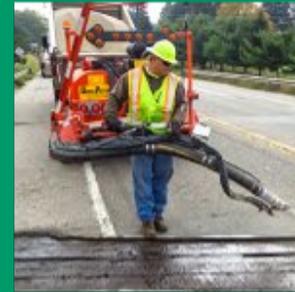


# POST-CONSTRUCTION GROUNDCOVER ON HIGHWAY ROW

RIGHTS OF WAY AS HABITAT WORKING GROUP

FEBRUARY 20, 2019



OHIO DEPARTMENT OF  
TRANSPORTATION

# How We Got Here

- ODOT Wildflower Program – **1990s**
- ODOT roadside pollinator habitat pilot (**Pheasants Forever**) - **2011**
- ODOT roadside pollinator habitat expansion (**Dawes Arboretum**) - **2014**
- ODOT helps form Ohio Pollinator Habitat Initiative (OPHI) - **2015**
- ODOT creates standalone Pollinator Habitat Program - **2017**

# Ohio Pollinator Habitat Initiative (OPHI)

- Assisted ODOT with design of roadside pollinator mixes
- Assisted ODOT with establishment of new pollinator habitat protocols
  - Site assessment
  - Site establishment
  - Site maintenance
  - Site monitoring
- Assisted State of Ohio with new multiple-award seed contract
- Assists ODOT with new seed mixes, including post-construction



# Why ODOT Cares About Habitat

- Saves taxpayers money
- Opportunity cost
- Regulatory
- Good stewards of the environment
- Favorable public relations



# Beyond Roadside Restoration Projects

- ODOT facilities (garages, rest areas, weigh stations)
- Interpretive gardens at Ohio Welcome Centers
- Community/Business Gateways (P3s)
- Brownfields to Blooms
- BioSwitch Erosion Control Sock
- Mowing reduction
- **Post-construction**



# Post-Construction Opportunities

- ODOT has the fourth-largest interstate highway system in the country
- ODOT manages 19,000 miles of roadsides comprising 260,000 acres
- Since 2011, ODOT has constructed 8,000 projects costing \$16.4 billion



# Post-Construction Groundcover Research Project

- Project title:
  - *“Evaluate and Develop Post-Construction Groundcover that Meets Erosion and Sediment Goals and is Beneficial to Pollinators”*
- Two phases
- Five-year study
- Led by Davey Resource Group



# Post-Construction Groundcover Research Project

- Post-Construction Groundcover Research Project Challenges
  - Roadside habitat contains highly compacted soils of poor quality
  - Salt-laden storm water runoff is typical
  - Native seed is expensive
  - Native seed is slow to establish
  - Fear of change

**CHALLENGE**



# Post-Construction Groundcover Research Project

- Post-Construction Groundcover Research Project Goals
  - Identify post-construction groundcover seed mixes that will:



- Benefit pollinators
- Be comparable in cost to existing post-construction groundcovers
- Reduce ODOT's roadside maintenance costs
- Include a mix of Ohio native grasses
- Not obstruct motorists' line of sight
- Enhance roadside aesthetics
- Provide stormwater benefits

# Post-Construction Groundcover Research Project

- Phase 1 Project Overview
  - Literature review
  - Survey surrounding state DOTs
  - Evaluate ODOT's current post-construction groundcovers
  - Develop matrix of alternative seed mixes consisting of:

