

Productive Conservation for Flood Prone Fields



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Regenerative
DesignGroup

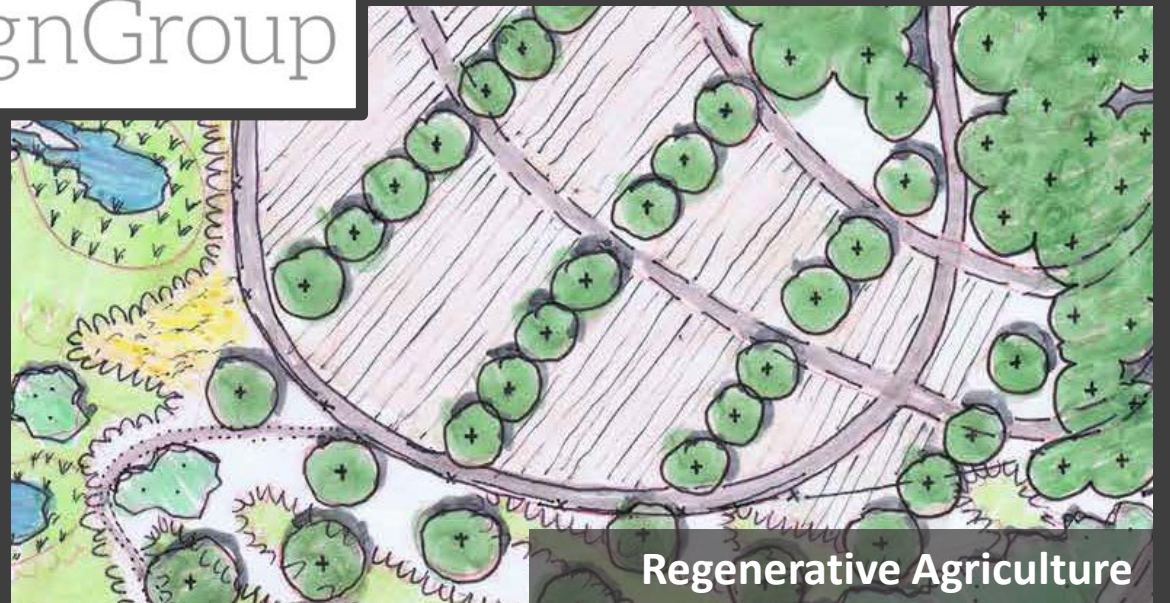
Campuses + Estates



Green Infrastructure

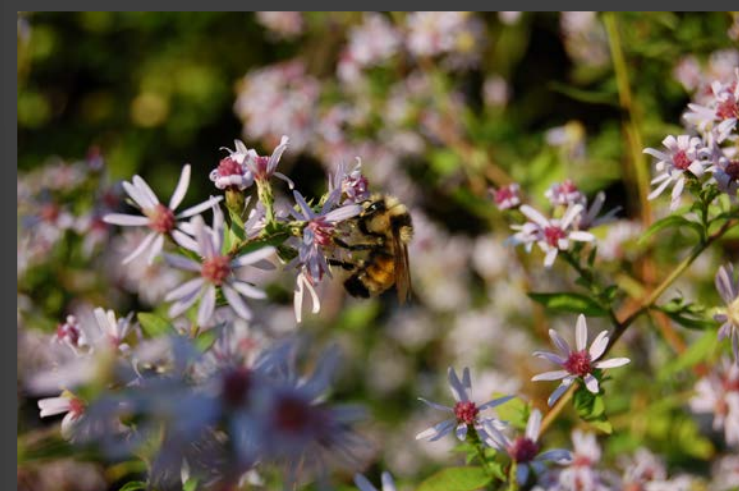


Productive Landscapes



Regenerative Agriculture

Multiple Functions of Productive Landscapes



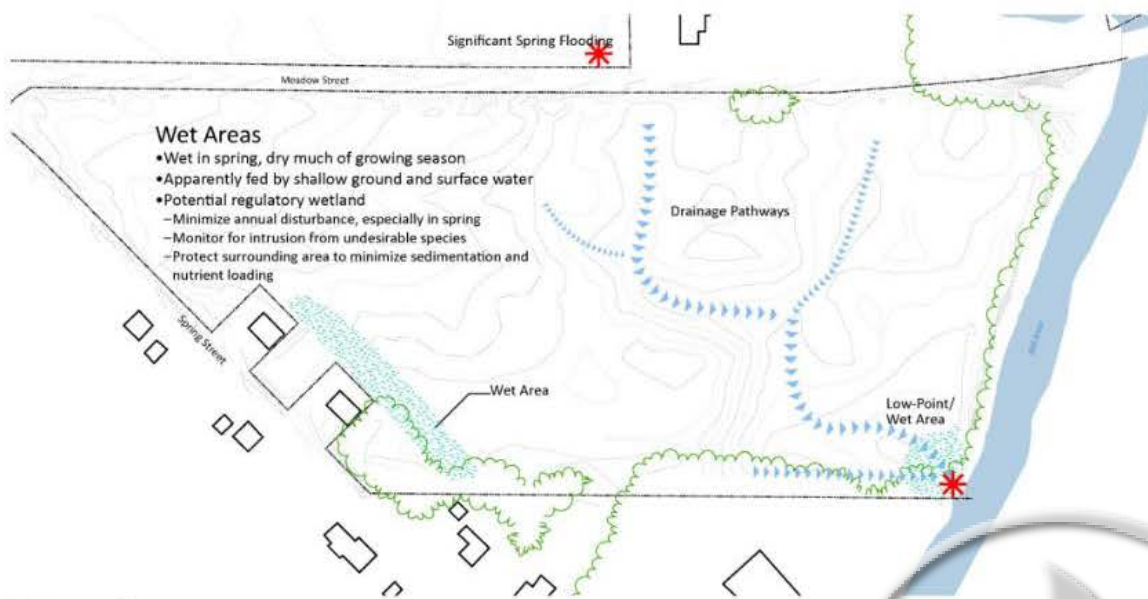
