

Introduction to Matrix Landscape Design

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Roadmap

What is matrix landscape design?

Why use matrix design?

Where can I use matrix design?

How do I do it?



What is Matrix Planting and Design?





What is Matrix Planting and Design?

Gardens using a matrix design have:

- Inspiration from (not duplication of) natural communities
- High density planting (~1ft)
- Native species





Why use matrix design?

1. Habitat for birds, pollinators, and wildlife!
Severely lacking in most landscapes.
2. Reduced maintenance and inputs of water/fertilizer/mulch/energy = more sustainable
3. Enjoy changes through time, seasonally and from year to year
4. Flexible aesthetically (though often associated with naturalized, wilder-looking gardens)



Where can I use matrix design?

Anywhere! There are native plants for every place in your yard!

- Sunny/Shady
- Sand/Loam/Clay
- Wet/Dry





How - Plant Selection Tips

1. Look for plants to match site conditions using nursery descriptions
2. Look to natural communities for inspiration/analogues (but not rules):
(<https://mnfi.anr.msu.edu/publications/abstracts>)
3. No taller than 3 (-4) feet (except for trees, shrubs, or well-behaved screening plants) to avoid scaring the neighbors
4. Match plants with similar “sociability” levels





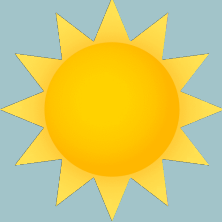

How - Plant Selection Tips

Matrix (ground-covering) Species

- 1 species up to 2-3+ species
- Use less species (especially in small spaces) for cleaner, more readable design
- *Often* (but not always) grasses and sedges



How - Matrix Plants

		
	<ul style="list-style-type: none">-Prairie dropseed-Little bluestem-Bearberry	<ul style="list-style-type: none">-Sensitive fern-Hop sedge-Tussock sedge
	<ul style="list-style-type: none">-Pennsylvania sedge-Ivory sedge-Mayapple-Big-leaf aster	<ul style="list-style-type: none">-Ostrich fern-Gray's sedge-Tussock sedge


How - Matrix Plants



How - Plant Selection Tips

Structural Species

- 1-3 species
- Long-lived taller flowers and grasses and/or trees and shrubs that stay put
- Should provide structural focal points through the winter



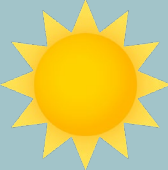

		
	<ul style="list-style-type: none">-Switchgrass*-Serviceberry-New Jersey tea-White wild indigo	<ul style="list-style-type: none">-Sweet gale-Ninebark-Red maple
	<ul style="list-style-type: none">-Alternate-leaf Dogwood-Huckleberry-<i>Diervilla lonicera</i>	<ul style="list-style-type: none">-Spicebush-Pawpaw-Musclewood

**Cultivars don't spread as aggressively*

How - Plant Selection Tips

Dynamic Filler Species

- 1-3 species that spread (runners/rhizomes, self-sowers) but aren't super competitive
- Often short-lived but survive in the soil seed bank
- Function is to fill in gaps left by disturbance to reduce weeds

		
	-Wild strawberry - <i>Rudbeckia hirta</i>	-Silverweed - <i>Bidens</i> spp. -Touch-me-knot
	-Columbine	-Cardinal flower

How - Plant Selection Tips

Seasonal Color Species


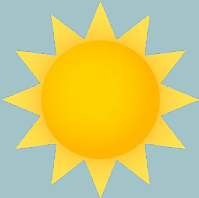

- Select multiple species
- Provide color throughout the season
- No more than 3-4 things blooming at once to avoid chaos. Use fewer species for a cleaner look.
- Arrange in repeated masses and drifts, the size of which corresponds to how visible the flowers of one plant will be
- Colors can be contrasting (more exciting) or complementary (more relaxing), according to your tastes



