDA applications, maintaining a list of active LDA permits, conducting inspections / maintenance reports, and enforcing local protective ordinances and (GESA) Georgia Erosion and Sedimentation Control Act.

Dawson County will work with owners/operators and developers to determine appropriate features based on the characteristics of the site. Dawson County will continue to refer to guidance from the update to the GSMM with regards to feasibility and site applicability of GI/LID practices and will recommend a site feasibility study to determine the applicability of the six GI/LID structures of interest by Dawson County. Dawson County will provide a table of Site Feasibility of Focused GI/LID Structures (Exhibit 3) to developers for use in their assessment, and will encourage the developer to consider the setting of the BMP, construction cost, maintenance burden, size limitations, and soil percolation rates in determining how stormwater requirements will best be met. When a permittee follows this process, Dawson County will document the information provided by the developer that was used to determine site applicability or non-applicability. This information will be attached to the permit file.

In determining the feasibility for new GI/LID structures, a site feasibility study will occur that will investigate the applicability of the 6 GI/LID structures of interest in Dawson County (Exhibit 3). The setting of the BMP, construction cost, maintenance burden, size limitations, and soil percolation rates will be considered.

EXHIBIT 3
Site Feasibility of Focused GI/LID Structures
Green Infrastructure / Low Impact Development Program

BMP Type	Appropriate Setting	Soil Feasibility	Construction Cost	Maintenance Burden	Runoff Reduction	WQv/TSS
Bioretention Area	Sitewide	0.5 in/hr minimum infiltration rate	Medium-High	Medium	50-100%	80%
Enhanced Dry Swale	Upland	Engineered Media	Medium	Low	50-100%	80%
Enhanced Wet Swale	Floodplain	No restrictions	Medium	Low	0%	80%
Filter Strip	Sitewide	0.25 in/hr minimum infiltration rate	Low	Low	10-25%	50%
Infiltration Practices	Upland	0.5 in/hr minimum infiltration rate	High	High	100%	100%
Permeable Pavers	Upland	No restrictions	High	High	50-100%	80%

In addition to the soil feasibility criteria listed in Exhibit 3, Dawson County considers other factors when reviewing site plans for GI/LID structures:

- Pretreatment measures should be used to prevent clogging of the basin bottom if runoff is expected to contain heavy sediment loads.
- Setback Requirements (Per Dawson County Future Land Use Resolution)
- Environmental Health required distances

During the plan review process, Dawson County will consider the following conditions when determining GI/LID practices are not feasible for a specific site:

- Minimum soil infiltration rate cannot be achieved.
- Minimum clearance of high-water table cannot be achieved. GSMM states that a high-water table within two (2) feet deems the project infeasible of GI/LID practices.
- Minimum land area requirements for the proposed structure cannot be achieved.
- Minimum setbacks to property lines, building foundations, wells, septic systems, or surface waters cannot be achieved.
- Minimum space requirements for necessary pretreatment measures cannot be achieved.
- Separation between infiltration practice and confining layers cannot be achieved. GSMM states that from the bottom of the infiltration practice to the confining layers is two (2) feet.
- Utility conflicts cannot be resolved.
- Contaminants that cannot be remediated are present

GI/LID Structure Inspection and Maintenance Program

Permit Requirements

Per Phase II MS4 permit requirements, permittees must:

- Conduct inspections and/or ensure that inspections are conducted on 100% of the total privately owned non-residential and publicly owned GI/LID structures within a 5-year period, beginning on February 15th 2020. Provide the number and/or percentage of the total structures inspected during the reporting period in each annual report.
- Conduct maintenance on the publicly owned GI/LID structures, as needed, beginning on February 15th 2020. Provide the number and/or percentage of the total structures maintained during the reporting period in each annual report.
- Develop procedures for ensuring privately-owned non-residential GI/LID structures are maintained as needed. Provide GI/LID maintenance agreements for stormwater structures to EPD for review with the 2018 annual report. Upon EPD approval, implement the procedures and provide documentation in each subsequent annual report.

GI/LID Inspection and Maintenance Program

Exhibit 4 summarizes the GI/LID inspection and maintenance responsibilities by Dawson County.