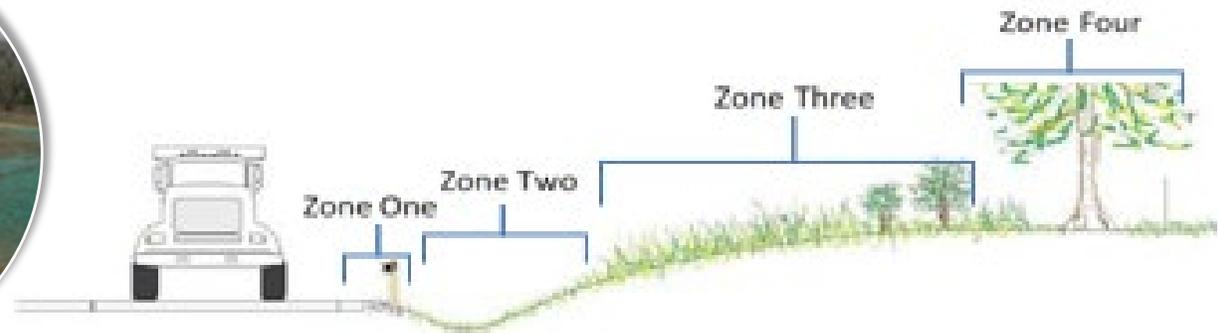
INFIELDS - MEADOWS (WET/DRY)																		
Slope Designation		ODOT Current Mixes (\$59.00)						Pheasants/Quail Forever Mixes				DRG Seed Mixes						
Use Designation		3:1 slopes or flatter			2:1 slopes or flatter			Any				Any		3:1 slopes or flatter				
Category		Zones 1-4 (In front of residences/commercial properties; between curb and sidewalk)		Zones 1-4 (Low-growing/mowed areas)		Zones 2-4 (Shale or rocky slopes)		Zones 3-4 (min-mow areas; non-critical visibility areas)				Zones 1-4 (Low-growing/mowed areas; difficult to mow areas)		Zones 1-4 (min-mow areas; non-critical visibility areas)				
Attribute		Class 1 Lawn Mixture		Class 2 Roadside Mixture		Class 3A Slope Mixtures		Class 3B Low Growing Slope Mixture		Class 3C Crown Vetch Mixture		Ohio IVM		Ohio Critical Area Mixture		Ohio All CRP Mixture		
Use Rating		★★		★★		n/a		★★		★★		★★★		★★		★★★		
Seed Mix Characteristics	Phenology	Cool Season Grasses	Cool Season Grasses	n/a	Cool Season Grasses	Cool Season Grasses	Cool Season Grasses	Cool Season Grasses	Cool Season Grasses	Cool Season Grasses	Cool Season Grasses	Cool Season Grasses	Cool Season Grasses	Warm-Season/Cool-Season Grasses	Warm-Season/Cool-Season Grasses	Warm-Season/Cool-Season Grasses	Warm-Season/Cool-Season Grasses	
	Life Cycle	Annual/Perennial	Perennial	n/a	Annual/Perennial	Perennial	Annual/Perennial	Perennial	Annual/Perennial	Perennial	Annual/Perennial	Perennial	Annual/Perennial	Perennial	Perennial	Annual/Perennial	Annual/Perennial	
	Growth Rate	Moderate-Rapid	Moderate-Rapid	n/a	Moderate-Rapid	Moderate-Rapid	Moderate-Rapid	Moderate-Rapid	Moderate-Rapid	Moderate-Rapid	Moderate-Rapid	Moderate-Rapid	Moderate-Rapid	Moderate	Moderate	Moderate	Moderate	
	Maximum Height (Inches)	18	36	n/a	48	48	48	48	48	48	48	48	48	60	84	84	84	
	Root Depth (Inches)	6-30	6-30	n/a	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30	12	10	10	10	
	Soil Type	Loam, Clay	Loam, Clay	n/a	Loam, Clay	Loam, Clay	Loam, Clay	Loam, Clay	Loam, Clay	Loam, Clay	Loam, Clay	Loam, Clay	Loam, Clay	Sand, Loam, Clay	Sand, Loam, Clay	Sand, Loam, Clay	Sand, Loam, Clay	
	pH Range	5.5-7.5	5.5-7.5	n/a	5.5-7.5	5.5-7.5	5.5-7.5	5.5-7.5	5.5-7.5	5.5-7.5	5.5-7.5	5.5-7.5	5.5-7.5	5.0-7.5	4.5-8.0	4.5-7.5	4.5-7.5	
	Germination	Rapid	Rapid	n/a	Rapid	Rapid	Rapid	Rapid	Rapid	Rapid	Rapid	Rapid	Rapid	Rapid	Moderate to Rapid	Moderate to Rapid	Moderate	Moderate
	Bloom Period	May-July	May-July	n/a	May-July	May-July	May-July	May-July	May-July	May-July	May-July	May-July	May-July	July	May-September	May-October	May-October	
	Establishment Period	☀☀☀	☀☀☀	n/a	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀
Tolerance	Sunlight Requirement	☀☀☀	☀☀☀	n/a	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	
