B3 SITE + WATER UPDATES

VERSION 3.2 REVISION 3

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Center for Sustainable Building Research (CSBR)

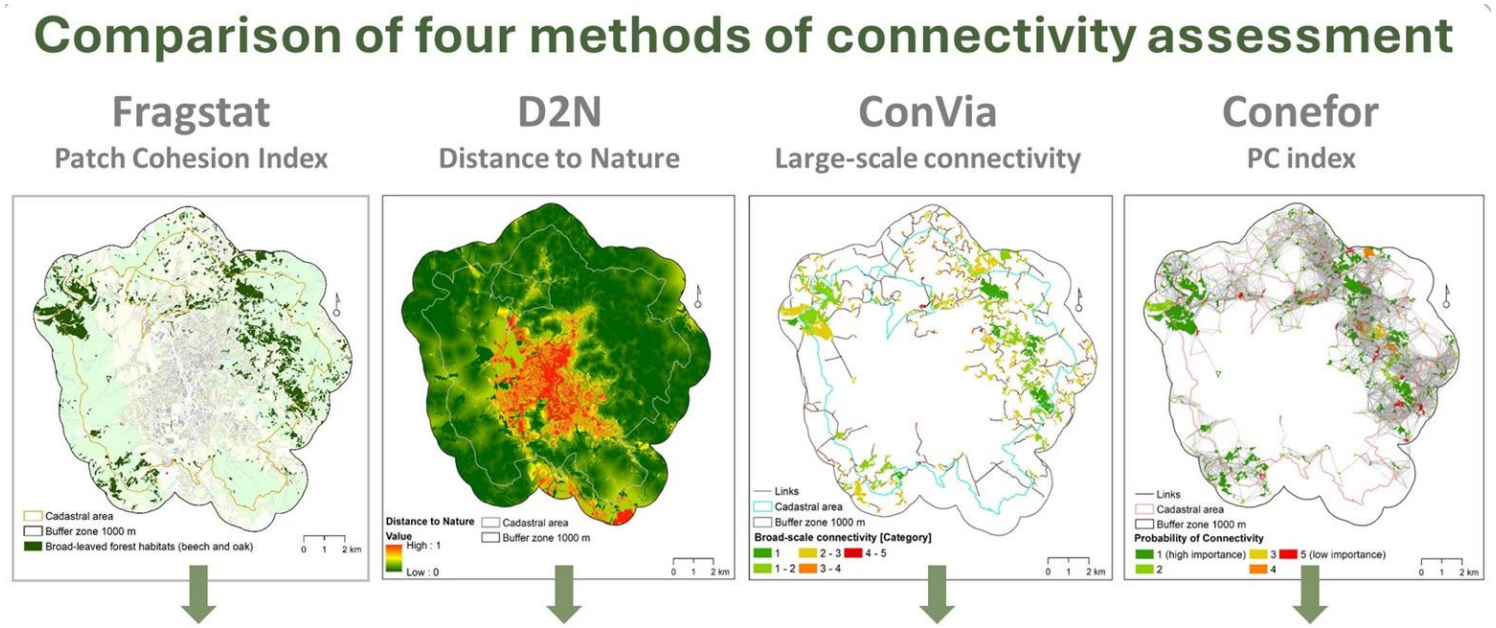
07/01/2025

B3 - SITE AND WATER OVERVIEW

Site and Water Guideline	New Buildings	Major Renovations
S.1 Site and Water Connections	Required	Required for Minimum Site Scope (See Guideline)
S.2 Site Water Quality and Efficiency	Required	Required for Minimum Site Scope (See Guideline)
S.3 Soil	Required	Required for Minimum Site Scope (See Guideline)
S.4 Vegetation	Required	Required for Minimum Site Scope (See Guideline)
S.5 Animal Habitat Support	Required	Required for Minimum Site Scope (See Guideline)

S1 - SITE AND WATER CONNECTIONS

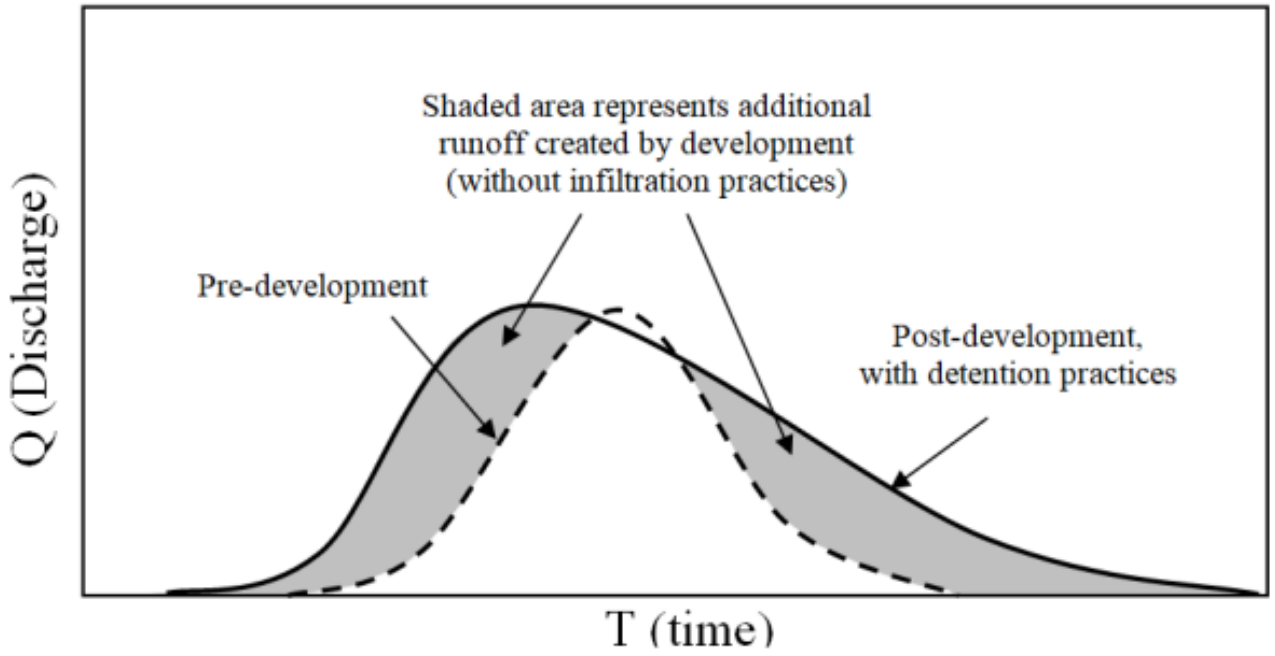
TO CREATE SITES THAT ARE RESILIENT, HEALTHY, AND SUSTAINABLE, AND TO **ENSURE CONNECTIONS BETWEEN THE SURROUNDING ENVIRONMENT AND THE SITE** THROUGH VEGETATION SELECTION, PROVISION OF ANIMAL HABITATS, AND CONNECTIONS TO HUMAN-MADE SYSTEMS.



Vilém Pechanec, Marcela Prokopová, Renata Včeláková, Lenka Štěrbová, Ondřej Cudlín, Tereza Pohanková, Stanislav Grill, Luca Salvati, Pavel Cudlín,
Assessing habitat connectivity: A comparative analysis of four methodologies applied to peri-urban landscapes,
Science of The Total Environment, Volume 1003, 2025,180729, ISSN 0048-9697,

S2 – SITE WATER QUALITY AND EFFICIENCY

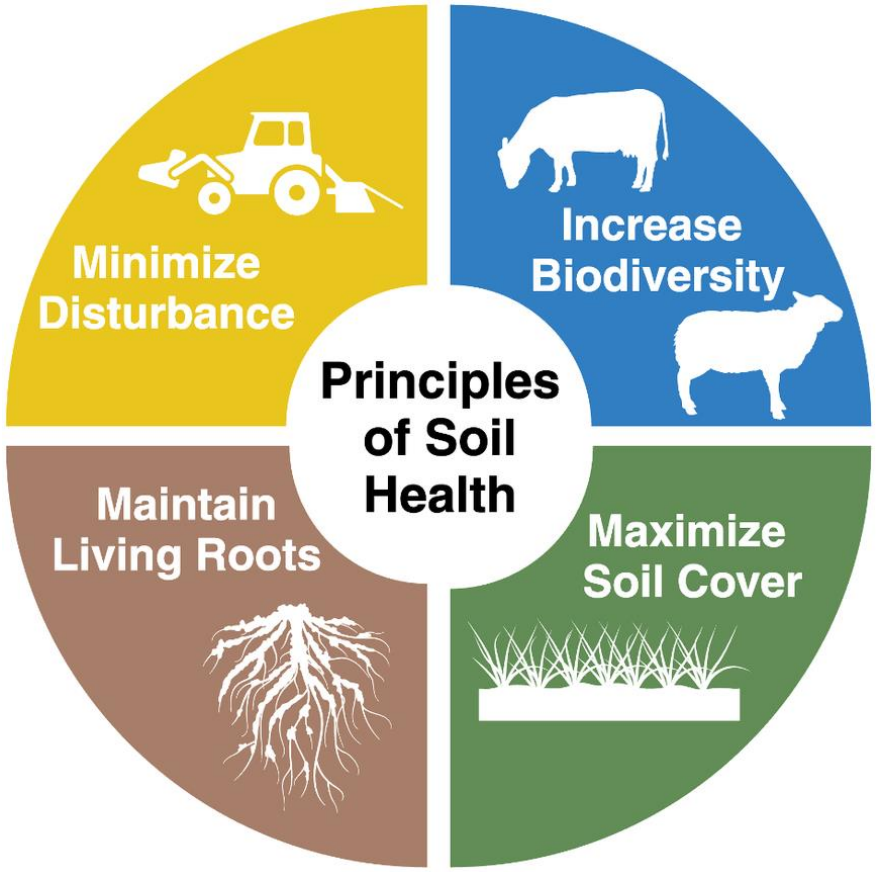
TO RESTORE THE NATURAL WATER CYCLE OF MINNESOTA BIOMES TO SUPPORT EFFICIENT NATURAL AND CONSTRUCTED HYDROLOGY, HEALTHY SOILS, ROBUST VEGETATION, AND ECOSYSTEM SERVICES; **REDUCE AND LIMIT WATER BOUND POLLUTANTS LEAVING THE SITE; OPTIMIZE POTABLE WATER USE**; AND RESPOND TO THE ECOLOGICAL FACTORS OF THE PROJECT SITE AS A PART OF ITS LARGER WATERSHED.