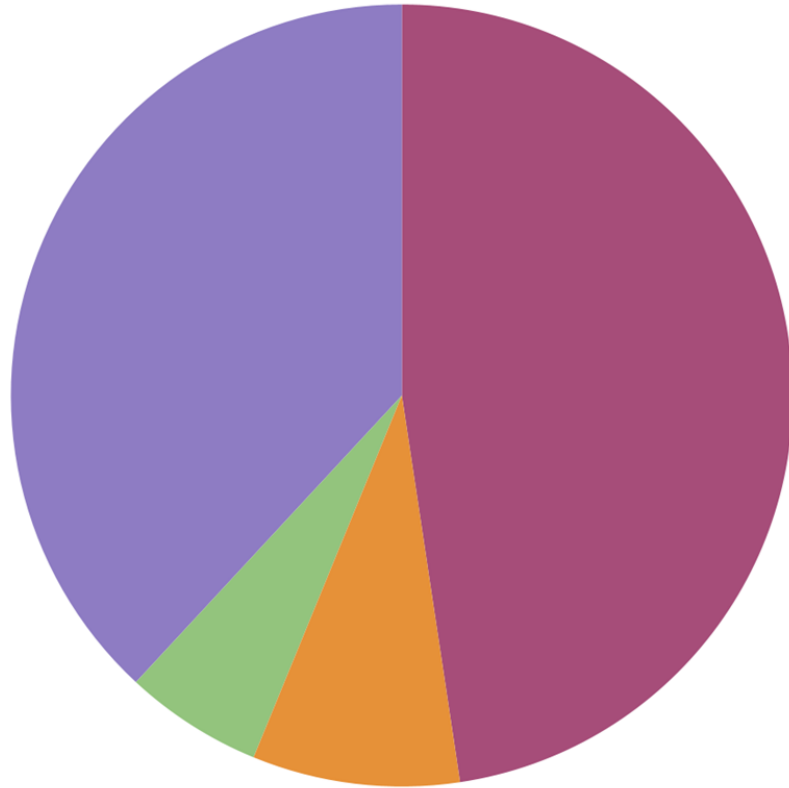
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How - Seasonal Color Plants

		
	<ul style="list-style-type: none">-Butterfly milkweed-Sand coreopsis-Pale coneflower-Nodding wild onion	<ul style="list-style-type: none">-Marsh marigold-Blue flag iris-Bottle gentian-Marsh milkweed
	<ul style="list-style-type: none">-Trout lily-Trillium-Bluestem goldenrod-False Solomon's seal	<ul style="list-style-type: none">-Jack-in-the-pulpit-Red baneberry-Wild geranium-Marsh skullcap