EXHIBIT 4
 GI/LID Inspection and Maintenance Responsibilities
Green Infrastructure / Low Impact Development Program

Location	Inspection Responsibility	Maintenance Responsibility
Within public right-of-way	Dawson County	Dawson County
Private non-residential	Dawson County	Property Owner (Dawson County ensures that maintenance agreement has been completed by owner)
Private residential	Property Owner	Property Owner
Dawson County facilities	Dawson County	Dawson County

GI/LID Inspection Program

As directed by GAEPD, 100 percent of the total privately owned non-residential and publicly owned GI/LID BMPs are inspected within the 5-year period. Dawson County will perform inspections of all publicly-owned GI/LID BMPs. Dawson County is responsible for verifying inspections for privately-owned non-residential BMPs as well as inspecting each privately-owned non-residential structure every 5 years.

Privately Owned Non-Residential Structures

Privately owned non-residential structures are required to be maintained by individual property owners. Private non-residential property owners are required to complete a signed and notarized maintenance agreement. If Dawson County identifies non-compliance with the maintenance agreement, the first step to bring the site into compliance is for a Dawson County staff member to conduct a site visit or phone call to the property owner.

Property owners who fail to maintain their stormwater systems will be notified of the violation. If within thirty (30) days (or twenty-four (24) hours if there is an immediate danger to public safety), no actions are taken, Dawson County may enter the property and correct the failure. The cost for the repair work will result in a lien on the property, and may be placed on the ad valorem tax bill for such property and collected in the ordinary manner for such taxes.

Additionally, failure to maintain stormwater controls in accordance with maintenance agreements may be subject to the enforcement actions outlined in section 7 subsection 1 and 2 of Dawson County Stormwater Ordinance. If Dawson County determines that a responsible person has failed to comply such provisions, it will issue a written notice of violation, and if the responsible parties do not address the violations, they may be subject to penalties such as stop work orders, revocation of permit, civil penalties or criminal penalties for intentional and flagrant violations. Non-residential structures are subject to future inspections by county personnel to verify maintenance activities were performed. Dawson County Stormwater Manager documents all maintenance agreements, inspection forms, property owner communication, and if applicable, documentation of any enforcement actions, and provides this information to EPD with each annual report. Appendix C contains example inspection forms.

Publicly Owned Structures

For publicly owned GI/LID structures, Dawson County prioritizes inspections similar to MS4 structure prioritization, which is based on proximity to a documented complaint. Inspections are completed by trained staff, and during each inspection, conditions are documented on an inspection form. Forms provided in the GSMM for each GI/LID structure are used to complete inspections. Inspections are prioritized based on structure location, subdivision age, accessibility, or concern. Once the higher-priority inspections are completed, any remaining inspections are conducted by Dawson County to ensure the required number of inspections occurs on an annual basis (i.e., 100 percent in the 5-year period). This approach allows staff to respond efficiently to known problems, while documenting the condition of other structures in adjacent areas.

Inspections of applicable GI/LID BMPs are documented on the inspection form and, at a minimum, attempt to identify the following information:

- adequate access to GI/LID BMPs via drainage easements and berms;
- stormwater facilities that require sediment removal, grassing, outlet control structure repair, and erosion control;
- accumulation of sediment or debris at the discharge of outfall structures;
- stormwater collection and transfer structures that are not properly maintained or damaged.

If an issue is found or a complaint filed, a work order is initiated. Emergency situations are addressed immediately while routine inspections are prioritized based upon the assessed conditions recorded in the inventory.

GI/LID Maintenance Program

As directed by GAEPD, Dawson County conducts maintenance on publicly-owned GI/LID structures on an as-needed basis. Dawson County ensures maintenance of privately-owned non-residential GI/LID structures. With regard to responsibility:

- Publicly-owned structures: Dawson County would maintain any GI/LID structures located on Dawson County property.
- Privately-owned non-residential structures: The property owner is responsible for maintenance of the GI/LID structures. Dawson County ensures that proper maintenance is performed by the owner through a notarized maintenance agreement signed by the owner/operator

Maintenance needs vary for each of the GI/LID BMPs and may include such actions as proper drainage, replacing mulch and plants, removing sediment, sweeping/vacuuming, dewatering, invasive species removal, planting, and removing trash/debris. Dawson County utilizes the GSMM to identify maintenance needs for structures included in the inventory.