ONLINE IMAGE : https://danecountystormwatermanual.com/lib/exe/fetch.php?w=600&tok=9d4873&media=wiki:images:discharge_with_controls.png

S3 - SOILS

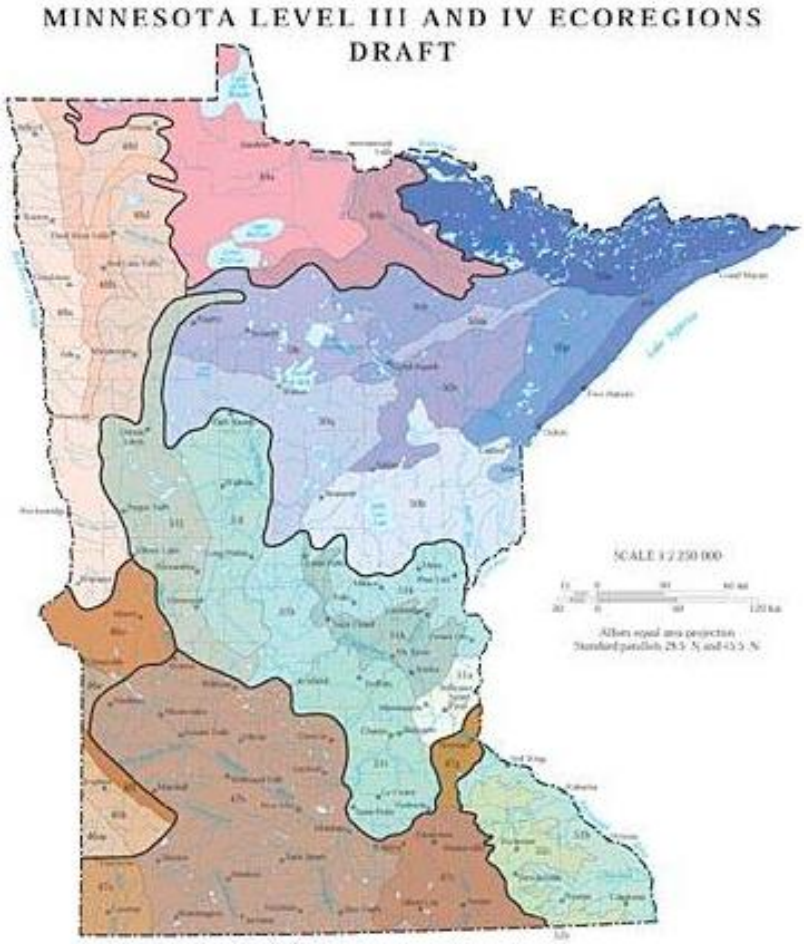
TO ENSURE THE MAINTENANCE AND RESTORATION OF HEALTHY SOILS BY DOCUMENTING EXISTING SOIL CONDITIONS, **PRESERVING AND PROTECTING BENEFITS OF EXISTING SOIL,** MINIMIZING THE IMPACTS OF CONSTRUCTION, REPAIRING SOILS TO RETURN TO SUPPORTIVE CONDITIONS, AND DOCUMENTING SOIL MAINTENANCE PRACTICES TO ENSURE ONGOING OPTIMAL SOIL CONDITIONS.

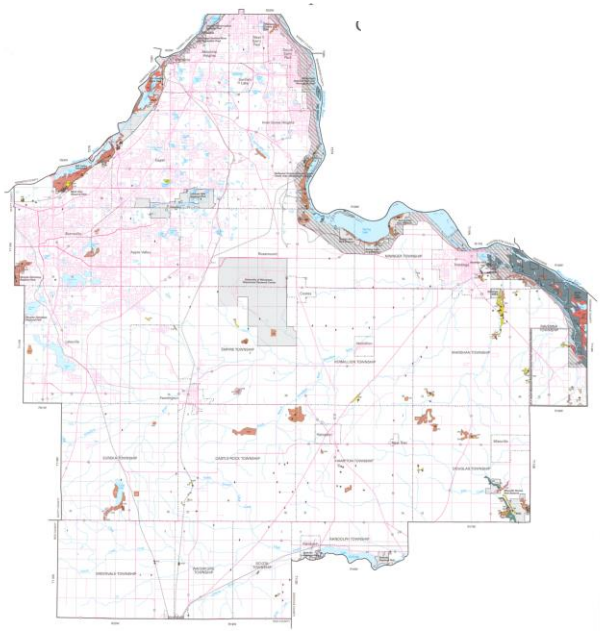


ONLINE IMAGE https://eit-wagpress-prod.s3.amazonaws.com/media/images/2023-09-Soil-Health-Principles.max-900x900.png
Figure 1. Soil health principles recommended by USDA-NRCS. Image created with BioRender.com

S4 - VEGETATION

TO OPTIMIZE THE ECOLOGICAL FUNCTION OF PROJECT SITES BY **RESTORING MINNESOTA'S NATIVE VEGETATION, PROTECTING NATURAL AREAS, CONSERVING EXISTING SITE FEATURES, AND SELECTING VIBRANT AND APPROPRIATE VEGETATION** TO ENSURE THE OPTIMUM FUNCTIONING OF ECOSYSTEMS AND HUMAN USES ON THE PROJECT SITE.





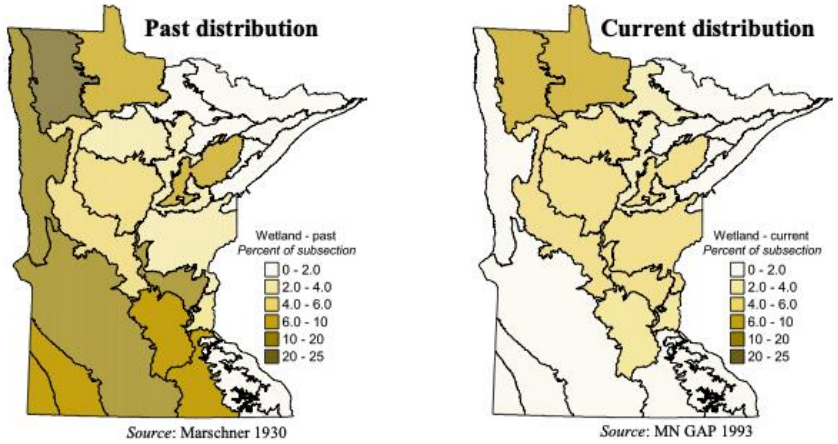
ONLINE IMAGE: https://stormwater.pca.state.mn.us/ecoregions
MN Stormwater Manual – MPCA

ONLINE IMAGE: https://files.dnr.state.mn.us/eco/mcbs/ma[illegible]kota.pdf
MBS COUNTY LEVEL SURVEY – DAKOTA COUNTY

S5 – ANIMAL HABITAT SUPPORT

TO PROTECT AND SUPPORT SITE ANIMAL HABITAT RESILIENCE BY REDUCING THE NEGATIVE IMPACT OF THE BUILT ENVIRONMENT ON ANIMAL SPECIES AND PROVIDING SUPPORTIVE ENVIRONMENTS FOR AT-RISK NATIVE SPECIES THAT ARE ESSENTIAL TO ECOSYSTEM HEALTH.