	Hardiness Zone	5a	5a	n/a	5a	5a	5a	5a	5a	5a	5a	5a	5a	5a, 5b, 6a, 6b	5a, 5b, 6a, 6b	5a, 5b, 6a, 6b	5a, 5b, 6a, 6b	
	Native Status (* Annual Rye Introduced)	Introduced	Introduced	n/a	Introduced	Introduced	Introduced	Introduced	Introduced	Introduced	Introduced	Introduced	Introduced	Native/Introduced	Native	Native	Native*	
	Indicator Status	FAC to UPL	FAC to UPL	n/a	FAC to UPL	FAC to UPL	FAC to UPL	FAC to UPL	FAC to UPL	FAC to UPL	FAC to UPL	FAC to UPL	FAC to UPL	FACU	FACW to OBL	FACW to OBL	FACW to OBL	
	Drought Tolerance	☀☀☀	☀☀☀	n/a	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀
	Tolerance to Significant Sheet Flow	Tolerant	Tolerant	n/a	Tolerant	Tolerant	Tolerant	Tolerant	Tolerant	Tolerant	Tolerant	Tolerant	Tolerant	Tolerant	Tolerant	Tolerant	Tolerant	
	Salt Tolerance	Low-Moderate	Low	n/a	Low-Moderate	Low	Low-Moderate	Low	Low-Moderate	Low	Low-Moderate	Low	Low-Moderate	Moderate to High	Moderate to High	Moderate	Moderate	
	Tolerance to Disturbance/Mowing	High	High	n/a	High	High	High	High	High	High	High	High	High	Moderate	High	Moderate	Low	
	Soil Compaction Tolerance	Moderate-High	Moderate-High	n/a	Moderate-High	Moderate-High	Moderate-High	Moderate-High	Moderate-High	Moderate-High	Moderate-High	Moderate-High	Moderate-High	Moderate	Moderate	Moderate	Moderate	
	Environmental Benefits	Attractiveness to Pollinators	Low	Low	n/a	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Very High	Moderate to High	
Water Quality Benefits		Low-Moderate	Low-Moderate	n/a	Low-Moderate	Low-Moderate	Low-Moderate	Low-Moderate	Low-Moderate	Low-Moderate	Low-Moderate	Low-Moderate	Low-Moderate	Moderate to High	High	Moderate to High		
Erosion Control Benefits		☀☀☀	☀☀☀	n/a	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	☀☀☀	
Cost	Price Per Pound	\$2.48	\$2.61	n/a	\$2.94	\$2.94	\$2.94	\$2.94	\$2.94	\$2.94	\$2.94	\$2.94	\$2.94	\$28.40 (Quail)	\$33.85 (OPN)	\$12.31 (Erat)	\$58.76 (Erat)	
	Cost to Seed 1 Acre	\$\$\$\$	\$\$\$\$	n/a	\$\$\$	\$\$\$\$\$	\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$50.95 (OPN)	\$\$\$\$	\$\$\$\$	\$\$\$\$	
	Mow Cost /Acre/Year	\$84.40	\$84.40	n/a	\$40.11	\$0.00	\$33.76	\$33.76	\$33.76	\$33.76	\$33.76	\$33.76	\$33.76	\$8.44	\$0.00	\$8.44	\$8.44	
Seeding Rates	Op. # of PLS Per Acre	348.5	304.9	n/a	101.5	130.7	*22.65 (spring); *25.26 (fall)	*16.12 (spring); *26.14 (fall)	*15.2	*60.9	*58.37 (spring); *68.39 (fall)	*23	*7.023	*220	*20 - 40	*20	*20	
	lb. Per 1000 ft²	8	7	n/a	2.33	3	0.53 (spring); 0.58 (fall)	0.37 (spring); 0.6 (fall)	0.35	1.398	1.34 (spring); 1.57 (fall)	0.131	0.161	5.05	0.459 - 0.918	0.459	0.459	
	kg Per 1000 m²	39.04	34.36	n/a	11.37	14.64	1.41 (spring); 2.53 (fall)	1.8 (spring); 2.92 (fall)	1.71	6.82	6.54 (spring); 7.66 (fall)	0.64	0.786	24.66	2.241 - 4.482	2.241	2.241	