Maintenance activities follow the same pattern as the inspections, since most structures being repaired or maintained are included as a work order as the result of an inspection. Once maintenance is conducted, information is documented regarding the efforts, final condition, and follow-up needs of the structure. Dawson County will provide the number and/or percentage of public GI/LID BMPs maintained during the reporting period in each annual report.

GI/LID Program Implementation Schedule

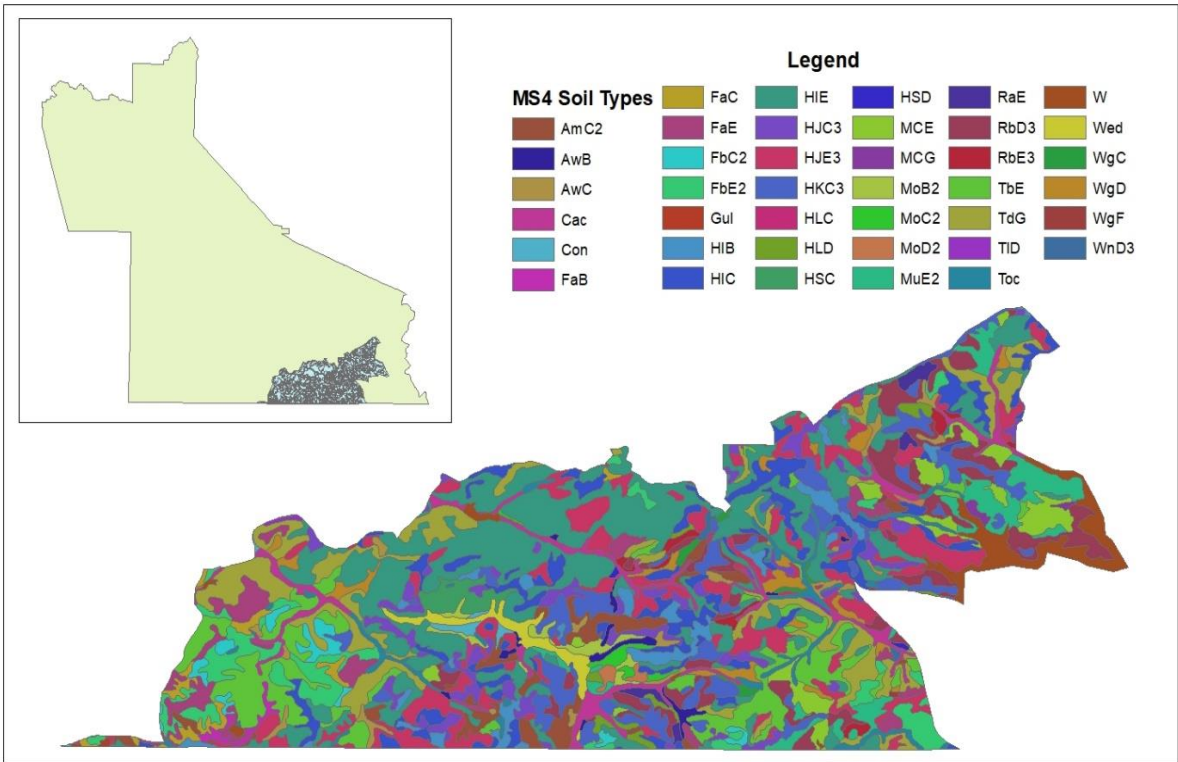
The GI/LID program outlined above will be implemented according to the following schedule:

- Effective immediately, Dawson County will conduct the following:
 - Submit revised inventories with permitted site feasibility sheets to be turned in each years MS4 Annual Report
 - Conduct inspections on public and private non-residential GI/LID BMPs so that each structure is inspected once every 5 years or 20% of the total structures
 - Conduct maintenance, as needed, on Dawson County-owned GI/LID
 - Coordinate with private non-residential property owners to ensure that needed maintenance is conducted on GI/LID structures included in the inventory, if not enforcement action could be taken