Sedge Meadow (WMn82b)



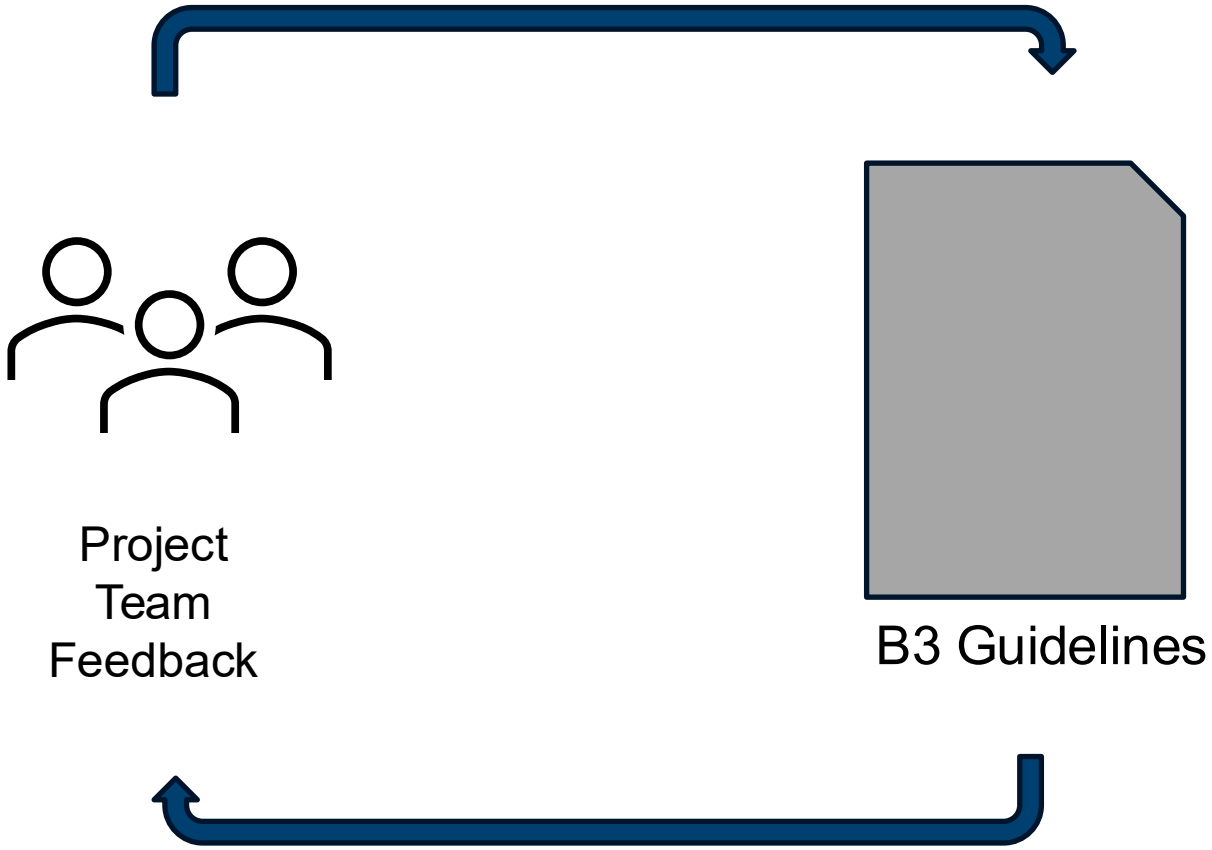
Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife

Management Options to Support Species in Greatest Conservation Need

- Prevent loss or degradation of all types of nonforested wetlands.
- Preserve nonforested wetlands, especially in the Eastern Broadleaf Forest and Prairie Parkland provinces.
- Focus on protecting wetlands larger than 10 hectares (25 acres) and wetland complexes.
- Restore large wetland complexes, with attention to the habitat features required by SGCN.
- Avoid creating impoundments that flood wet meadows.
- Manage the invasions of invasive exotic plants in nonforested wetlands (e.g., purple loosestrife, *Phragmites*).
- Protect known nesting areas of Forster's terns.
- Enforce wetland protection regulations ("no-net loss").

ONLINE IMAGE: https://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/cwcs/habitats/14.pdf
MN DNR –Subsection Profiles and Habitat Descriptions

We welcome feedback from project teams participating in the B3 program. Please reach out to guidelines@b3mn.org to schedule a meeting or to suggest proposed amendments/changes/additions to B3 requirements.

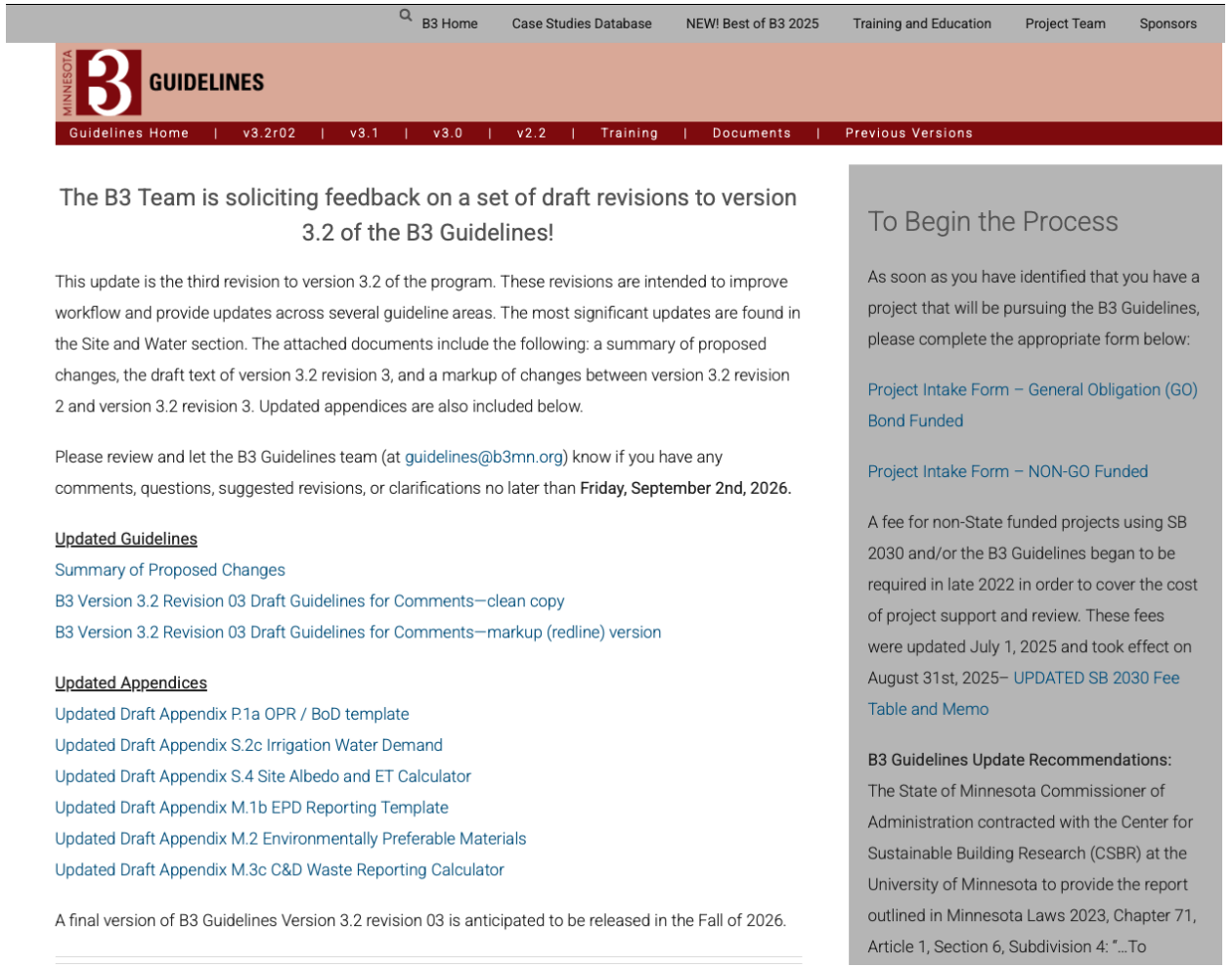


UPDATES SUMMARY

The following changes are proposed and will be open for comment. Based on the feedback we have already received, and your comments following this presentation, along with ongoing maintenance and renovation of the guideline language, reporting strategy, and overall program structure, we hope to have a new set of guidelines by Fall 2026.

1. NAVIGATE TO THE B3 HOMEPAGE (WWW.B3MN.ORG/GUIDELINES)

2. CLICK ON ANY OF THE LINKS FOR CALCULATORS, THE TEXT OF THE PROPOSED GUIDELINES, OR SUMMARY DOCUMENTS.



B3 Home | Case Studies Database | NEW! Best of B3 2025 | Training and Education | Project Team | Sponsors

MINNESOTA B3 GUIDELINES

Guidelines Home | v3.2r02 | v3.1 | v3.0 | v2.2 | Training | Documents | Previous Versions

The B3 Team is soliciting feedback on a set of draft revisions to version 3.2 of the B3 Guidelines!

This update is the third revision to version 3.2 of the program. These revisions are intended to improve workflow and provide updates across several guideline areas. The most significant updates are found in the Site and Water section. The attached documents include the following: a summary of proposed changes, the draft text of version 3.2 revision 3, and a markup of changes between version 3.2 revision 2 and version 3.2 revision 3. Updated appendices are also included below.

Please review and let the B3 Guidelines team (at guidelines@b3mn.org) know if you have any comments, questions, suggested revisions, or clarifications no later than **Friday, September 2nd, 2026.**

Updated Guidelines

Summary of Proposed Changes
B3 Version 3.2 Revision 03 Draft Guidelines for Comments—clean copy
B3 Version 3.2 Revision 03 Draft Guidelines for Comments—markup (redline) version

Updated Appendices

Updated Draft Appendix P.1a OPR / BoD template
Updated Draft Appendix S.2c Irrigation Water Demand
Updated Draft Appendix S.4 Site Albedo and ET Calculator
Updated Draft Appendix M.1b EPD Reporting Template
Updated Draft Appendix M.2 Environmentally Preferable Materials
Updated Draft Appendix M.3c C&D Waste Reporting Calculator

A final version of B3 Guidelines Version 3.2 revision 03 is anticipated to be released in the Fall of 2026.