# Post-Construction Groundcover Research Project

- Phase 2 Field Trials: Planting Methods

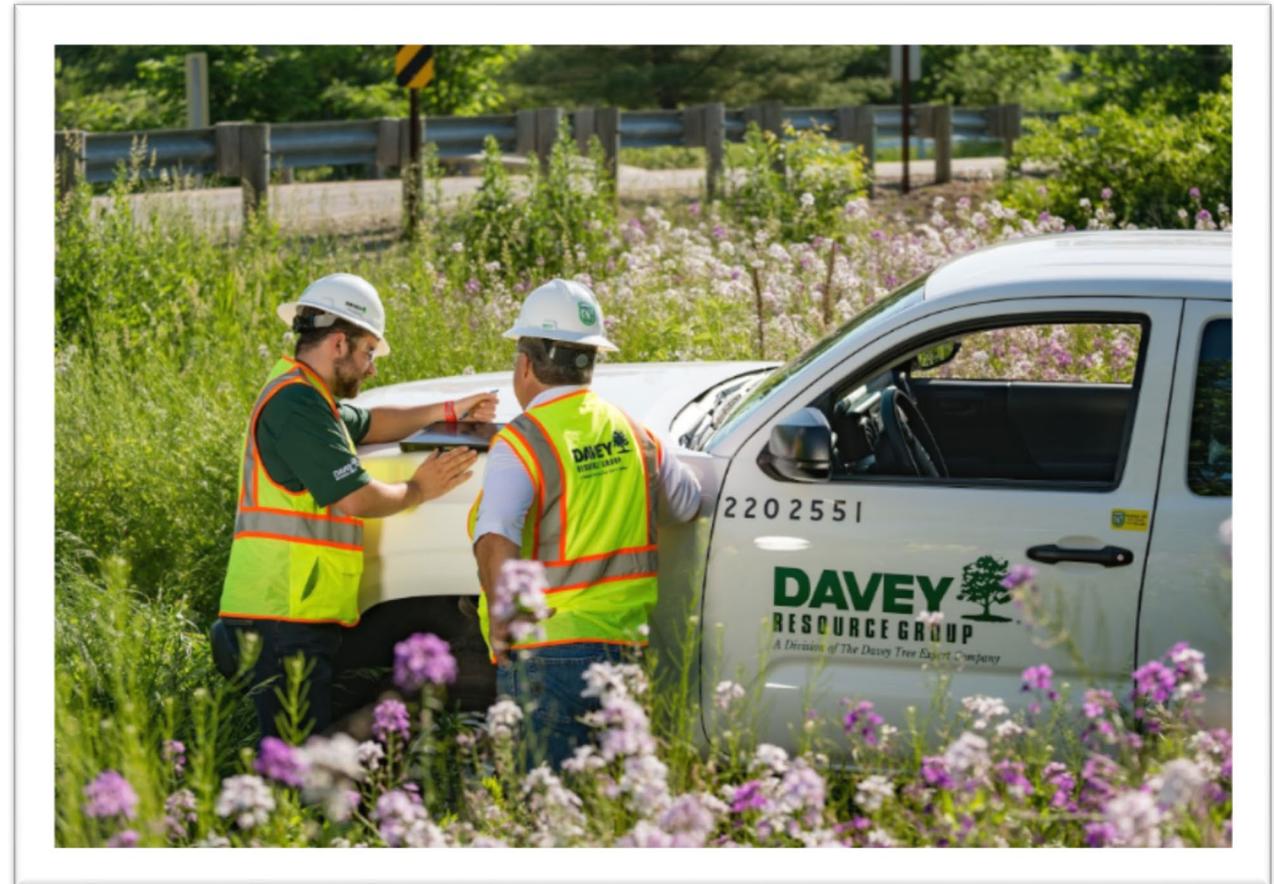
- 70 percent water/30 percent wood fiber hydromulch
- Broadcast seeding
- Drill seeding

Zone 2 (Road Edge)	Zone 3 (Wet Ditch)	Zone 2/3/4 (Slope)	Zone 4 (Fence Line)
70/30 wood fiber hydromulch	Broadcast	Broadcast	70/30 wood fiber hydromulch
Drill seeding	70/30 wood fiber hydromulch	70/30 wood fiber hydromulch	Drill seeding