Appendix A – Maps of Soils in Dawson County



Dawson County: MS4 Soil Map



Created By: Public Works

Appendix B – GI/LID Structures and Better Site Planning and Design Techniques

EXHIBIT B.1

Summary of Potential GI/LID Structures in Dawson County

BMP Structure	Location in Volume 2 GSMM 2016 (Section and PDF page #)	Description	Runoff Reduction	Stormwater Management and Treatment							Site Applicability					Cost Considerations		
			RR	WQv / TSS	CP v	Qp25 / Qf	Total Phosphorus	Total Nitrogen	Fecal Coliform	Metals	LID/ GI	Drainage Area (ac)	Space Req'd (% of Imperv. Drainage Area)	Max Site Slope	Minimum Head (Elevation Difference)	Depth to Water Table	Construction Cost	Maintenance Burden
Bioretention Areas	Section 4.2 (page 398)	Bioretention areas are shallow stormwater basins or landscaped areas that utilize engineered soils and vegetation to capture and treat stormwater runoff. Bioretention areas may be designed with an underdrain that returns runoff to the conveyance system or designed without an underdrain to exfiltrate runoff into the soil.	Yes	80%	†	†	80%	60%	90%	95%	Yes	5 max	3 - 6%	20%	3 ft .	2 ft.	Med - High	Med
Enhanced Dry Swales	Section 4.8 (page 454)	Enhanced swales are vegetated open channels that are designed and constructed to capture and treat stormwater runoff within dry or wet cells formed by check dams or other structures.	Yes	80%	†	X	50%	50%	X	40%	Yes	5 max	10 - 20%	4%	3 - 5 ft.	2 ft.	Med	Low
Enhanced Wet Swales	Section 4.8 (page 454)	Enhanced swales are vegetated open channels that are designed and constructed to capture and treat stormwater runoff within dry or wet cells formed by check dams or other structures.	No	80%	†	X	25%	40%	X	20%	Yes	5 max	10 - 20%	4%	1 ft.	Below	Med	Low
Filter Strips	Section 4.9 (page 466)	Grass channels are vegetated open channels that provide "biofiltering" of stormwater runoff as it flows across the grass surface.	Minimal	50%	†	X	25%	20%	X	30%	Yes	5 max	10%	4%	< 1 ft.	2 ft.	Low	Low
Infiltration Practices	Section 4.12 (page 490)	An infiltration practice is a shallow excavation, typically filled with stone or an engineered soil mix, which is designed to temporarily hold stormwater runoff until it infiltrates into the surrounding soils. Infiltration practices are able to reduce stormwater quantity, recharge the groundwater, and reduce pollutant loads.	Yes	100%	†	†	100%	100%	100%	100%	Yes	5 max	2 - 3%	6%	1 ft.	2 ft.	High	High
Permeable Paver Systems	Section 4.15 (page 508)	A permeable paver system is a pavement surface composed of structural units with void areas that are filled with pervious materials such as gravel, sand, or grass turf. The system is installed over a gravel base course that provides structural support and stores stormwater runoff that infiltrates through the system into underlying permeable soils.	Yes	80%	†	†	50%	50%	N/A*	60%	Yes	N/A	No restrictions	6%	2 - 4 ft.	2 ft.	High	High

- √ BMP can meet the stormwater management or treatment requirement
- † BMP may meet the stormwater management or treatment requirement depending on size, configuration, and site constraints
- X BMP may contribute but is not likely to fully meet the stormwater management or treatment requirement

EXHIBIT B.2**Summary of Potential Better Site Planning and Design Techniques in Dawson County**