To Begin the Process

As soon as you have identified that you have a project that will be pursuing the B3 Guidelines, please complete the appropriate form below:

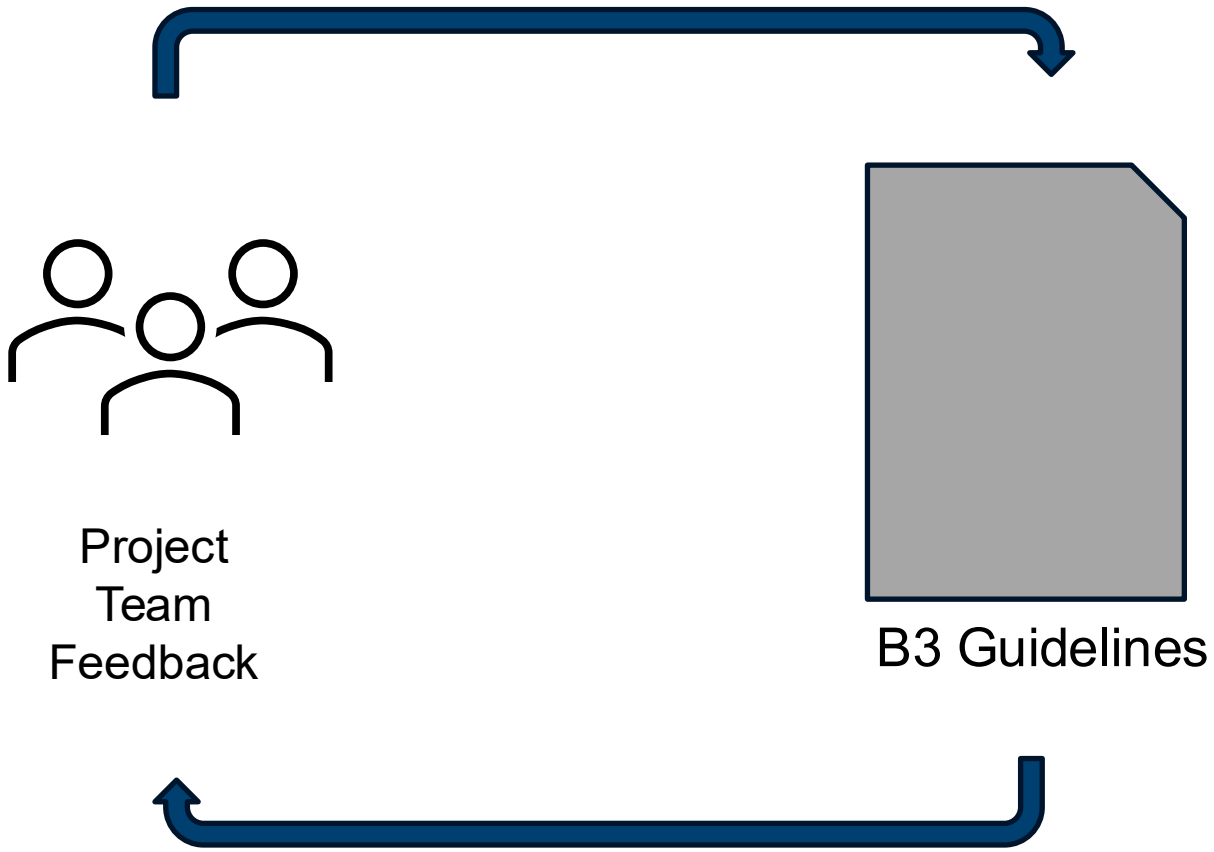
Project Intake Form – General Obligation (GO) Bond Funded

Project Intake Form – NON-GO Funded

A fee for non-State funded projects using SB 2030 and/or the B3 Guidelines began to be required in late 2022 in order to cover the cost of project support and review. These fees were updated July 1, 2025 and took effect on August 31st, 2025– UPDATED SB 2030 Fee Table and Memo

B3 Guidelines Update Recommendations:
The State of Minnesota Commissioner of Administration contracted with the Center for Sustainable Building Research (CSBR) at the University of Minnesota to provide the report outlined in Minnesota Laws 2023, Chapter 71, Article 1, Section 6, Subdivision 4: "…To

OVERVIEW OF SITE + WATER CHANGES



S2 – Evapotranspiration Calculations
S2 – Site Albedo Calculations
S2 – Hydrologic Soil Group Determination
S2 – Irrigation and Outdoor Water Calc
S2 – Green Roof Incentives

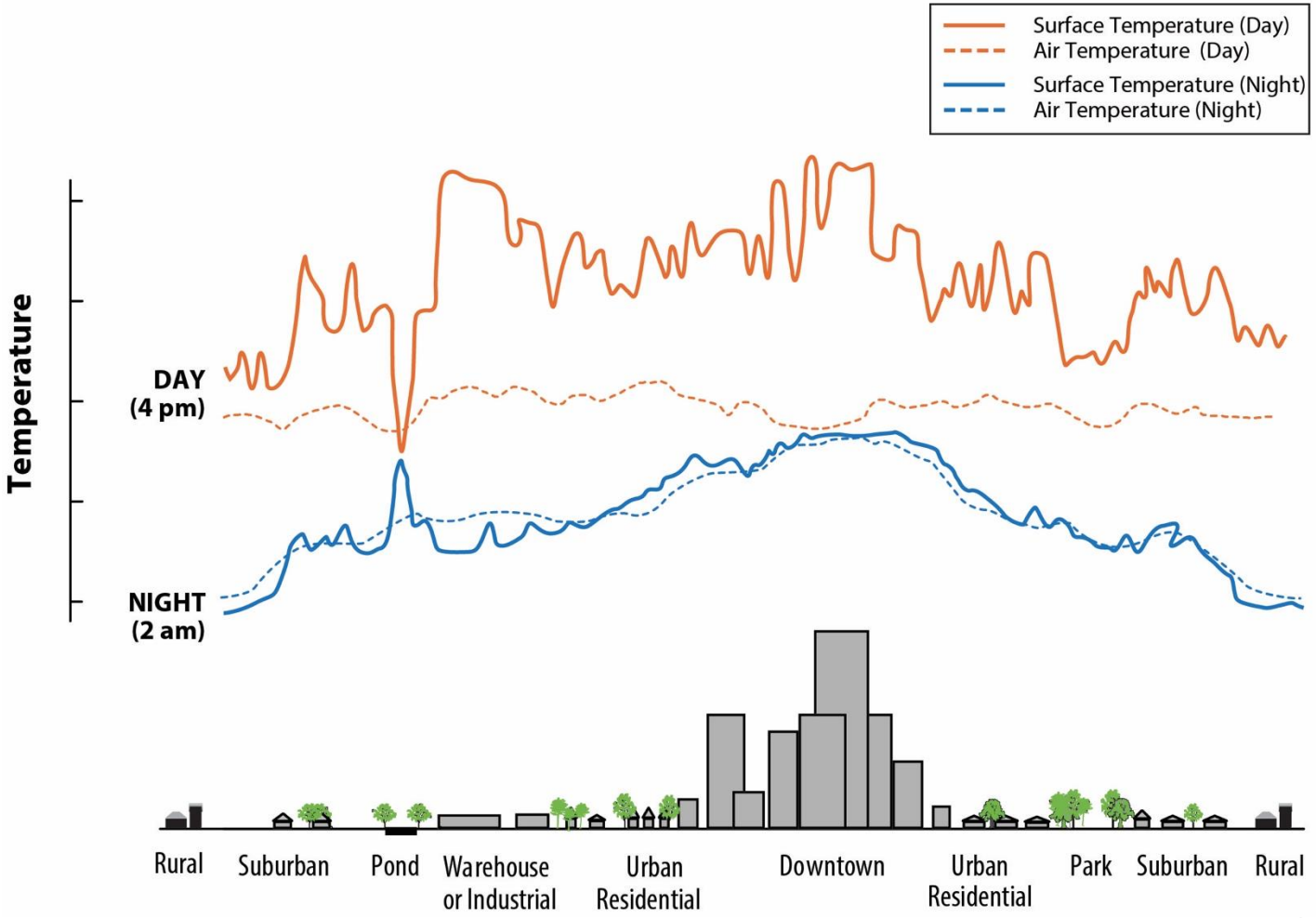
S3 – HSG Testing protocol and Methodology
S3 – Site Soil Protection Zones (SSPZ)

S4 – Green Roofs
S4 – Biomass Targets
S4 – Class Fact Sheets
S4 – Plant Communities and SNAs
S5 – Habitat Requirements
S5 – Habitat Determination

S4 – Site Albedo + ET

Albedo measures the amount of absorption or reflectance a surface has. A higher albedo has more reflectance, a lower albedo has more absorptance.

B3 has been using the albedo calculator for many years to promote the use of more reflectance in site materials to mitigate the effects of urban heat island effect.