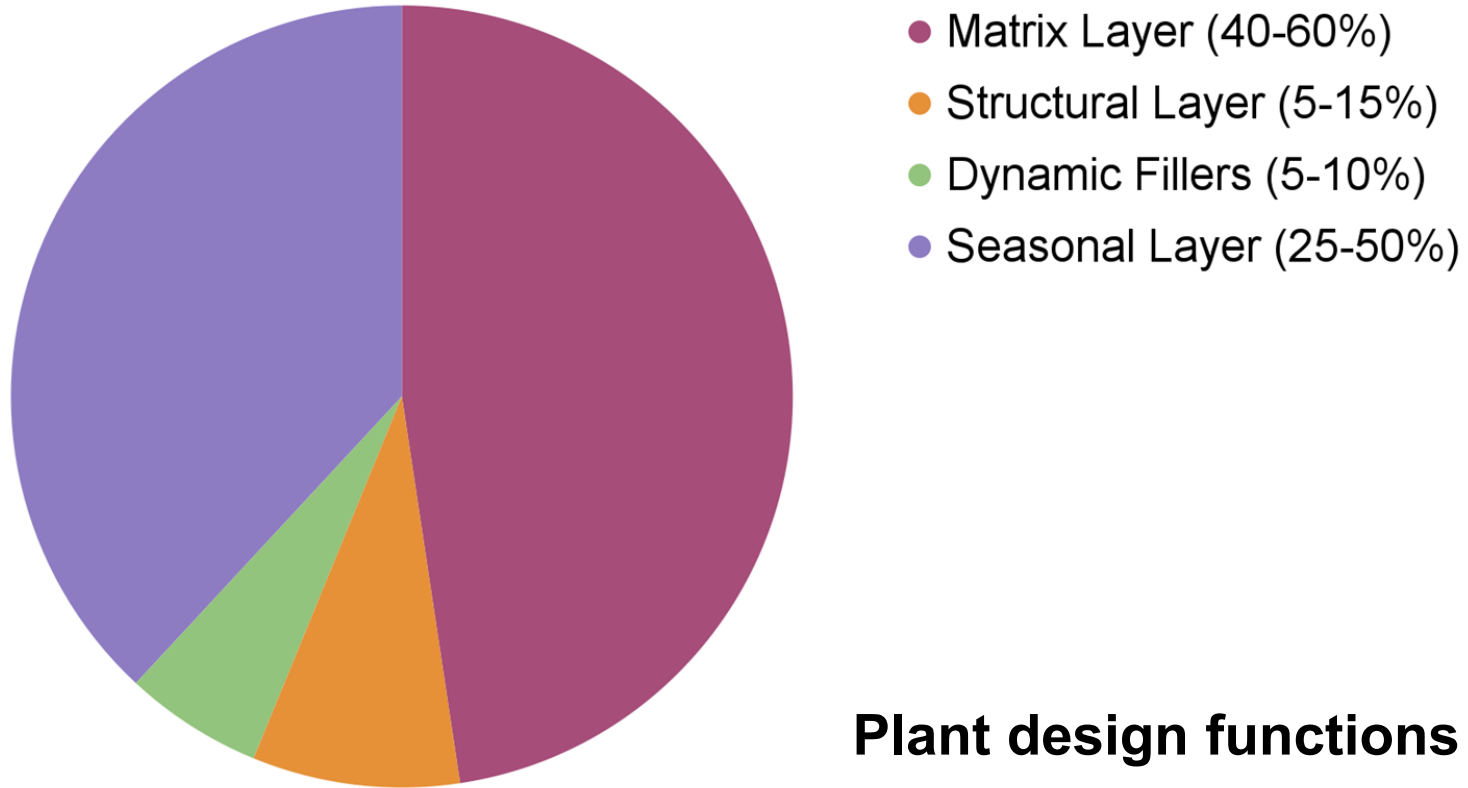
How - Plant Selection Tips



- Matrix Layer (40-60%)
- Structural Layer (5-15%)
- Dynamic Fillers (5-10%)
- Seasonal Layer (25-60%)