Better Site Planning Techniques	Location in Volume 2 GSMM 2016 (Section and PDF page #)	Description
Preserved Undisturbed Natural Areas	Section 2.3.2 (page 269)	Important natural features and areas such as undisturbed forested and vegetated areas, natural drainageways, stream corridors, wetlands and other important site features should be delineated and placed into conservation areas.
Preserve Riparian Buffers	Section 2.3.2 (page 270)	Naturally vegetated buffers should be delineated and preserved along perennial streams, rivers, lakes, and wetlands.
Avoid Floodplains	Section 2.3.2 (page 271)	Floodplain areas should be avoided for homes and other structures to minimize risk to human life and property damage, and to allow the natural stream corridor to accommodate flood flows.
Avoid Steep Slopes	Section 2.3.2 (page 273)	Steep slopes should be avoided due to the potential for soil erosion and increased sediment loading. Excessive grading and flattening of hills and ridges should be minimized.
Minimize Siting on Porous or Erodible Soils	Section 2.3.2 (page 274)	Porous soils such as sand and gravels provide an opportunity for groundwater recharge of stormwater runoff and should be preserved as a potential stormwater management option. Unstable or easily erodible soils should be avoided due to their greater erosion potential.
Fit Design Practice to Terrain	Section 2.3.2.2 (page 276)	The layout of roadways and buildings on a site should generally conform to the landforms on a site. Natural drainageways and stream buffer areas should be preserved by designing road layouts around them. Buildings should be sited to utilize the natural grading and drainage system and avoid the unnecessary disturbance of vegetation and soils.
Locate Development in Less Sensitive Areas	Section 2.3.2.2 (page 278)	To minimize the hydrologic impacts on the existing site land cover, the area of development should be located in areas of the site that are less sensitive to disturbance or have a lower value in terms of hydrologic function.
Reduce Limits of Clearing and Grading	Section 2.3.2.2 (page 279)	Clearing and grading of the site should be limited to the minimum amount needed for the development and road access. Site footprinting should be used to disturb the smallest possible land area on a site.
Utilize Open Space Development	Section 2.3.2.2 (page 280)	Open space site designs incorporate smaller lot sizes to reduce overall impervious cover while providing more undisturbed open space and protection of water resources.
Consider Creative Development Design	Section 2.3.2.2 (page 282)	Planned Unit Developments (PUDs) allow a developer or site designer the flexibility to design a residential, commercial, industrial, or mixed-use development in a fashion that best promotes effective stormwater management and the protection of environmentally sensitive areas.
Reduce Roadway Lengths and Widths	3.3.3.1 (page 89)	Strategies to reduce impervious cover by making streets narrower while still meeting transportation objectives.
Reduce Building Footprints	3.3.3.4 (page 106)	Reducing footprint size of commercial building and residences by using alternate or taller buildings while maintaining the same floor to area ratio (the ratio of building square footage to lot size)
Reduce the Parking Footprint/ Reducing Paved Parking and Walking Areas	3.3.3.3 (page 101)	Reducing the footprint of paved parking lots, driveways, and sidewalks to reduce imperviousness
Reduce Setback and Frontages	3.3.2.3 (page 78)	Reduce front yard building setback to 20 feet to reduce the required length of driveways and sidewalks. Reduce side yard setback to 25 feet or less and frontage length to 80 feet or less to allow for denser development and shorter road lengths.

EXHIBIT B.2**Summary of Potential Better Site Planning and Design Techniques in Dawson County**

Better Site Planning Techniques	Location in Volume 2 GSMM 2016 (Section and PDF page #)	Description
Use Fewer or Alternative Cul-de-Sacs/ Alternative Roadway Components	3.3.3.2 (page 95)	Alternatives to large cul-de-sacs and curb-and gutter stormwater conveyance
Create Parking Lot Stormwater "Islands"	2.3.1.2 (page 267)	Reduction of impervious cover
Use Buffers and Undisturbed Areas	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Use Natural Drainageways Instead of Storm Sewers	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Use Vegetated Swale Instead of Curb and Gutter	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Use Soil Restoration Practices to Improve Native Soils	2.3.1.2 (page 267)	Utilization of natural features for stormwater management
Drain Rooftop Runoff to Pervious Area	2.3.1.2 (page 267)	Utilization of natural features for stormwater management

Appendix C – BMP Inspection Forms

Bioretention Area					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, etc. removed).					
Inlet Structure					
Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc.					
Area around the inlet structure is mowed and grass clippings are removed.					
No evidence of gullies, rills, or excessive erosion around the inlet structure.					
Water is going through structure (i.e. no evidence of water going around the structure).					
Diversion structure (high flow bypass structure or other) is free of trash, debris, or sediment. Comment on overall condition of diversion structure and list type.					
Pretreatment (choose one)					
Forebay – area is free of trash, debris, and sediment.					
Weir – area is free of trash, debris, and sediment is less than 25% of the total depth of the weir.					
Filter Strip or Grass Channels – area is free of trash debris and sediment. Area has been mowed and grass clippings are removed. No evidence of erosion.					
Rock Lined Plunge Pools – area is free of trash debris and sediment. Rock thickness in pool is adequate.					
Main Treatment					
Main treatment area is free of trash, debris, and sediment.					
Erosion protection is present on site (i.e. turf reinforcement mats). Comment on types of erosion protection and evaluate condition.					