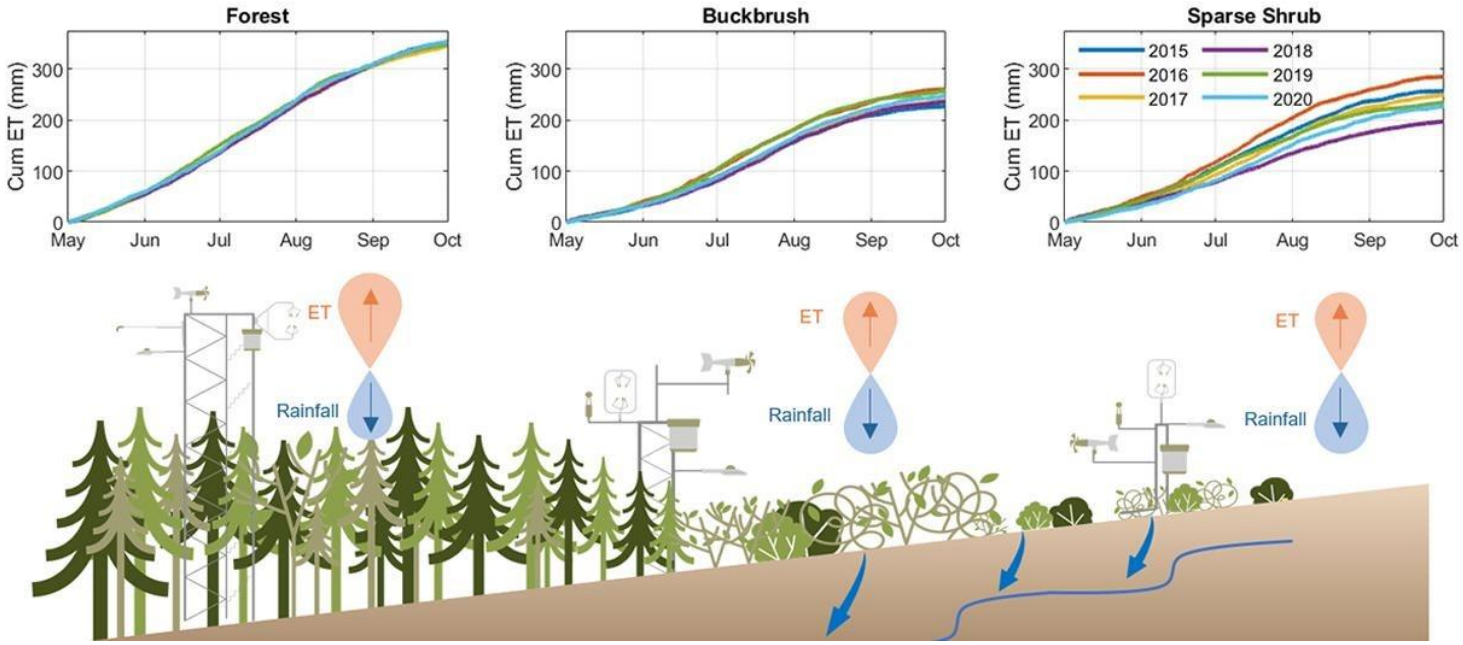


ONLINE IMAGE https://www.epa.gov/sites/default/files/2020-07/heat_island_effect_diagram.jpg
What are Heat Islands? US EPA

ET Added

Now B3 has integrated Evapotranspiration calculations for non-stormwater BMP vegetative cover within the Site Albedo Calculator. This allows project teams to account for and easily calculate the Evapotranspiration of trees, shrubs, ground cover, and turf as part of their overall on-site volume reductions.

The calculator also promotes the use of vegetation over impervious (and often lower albedo materials) for site areas.



S2 – Evapotranspiration Calculations

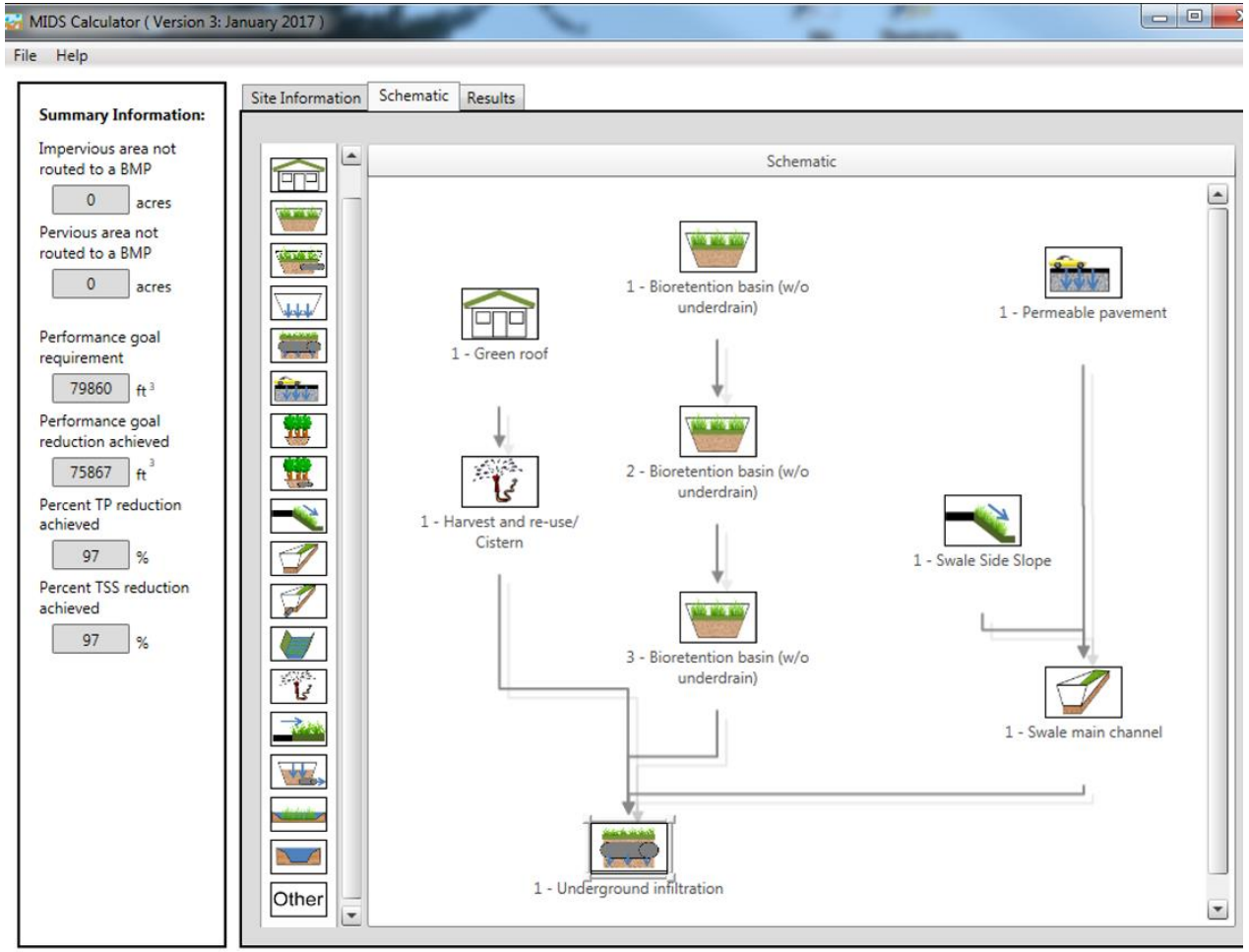
PROPOSED: Mean Site Albedo and Evapotranspiration after development

	Hardscape/Building									Vegetation							Proposed	
Name of Material	Material	Material	Material	Material	Material	Material	Material	Material	Total Hardscape	Turf	Deciduous Tree Canopy **/***	Coniferous Tree Canopy **/***	Grasses + Shrubs	Stormwater BMP From MIDS *	Total Vegetation	Total Area (ft2)	Mean Site Albedo	
Square Feet of Area									0						0		#DIV/0!	#DIV/0!
Percent of Total Area	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!					#DIV/0!	#DIV/0!	#DIV/0!		
Albedo of Area									#DIV/0!	28%	40%	40%	30%	30%	34%		Site Evapotranspiration	
									ET Rates:	0.1	0.5	0.5	0.3	0			#VALUE!	inches/storm event
																	MIDS Default Event Volume	1.1 inches
																	Remaining Event Volume	#VALUE! inches
																	MIDS Total Event Volume	0.00 acre ft
																	MIDS reductions	2.5 acre ft
																	ET reductions from this sheet	#VALUE! acre ft
																	Total Volume Reductions (MIDS + ET)	#VALUE! acre ft
																	Total % Volume Managed on site	#VALUE! Total M

S2 – Evapotranspiration Calculations

Proposed		
Mean Site Albedo		
#DIV/0!	#DIV/0!	
Site Evapotranspiration		
#VALUE!	inches/storm event	
MIDS Default Event Volume	1.1	inches
Remaining Event Volume	#VALUE!	inches
MIDS Total Event Volume	0.00	acre ft
MIDS reductions	2.5	acre ft
ET reductions from this sheet	#VALUE!	acre ft
Total Volume Reductions (MIDS + ET)	#VALUE!	acre ft
Total % Volume Managed on site	#VALUE!	Total M