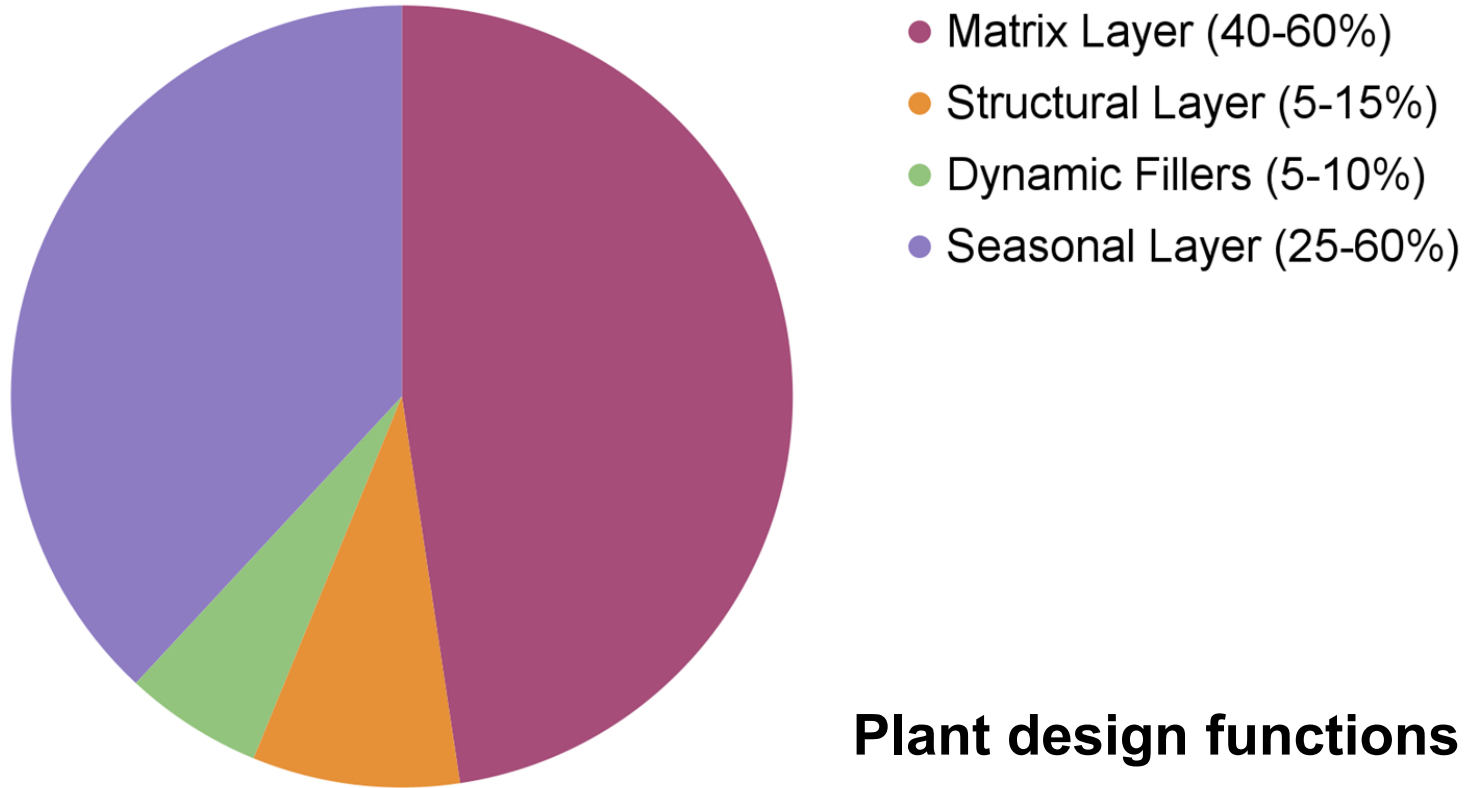
Plant design functions

How - Plant Selection Tips



Some plants will serve multiple functions or can serve different functions depending on the context