Bioretention Area					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
No evidence of long-term ponding or standing water in the ponding area of the practice (examples include: stains, odors, mosquito larvae, etc).					
Structure seems to be working properly. No settling around the structure. Comment on overall condition of structure.					
Vegetation within and around practice is maintained per landscaping plan. Grass clippings are removed.					
Mulching depth of 3-4 inches is maintained. Comment on mulch depth.					
Native plants were used in the practice according to the planting plan.					
No evidence of use of fertilizer on plants (fertilizer crusting on the surface of the soil, tips of leaves turning brown or yellow, blackened roots, etc.).					
Plants seem to be healthy and in good condition. Comment on condition of plants.					
Emergency Overflow					
Emergency overflow is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
Outlet Structure					
Outlet structure is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
Results					
Overall condition of Bioretention Area:					
Additional Comments					
Notes: *If a specific maintenance item was not checked, please check N/A and explain why in the appropriate comment box.					

Dry Enhanced Swale/Wet Enhanced Swale

Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, etc. removed).					
Inlet Structure					
Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc.					
Area around the inlet structure is mowed and grass clippings are removed (for dry enhanced swale).					
No evidence of gullies, rills, or excessive erosion around the inlet structure.					
Water is going through structure (i.e. no evidence of water going around the structure).					
Pretreatment (choose one)					
Forebay – area is free of trash, debris, and sediment.					
Weir – area is free of trash, debris, and sediment is less than 25% of the total depth of the weir.					
Filter Strip or Grass Channels – area is free of trash debris and sediment. Area has been mowed and grass clippings are removed. No evidence of erosion.					
Rock Lined Plunge Pools – area is free of trash debris and sediment. Rock thickness in pool is adequate.					
Main Treatment					
Main treatment area is free of trash, debris, and sediment.					
Erosion protection is present on site (i.e. turf reinforcement mats). Comment on types of erosion protection and evaluate condition.					
For dry enhanced swale, no evidence of long-term ponding or standing water in the ponding area of the practice (examples include: stains, odors, mosquito larvae, etc).					
Plants were used in the practice according to the planting plan.					

Dry Enhanced Swale/Wet Enhanced Swale					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
Vegetation within and around practice is maintained per landscaping plan. Grass clippings are removed.					
Structure seems to be working properly. No settling around the structure. Comment on overall condition of structure.					
No evidence of undesirable vegetation.					
No evidence of use of fertilizer on plants (fertilizer crusting on the surface of the soil, tips of leaves turning brown or yellow, blackened roots, etc.).					
Plants seem to be healthy and in good condition. Comment on condition of plants.					
No evidence of erosion around the sides of the check dam.					
Cleanout caps are in place and in good condition (for dry enhanced swale).					
The underdrain appears to be unclogged evidenced by water exiting the practice freely (for dry enhanced swale).					
Pea gravel diaphragm or other flow spreader is clean and working properly.					
Emergency Overflow					
Emergency overflow is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
Outlet Structure					
Outlet structure is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
Results					
Overall condition of Enhanced Swale:					
Additional Comments					
Notes: *If a specific maintenance item was not checked, please explain why in the appropriate comment box.					

Grass Channel					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, etc. removed).					
Inlet					
Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc.					
Area around the inlet is mowed and grass clippings are removed.					
No evidence of gullies, rills, or excessive erosion around the inlet.					
No signs of clogging or damage around the inlet.					
Pretreatment (choose one)					
Forebay – area is free of trash, debris, and sediment.					
Filter Strip or Grass Channels – area is free of trash debris and sediment. Area has been mowed and grass clippings are removed. No evidence of erosion.					
Main Treatment					
Main treatment area is free of trash, debris, and sediment.					
No evidence of erosion in the practice.					
No evidence of long-term ponding or standing water in the ponding area of the practice (examples include: stains, odors, mosquito larvae, etc).					
No undesirable vegetation located within the practice.					
No evidence of use of fertilizer on plants (fertilizer crusting on the surface of the soil, blackened roots, etc.).					
Grass within and around practice is maintained at the proper height (3-4 inches). Grass clippings are removed.					
Grass cover seems healthy with no bare spots or dying grass.					