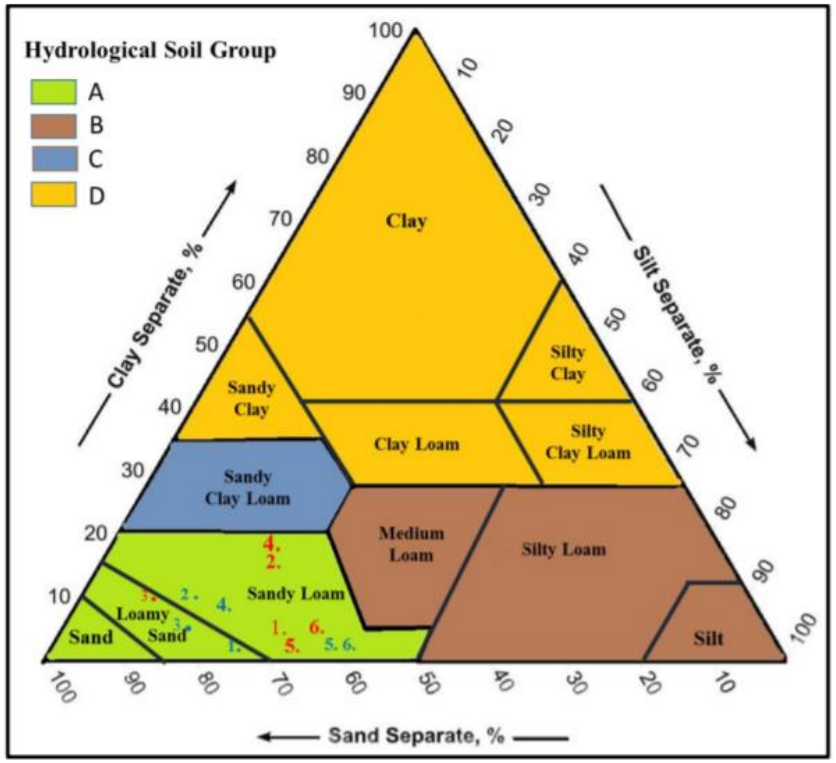
+



Online Image: https://stormwater.pca.state.mn.us/sites/stormwater/files/Screen_shot_of_calculator.png

S2 – Hydrologic Soil Group (HSG) Determination

S2 Hydrologic Soil Group Determination– Added testing protocol and clarified methodology for determining the site's Hydrologic Soil Group (HSG) for use in MIDS calculations. https://stormwater.pca.state.mn.us/index.php/Design_infiltration_rates



Hydrologic soil group	Infiltration rate (inches/hour)	Infiltration rate (centimeters/hour)	Soil textures	Corresponding Unified Soil Classification[1]
A	Although a value of 1.63 inches per hour (4.14 centimeters per hour) may be used, it is ***Highly recommended*** that you conduct field infiltration tests or amend soils.[b] See Guidance for amending soils with rapid or high infiltration rates and Determining soil infiltration rates.		gravel sandy gravel	GW - Well-graded gravels, fine to coarse gravel GP - Poorly graded gravel
	1.63[a]	4.14	silty gravels gravelly sands sand	GM - Silty gravel SW - Well-graded sand, fine to coarse sand
	0.8	2.03	sand loamy sand sandy loam	SP - Poorly graded sand
B	0.45	1.14	silty sands	SM - Silty sand
	0.3	0.76	loam, silt loam	MH - Elastic silt
C	0.2	0.51	Sandy clay loam, silts	ML - Silt
D	0.06	0.15	clay loam silty clay loam sandy clay silty clay clay	GC - Clayey gravel SC - Clayey sand CL - Lean clay OL - Organic silt CH - Fat clay OH - Organic clay, organic silt

[1]For Unified Soil Classification, we show the basic text for each soil type. For more detailed descriptions, see the following links: The Unified Soil Classification System, CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) UNIFIED SOIL CLASSIFICATION SYSTEM

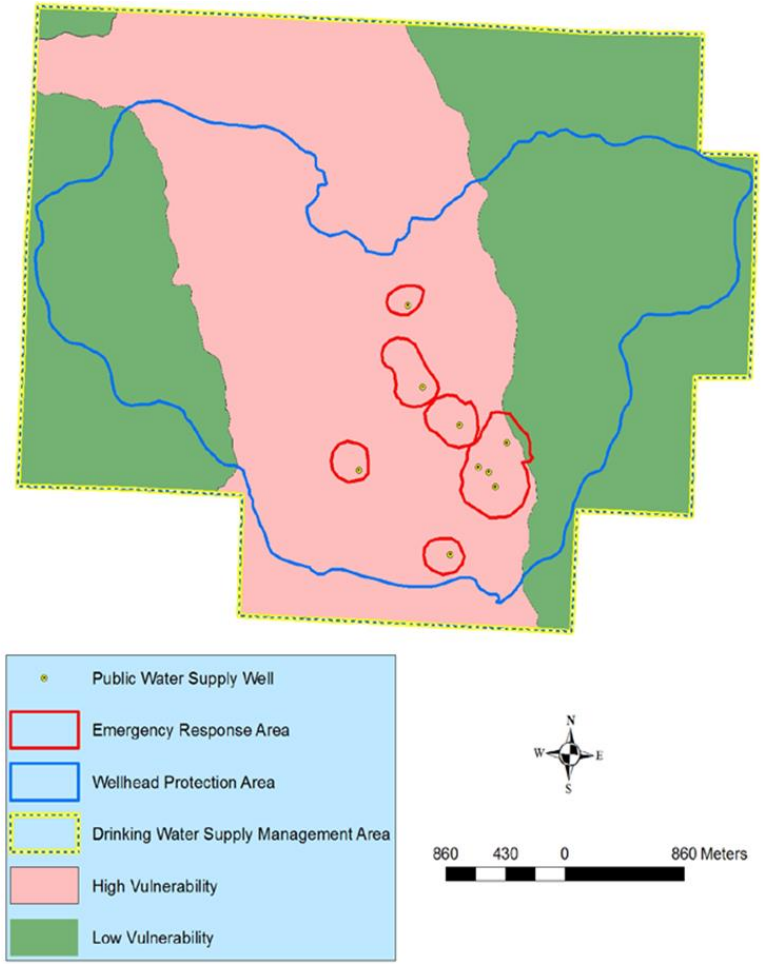
ONLINE IMAGE: https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcTjUl3Cr_9aN4FGhMnoEpRuzaJfoHM_qPOKJg&s

S2 – Stormwater Requirements for sites with infiltration restrictions

D Soils: 0.006 in./hr. ***Or if no infiltration is allowed on site.	Use MIDS Default	Use MIDS Default	15%	***85%***

For sites that have a qualified infiltration restriction which allows for 0% infiltration within the project site area (ex. karst soils, wellhead protection zones, easements, etc.) the project team can now provide proof of that restriction and can use the volume requirements within S2A for “D” type Hydrologic Soil Group sites regardless of actual soil conditions tested/reported for the site.

This allows for less stringent requirements given that the project site cannot use infiltration which is likely the easiest and likely the least costly method to manage stormwater volume on site.



ONLINE IMAGE
https://stormwater.pca.state.mn.us/sites/stormwater/files/Wellhead_protection_example.png
MN PCA – MN Stormwater Manual - Wellhead protection zones

S2 – Green Roof Incentives

S2 – Green Roofs - Incentivized roof captured rainwater/reuse by making roof area contribution to be 1.5x actual area. This allows for greater potential to capture and reuse stormwater on sites that cannot easily infiltrate (D soils, Wellhead protection zones, perched aquifers, karst soils, etc.)

ONLINE IMAGE: https://inhabitat.com/wp-content/blogs.dir/1/files/2011/05/Minneapolis-Central-Library-10.jpg
Minneapolis Central Library Green Roof

S2 – Irrigation and Outdoor Water Calculations

S2 – We have rebuilt the irrigation calculator tool to encourage drought tolerant plantings (after establishment) and high efficiency irrigation systems that utilize captured rain/roof water if project conditions (especially D typ soil conditions and other obstacles to infiltration) require alternative means of volume management within the project site.

Appendix S2C: Irrigation Water Calculator
B3 Guidelines - Version 3.2r03

KEY:		Blue highlighted areas show constants or outputs calculated by the spreadsheet
		Yellow highlighted areas show required inputs

Purpose:

The purpose of this worksheet is to calculate the base case and design case irrigation water consumption.