How - Plant Selection Tips



Plant design functions

But this is your garden, and you can alter the proportions as you see fit



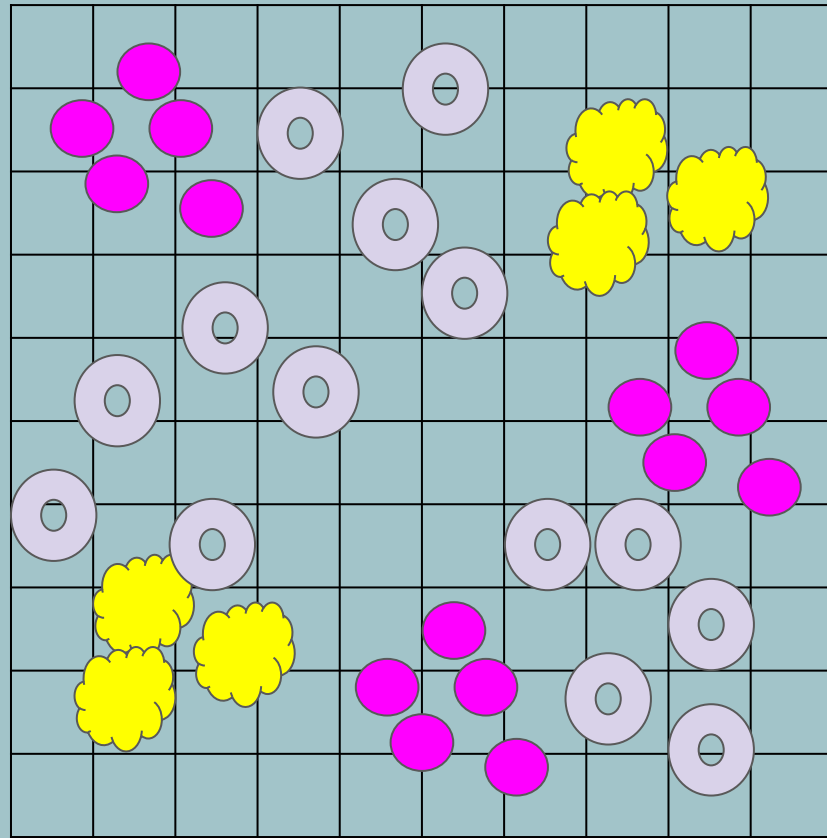
How - Creating a Matrix (medium to dry soil)