Grass Channel					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
No accumulating sediment within the grass channel.					
Outlet					
Outlet is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding.					
Results					
Overall condition of Grass Channel:					
Additional Comments					
Notes: * If a specific maintenance item was not checked, please check N/A and explain why in the appropriate comment box.					

Infiltration Practice					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, etc. removed).					
Inlet					
Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc. Drainage ways are in good condition.					
Area around the inlet structure is mowed and grass clippings are removed.					
No evidence of gullies, rills, or excessive erosion around the inlet structure.					
Water is going through structure (i.e. no evidence of water going around the structure).					
Diversion structure (high flow bypass structure or underdrain) is free of trash, debris, or sediment. Comment on overall condition of diversion structure and list type.					
Pretreatment (choose one)					
Forebay – area is free of trash, debris, and sediment.					
Forebay – No undesirable vegetation.					
Forebay – No signs of erosion, rills, or gullies. Erosion protection is present on site.					
Forebay – No signs of standing water.					
Filter Strip– area is free of trash debris and sediment. Area has been mowed and grass clippings are removed. No evidence of erosion or sediment accumulation.					
Filter Strip – No signs of unhealthy grass, bare or dying grass. Grass height is maintained to a height of 6 – 15 inches.					
Filter Strip– No signs of erosion, rills, or gullies. Erosion protection is present on site.					
Filter Strip – No undesirable vegetation.					
Filter Strip – No signs of standing water (examples include: stains, odors, mosquito larvae, etc).					

Infiltration Practice					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
Main Treatment					
Main treatment area is free of trash, debris, and sediment.					
Erosion protection is present on site (i.e. turf reinforcement mats). Comment on types of erosion protection and evaluate condition.					
Structure seems to be working properly. No settling around the structure. Comment on overall condition of structure.					
No signs of ponding water more than 48 hours after a rain storm event (examples include: stains, odors, mosquito larvae, etc).					
No undesirable vegetation growing within the practice.					
Native plants were used in the practice according to the landscaping plan.					
Observation well is capped and locked when not in use					
Flow testing has been performed on infiltration practice to determine if underdrain is clogged.					
Emergency Overflow and Outlet Structure					
Area is free of trash, debris, and sediment.					
No evidence of erosion, scour, or flooding around the structure.					
No signs of sediment accumulation.					
Grass height of 6 – 15 inches is maintained.					
Results					
Overall condition of Infiltration Practice:					
Additional Comments					
Notes: *If a specific maintenance item was not checked, please check N/A and explain why in the appropriate comment box.					

Permeable Bricks/Blocks

Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, leaves, etc. removed).					
Area around the practice is mowed and grass clippings are removed. No signs of bare or dead grass.					
No evidence of gullies, rills, or erosion around the practice.					
Water is permeating the bricks/blocks (i.e. no evidence of water going around the practice).					
Bricks/blocks are structurally sound. No signs of cracks or splitting.					
Aggregate between the bricks/blocks is reasonable.					
No evidence of long-term ponding or standing water in the practice.					
Grass in the concrete grid is healthy, no dead grass or bare spots.					
Grass in the concrete grid is mowed and grass clippings are removed.					
Structure seems to be working properly. No signs of the bricks/blocks settling. Comment on overall condition of bricks/blocks.					
Vegetation within and around practice is maintained. Grass clippings are removed.					
No exposed soil near the bricks/blocks that could cause sediment accumulation within the practice.					
Cleanout caps are present and not missing (if applicable).					
The underdrain system has been flushed properly and there is no sign of clogging (if applicable).					
Results					
Overall condition of Permeable Bricks/Blocks:					

Permeable Bricks/Blocks

Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
Additional Comments					
Notes: * If a specific maintenance item was not checked, please check N/A and explain why in the appropriate comment box.					