Planting requirements:

Planting requirements should achieve 100% coverage of soil at full maturity (this can be met with turf as well but non-turf planting areas should be 100% canopy coverage at full maturity)

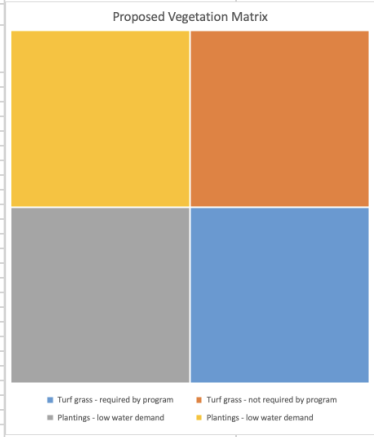
Definitions:

Plantings - high water demand:	Species that need more water than most plants within that type of vegetation (e.g., trees, shrubs, groundcover) or use 70 to 90 percent of ETo.
Plantings - moderate water demand:	Species that need a typical amount of water as compared to other plants within that type of vegetation or use 40 to 60 percent of ETo.
Plantings - low water demand:	Species that need less water than most plants within that type of vegetation or use less than 30 percent of ETo.
ETo:	Reference evapotranspiration rate. The amount of water use (evaporation + transpiration) by a well-irrigated, growing, mowed grass.
Irrigation system efficiency - high:	85% efficiency, irrigation systems that deliver water directly to the root zone via micro-spray or drip systems, with regular maintenance and proper scheduling
Irrigation system efficiency - medium:	60% efficiency, sprinkler-type systems such as pop-up heads and rotors that have regular maintenance and proper scheduling
Irrigation system efficiency - low:	50% efficiency, sprinkler type systems such as pop-up heads and rotors that are aging with poor maintenance, alignment, and lack of proper scheduling
Microclimate - protected:	areas shaded from sunlight and protected from wind and heat gain such as a landscape on a north side of a building or with a protective wind barrier
Microclimate - open:	areas that are in an open flat field such as a park or athletic field
Microclimate - intense:	areas exposed to high heat gain or windy conditions such as a landscape with southern exposure or near highly reflective surface like a street median

Design Case Planting Demand

Hydrozone	Landscape Planting Type	Microclimate	Baseline Irrigation Water Demand (gal/ft2/yr)	Design Case Irrigation Water demand (gal/ft2/yr)	Hydrozone Area (ft2)	Irrigation Water Use (gal/yr)	Baseline Irrigation Water Demand
1	Turf grass - required by program	Open	5.3	5.3	8000	42400	42400
2	Turf grass - not required by program	Open	5.3	5.3	8002	42411	42411
3	Plantings - low water demand	Protected	3.63	0	8003	0	29051
4	Plantings - low water demand	Open	5.3	0	8004	0	42421
5	Plantings - low water demand	Intense	11.98	0	8001	0	95852
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
				Total irrigated area in ft2	**40010**	**84811**	Gal/YR
						252135	Gal/YR
						42400	Gal/YR
						80%	
						84811	Gal/YR

Total Design Planting Demand
Total Baseline Planting Demand
Turf Grass Required By Program Design Demand
Irrigation consumption reduction (excluding program required turf grass)
Alternative Source Volume Demand (If using path 3)



S4 – Class Fact Sheets for Determining Adjacencies

Clarified that project teams should either use the applicable MN DNR Class Fact Sheets or the nearest applicable Scientific Natural Area (SNA) to determine vegetative reinforcement/replication of surrounding habitat.

WFn53 Northern Wet Cedar Forest — Species Frequency & Cover

Forbs, Ferns & Fern Allies	freq%	cover
Dwarf raspberry (*Rubus pubescens*)	95	●●●
Starflower (*Trientalis borealis*)	93	●
Bunchberry (*Cornus canadensis*)	91	●
Naked miterwort (*Mitella nuda*)	91	●●
Common oak fern (*Gymnocarpium dryopteris*)	84	●
Wild sarsaparilla (*Aralia nudicaulis*)	82	●●
Sweet-scented bedstraw (*Galium triflorum*)	82	●
Goldthread (*Coptis trifolia*)	82	●●
Bluebead lily (*Clintonia borealis*)	80	●
Canada mayflower (*Maianthemum canadense*)	78	●
Lady fern (*Athyrium filix-femina*)	77	●●
Alpine enchanter's nightshade (*Circaea alpina*)	72	●
Spinulose shield fern or Glandular wood fern*	61	●
Twinflower (*Linnaea borealis*)	58	●
Common strawberry (*Fragaria virginiana*)	53	●
Large-leaved aster (*Aster macrophyllus*)	52	●
Common marsh marigold (*Caltha palustris*)	49	●
Woodland horsetail (*Equisetum sylvaticum*)	48	●●
Crested fern (*Dryopteris cristata*)	48	●
Rose twistedstalk (*Streptopus roseus*)	46	●
Touch-me-not (*Impatiens* spp.)	45	●
Rattlesnake fern (*Botrychium virginianum*)	44	●
Palmate sweet coltsfoot (*Petasites frigidus*)	43	●
Long beech fern (*Phegopteris connectilis*)	43	●
Nodding trillium (*Trillium cernuum*)	40	●
Red-stemmed aster (*Aster puniceus*)	39	●
Kidney-leaved violet (*Viola renifolia*)	39	●
Red baneberry (*Actaea rubra*)	36	●
Three-leaved false Solomon's seal (*Smilacina trifolia*)	35	●
Shining firmoss (*Huperzia lucidula*)	34	●
Wood anemone (*Anemone quinquefolia*)	32	●
Interrupted fern (*Osmunda claytoniana*)	28	●
Northern bugleweed (*Lycopus uniflorus*)	28	●
Cinnamon fern (*Osmunda cinnamomea*)	23	●
One-flowered pyrola (*Moneses uniflora*)	23	●

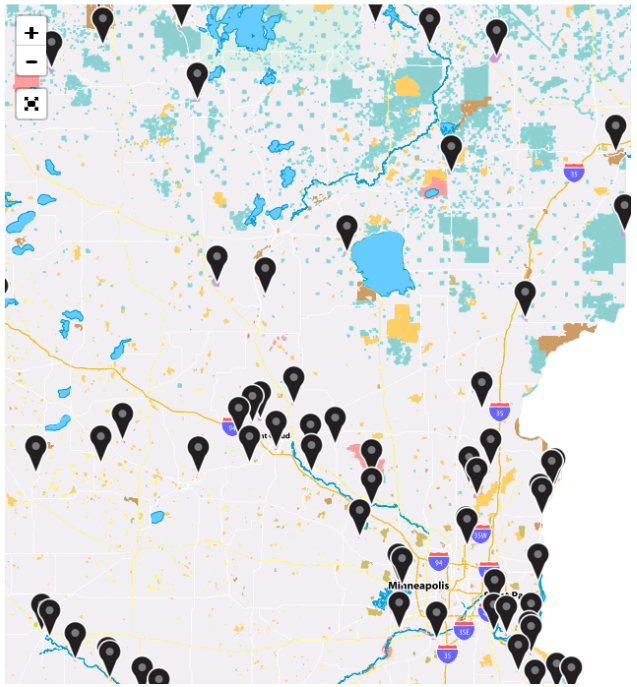
Grasses & Sedges	freq%	cover
Bristle-stalked sedge (*Carex leptalea*)	54	●●
Bladder sedge (*Carex intumescens*)	52	●
Long-stalked sedge (*Carex pedunculata*)	48	●●
Soft-leaved sedge (*Carex disperma*)	46	●
Three-fruited bog sedge (*Carex trisperma*)	45	●●
Fowl manna grass (*Glyceria striata*)	44	●
Drooping woodreed (*Cinna latifolia*)	33	●
Drooping wood sedge (*Carex arctata*)	30	●
Graceful sedge (*Carex gracillima*)	29	●
Low Shrubs		
Creeping snowberry (*Gaultheria hispidula*)	36	●
Labrador tea (*Ledum groenlandicum*)	33	●
Red raspberry (*Rubus idaeus*)	31	●
Tall Shrubs		
Fly honeysuckle (*Lonicera canadensis*)	71	●
Speckled alder (*Alnus incana*)	67	●●●
Beaked hazelnut (*Corylus cornuta*)	63	●
Mountain maple (*Acer spicatum*)	62	●●●
Swamp red currant (*Ribes triste*)	51	●
Red-osier dogwood (*Cornus sericea*)	47	●
Juneberries (*Amelanchier* spp.)	43	●
Dwarf alder (*Rhamnus alnifolia*)	29	●

Trees	Canopy freq%	Canopy cover	Subcanopy freq%	Subcanopy cover	Shrub Layer freq%	Shrub Layer cover
White cedar	83	●●●●	70	●●●	70	●
Balsam fir	46	●●	59	●●●	80	●●
Black ash	42	●●●	57	●●●	75	●●
Paper birch	40	●●	36	●	39	●
Black spruce	24	●●	17	●●	19	●
White spruce	18	●●	17	●	29	●
Yellow birch	17	●	25	●●	28	●
Red maple	-	-	13	●	50	●
Mountain ash	-	-	11	●	39	●
American elm	-	-	9	●	23	●

*Spinulose shield fern or Glandular wood fern (*Dryopteris carthusiana* or *D. intermedia*)

S4 – Plant Communities and Scientific Natural Areas (SNA)

Aligned the B3 plant community requirements so project teams are either referencing the class fact sheet or the nearest applicable Scientific Natural Areas (SNA) for vegetative reinforcement based on actual site conditions/continuity instead of solely relying on proximity to SNAs which may not be the most applicable or useful plant community to reinforce or replicate on the project site.