⊕ Matrix: Prairie dropseed

● Nodding wild onion

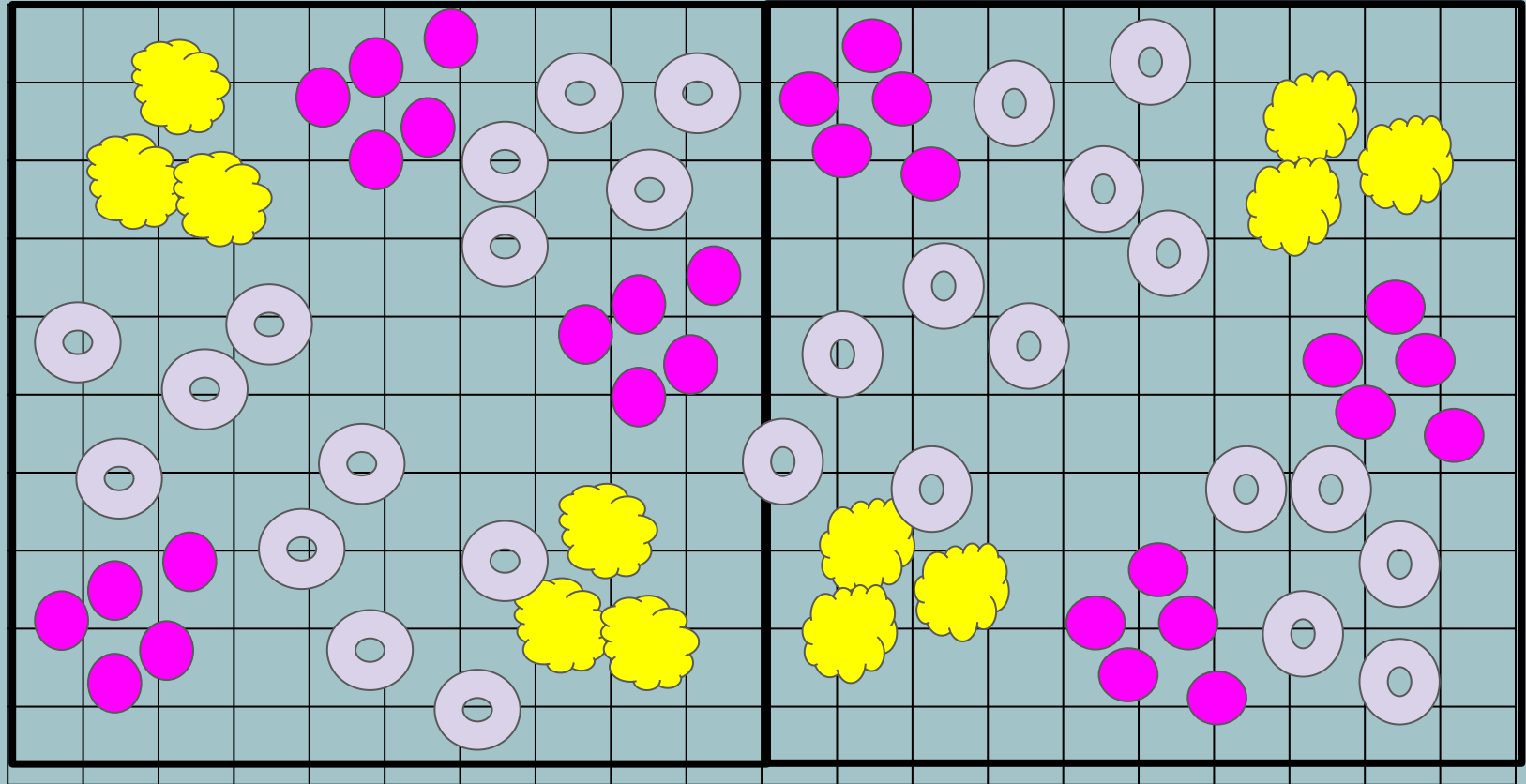
☀ Black-eyed susan

○ Pale coneflower





How - Expanding a Matrix

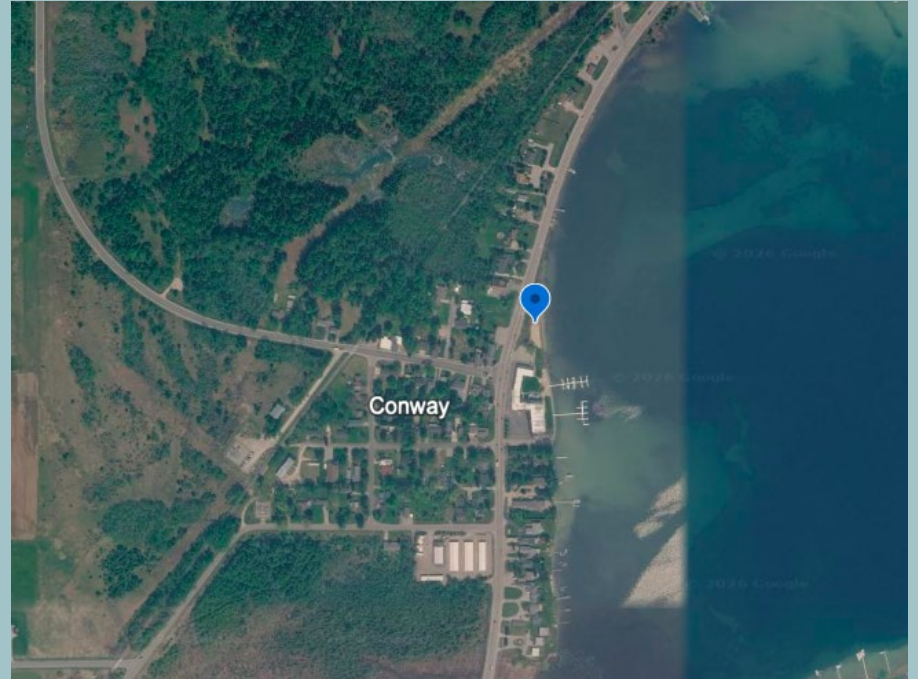


Example 1: Little Traverse Township Park Shoreline Greenbelt (Fall 2025)

Goals:

1. Protect water quality
2. Reduce goose poop and associated health risks
3. Enhance the beauty of the park
4. Maintain existing uses of the park (beach access, open lawn areas)

Tip of the Mitt Watershed Council project with funding from EGLE



Example 1: Little Traverse Township Park Shoreline Greenbelt (Fall 2025)