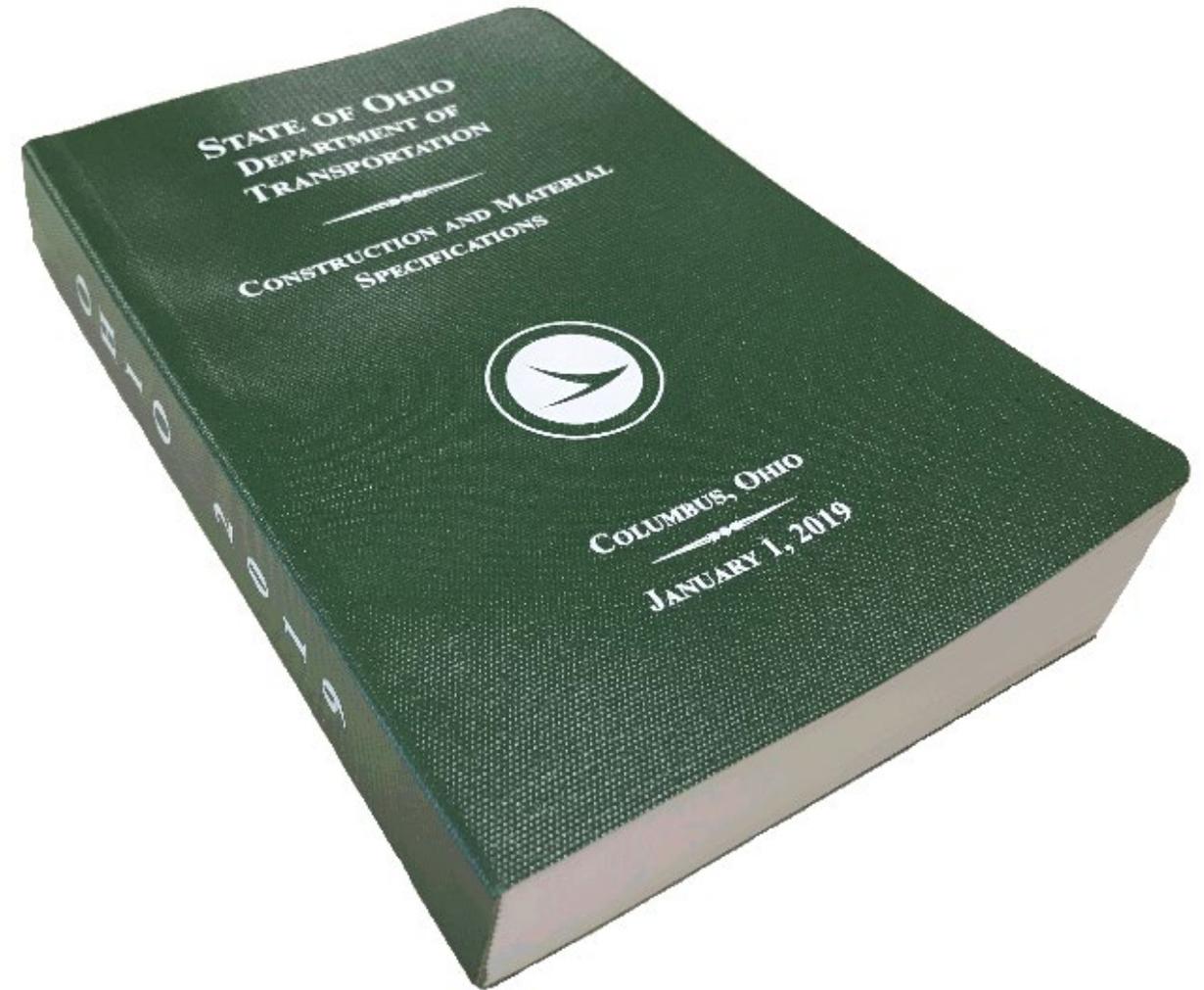
# Post-Construction Groundcover Research Project

- Phase 2 Field Trials: Monitoring
  - Sites will be monitored for:
    - Vegetation coverage
    - Grass and forb species composition
    - Height
    - Entomological pollinator species composition
  - Intervals:
    - Growing season 1
      - Visual assessments at 30, 60, 90, 120, 150, 180 days
    - Growing season 2
      - Visual assessments four times
    - Growing season 3
      - Visual assessments three times



# Post-Construction Groundcover Research Project

- Research deliverables
  - Decision tree
  - **Update ODOT Specification Manual**
  - *Guide for Identification of Native Plants Used in Seed Mixes*



# Post-Construction Groundcover Research Project

- Threats to Successful Implementation
  - Noxious/invasive weeds
  - Woodies
  - Policy changes
  - Cost
  - Interest and availability of “Green Contractors”
  - Resistance by general contractors



# Summary

- Combined, ODOT has created 80,000 acres of suitable habitat since 2017
- We will always face new challenges
  - New leadership
  - Policy changes
  - Budget constraints
  - Public opinion
- Diversity reduces risk
  - Restoration, post-construction, interpretive gardens, community/business gateways (P3s), Brownfields to Blooms, BioSwitch (or like products), IRVM
- Noxious/invasive weed and woody control must be priority number 1

# Questions