PLANT CHECKLIST

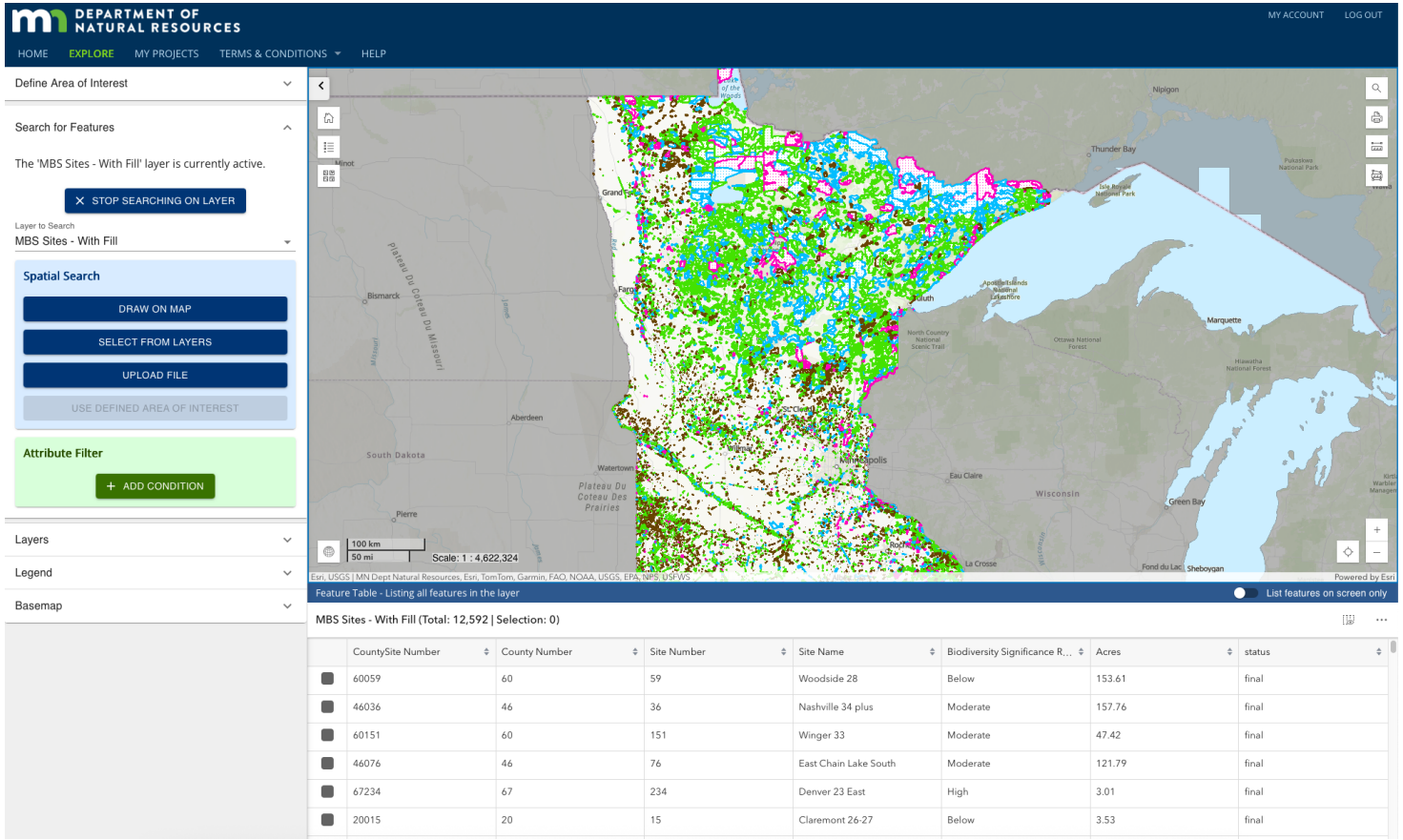
Roscoe Prairie SNA

Species	Confidence
AQUATICS	
__ water smartweed (*Persicaria amphibia*)	2
FERNS AND LYCOPHYTES	
__ field horsetail (*Equisetum arvense*)	2
__ water horsetail (*Equisetum fluviatile*)	3
__ common scouring rush (*Equisetum praealtum*)	3
FORBS	
__ common yarrow (*Achillea millefolium*)	2
__ slender-leaved false foxglove (*Agalinis tenuifolia*)	2
__ glaucous false dandelion (*Agoseris glauca*)	2
__ prairie wild onion (*Allium stellatum*)	2
__ long-headed thimbleweed (*Anemone cylindrica*)	3
__ pasqueflower (*Anemone patens*)	3
__ field pussytoes (*Antennaria neglecta*)	2
__ American hemp (*Apocynum cannabinum*)	3
__ swamp milkweed (*Asclepias incarnata*)	2
__ common milkweed (*Asclepias syriaca*)	2
__ Canada milk-vetch (*Astragalus canadensis*)	1
__ ground plum (*Astragalus crassicarpus*)	1
__ common marsh marigold (*Caltha palustris*)	2
__ hedge bindweed (*Calystegia sepium*)	3
__ white lamb's quarters (*Chenopodium album*)*	3
__ spotted water hemlock (*Cicuta maculata*)	2
__ field thistle (*Cirsium discolor*)	2
__ Flodman's thistle (*Cirsium flodmanii*)	3
__ swamp thistle (*Cirsium muticum*)	3
__ Hill's thistle (*Cirsium pumilum*)	1
__ bastard toadflax (*Comandra umbellata*)	2
__ bird's foot coreopsis (*Coreopsis palmata*)	2
__ small white lady's slipper (*Cypripedium candidum*)[SPC]	1
__ white prairie clover (*Dalea candida*)	2
__ purple prairie clover (*Dalea purpurea*)	2
__ Canada tick trefoil (*Desmodium canadense*)	3
__ flat-topped aster (*Doellingeria umbellata*)	2
__ tall cinquefoil (*Drymocallis arguta*)	3

Species	Confidence
__ narrow-leaved purple coneflower (*Echinacea angustifolia*)	2
__ daisy fleabane (*Erigeron strigosus*)	2
__ common boneset (*Eupatorium perfoliatum*)	2
__ grass-leaved goldenrod (*Euthamia graminifolia*)	2
__ spotted Joe pye weed (*Eutrochium maculatum*)	2
__ common strawberry (*Fragaria virginiana*)	2
__ northern bedstraw (*Galium boreale*)	2
__ bottle gentian (*Gentiana andrewsii*)	2
__ downy gentian (*Gentiana puberulenta*)	1
__ lesser fringed gentian (*Gentianopsis virgata*)	3
__ prairie smoke (*Geum triflorum*)	2
__ autumn sneezeweed (*Helenium autumnale*)	2
__ sawtooth sunflower (*Helianthus grosseserratus*)	2
__ Maximilian's sunflower (*Helianthus maximiliani*)	2
__ stiff sunflower (*Helianthus pauciflorus*)	3
__ rough hawkweed (*Hieracium umbellatum*)	2
__ yellow star-grass (*Hypoxis hirsuta*)	2
__ two-flowered cynthia (*Krigia biflora*)	2
__ marsh vetchling (*Lathyrus palustris*)	3
__ veiny pea (*Lathyrus venosus*)	2
__ field peppergrass (*Lepidium campestre*)*	3
__ rough blazing star (*Liatris aspera*)	2
__ northern plains blazing star (*Liatris ligulistylis*)	2
__ dotted blazing star (*Liatris punctata*)	3
__ great blazing star (*Liatris pycnostachya*)	2
__ Michigan lily (*Lilium michiganense*)	3
__ wood lily (*Lilium philadelphicum*)	2
__ hoary puccoon (*Lithospermum canescens*)	2
__ hairy puccoon (*Lithospermum caroliniense*)	1
__ great lobelia (*Lobelia siphilitica*)	3
__ pale-spiked lobelia (*Lobelia spicata*)	3
__ cut-leaved bugleweed (*Lycopus americanus*)	2
__ rough bugleweed (*Lycopus asper*)	2

S5 – Habitat Requirements
S5 – Habitat Determination and Documentation

S5 – Habitat Determination + Documentation – Clarified the protocol for rare/threatened species investigation to use the MN DNR Conservation Explorer Tool and the automated Natural Historic Inventory System (NHIS) reporting to determine the presence of state-listed rare, threatened, or protected species within, or adjacent to the project site. There is no need to coordinate with the MBS Staff or MN DNR to make protected species habitat determinations and management plans in this revision.



From the Conservation Explorer Tool Interface
MN Department of Natural Resources – Online portal

S5 – Habitat Requirements
S5 – Habitat Determination and Documentation

S5 – Habitat Requirements – Year-Round Water Feature – The year-round open water habitat requirement has been scaled back to only apply to large sites above 20 acres.

All sites are still required to have aquatic habitat in the size and type specified in the B3 Guidelines but the year-round requirement is only required for large sites above 20 acres.

OVERVIEW OF CHANGES

S2 – Evapotranspiration Calculations
S2 – Site Albedo Calculations
S2 – Hydrologic Soil Group Determination
S2 – Irrigation and Outdoor Water Calculations
S2 – Green Roof Incentives

S3 – HSG Testing protocol and Methodology
S3 – Site Soil Protection Zones (SSPZ)

S4 – Green Roofs
S4 – Biomass Targets
S4 – Class Fact Sheets for Determining Adjacencies
S4 – Plant Communities and Scientific Natural Areas (SNA)

S5 – Habitat Requirements
S5 – Habitat Determination and Documentation

MINNESOTA B3 GUIDELINES

v3.2 r3 SITE + WATER CHANGES

For questions or comments please send an email to guidelines@b3mn.org