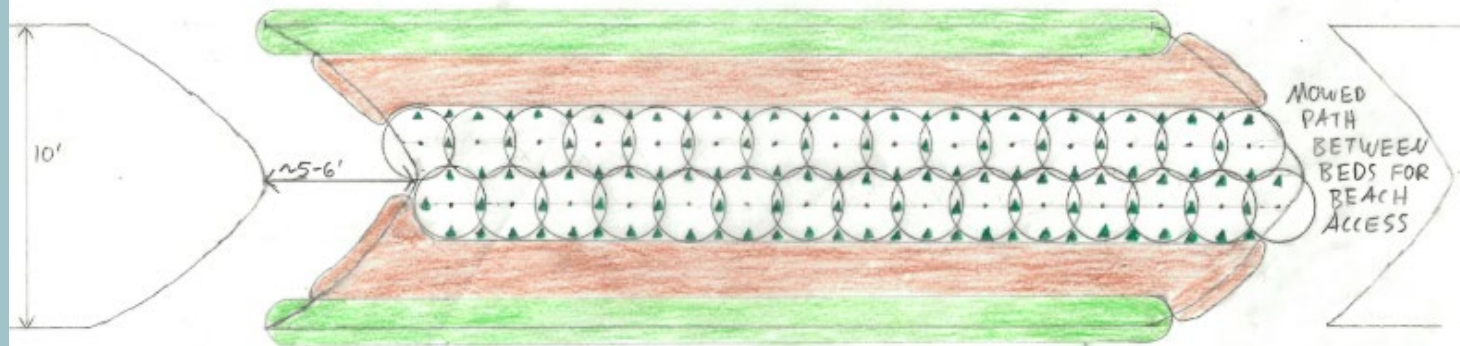
- Compromise between blocking geese and allowing people access to recreate
- Planting in a long strip at the edge of the beach and lawn instead of at the water's edge
- Bent paths allow people to walk between lawn and beach, while blocking the geese's sight lines.







↑
US. HWY 31

EX. LAWN

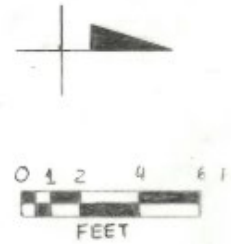
LENGTH OF BEDS VARIES



KEY

-  LOW SHRUBS ON 2' CENTERS
DIERVILLA LONICERA AND/OR *CEANOTHUS AMERICANUS*
-  *CAREX PENNSYLVANICA* UNDERPLANTED ON 1' CENTERS
-  *SPOROBOLUS HETEROLEPIS* ON 1.5' CENTERS
-  *SCHIZACHYRIUM SCOPARIUM* MATRIX (1' CENTERS) INTERMIXED WITH EQUAL PARTS FORBS, INCLUDING *COREOPSIS LANKEOLATA*, *FRAGARIA VIRGINIANA*, *MONARDA PUNCTATA*, *RUDBECKIA HIRTA*, *SOLIDAGO MEMORIALIS*, *SYMPHYOTRICUM DOOLEYANGIENSE*, AND *POTENTILLA SIMPLEX*

CROOKED LAKE 30-40' AWAY



Please allow me to introduce...





Example 1: Little Traverse Township Park Shoreline Greenbelt (Fall 2025)



Example 2: First Presbyterian Church of Petoskey (Coming Summer 2026)

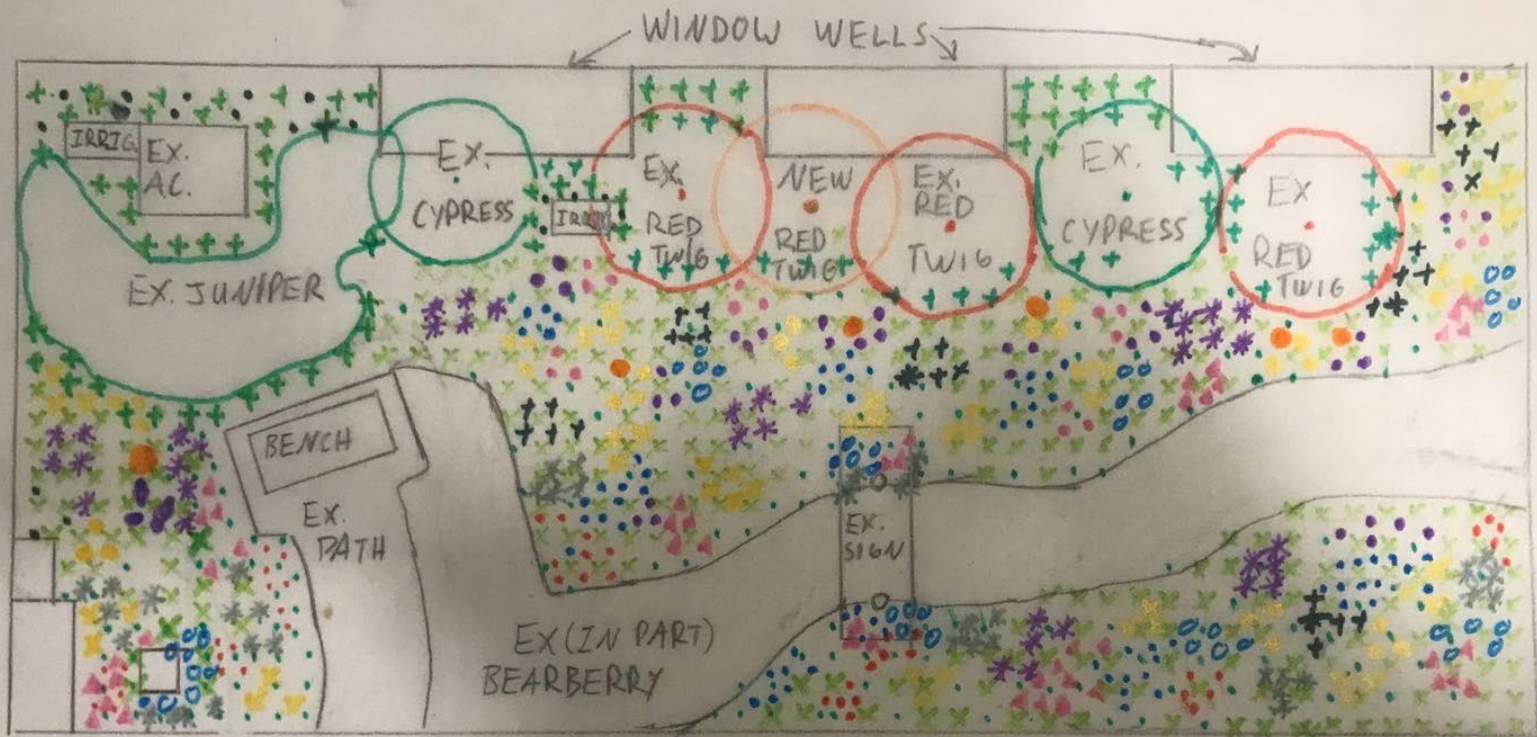


Example 2: First Presbyterian Church of Petoskey (Coming Summer 2026)

Goals:

1. Reinvigorate garden and enhance beauty of the park
2. Native plant demonstration garden
3. Pollinator habitat
4. Maintain existing uses (bench, little free library, AC units, sign)





- + PENNSYLVANIA SEDGE (114)
- JUNEGRASS (190)
- ✕ PRAIRIE DROPSEED (342)
- PRAIRIE SMOKE (76)
- WILD LUPINE (76)

- ✕ SAND COREOPSIS (38)
- ✖ PALE CONEFLOWER (38)
- BUTTERFLY WEED (~10)
- ♥ HAIRY BEARD TONGUE (38)
- ▲ NODDING WILD ONION (76)

- HORSE MINT (38)
- + BLACK-EYED SUSAN (R. HIRTA-38)
- ✖ YARROW (38)
- SHOWY GOLDENROD (38)
- SKY BLUE ASTER (38)

Thanks for listening!

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