Grow Food Northampton Community Farm



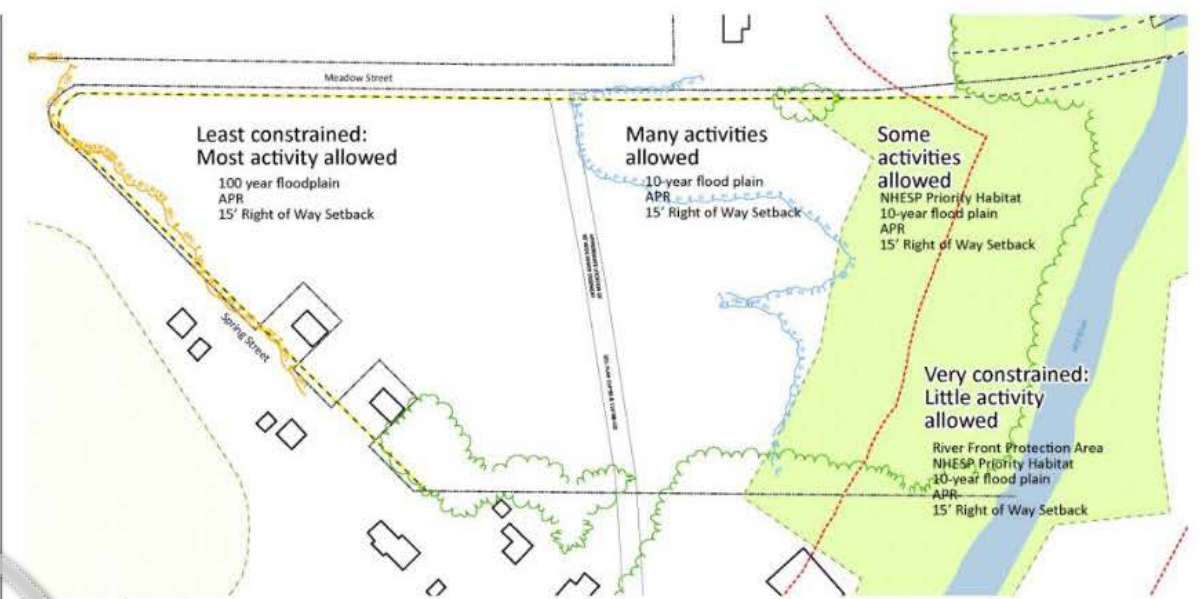
Grow Food Northampton Farm



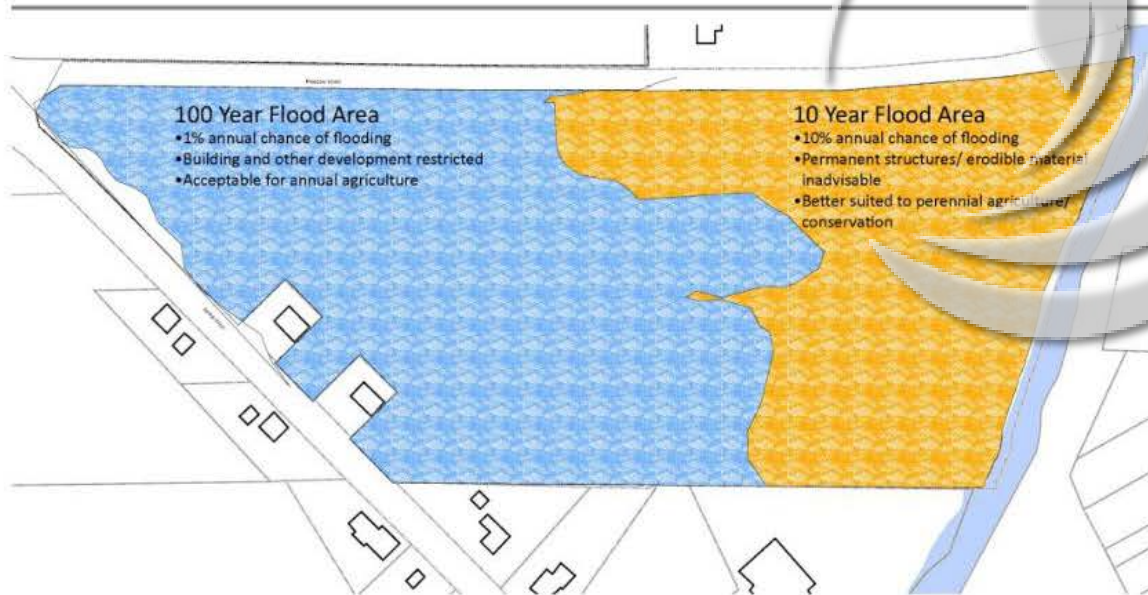
- Florence Organic Community Garden
- Streams
- Mill River
- Property Boundary (22B-011-001)
- Parcel Boundary (22B-011-001)
- NHESP Priority Habitats of Rare Species
- 100' Stream Buffer
- First 50' Stream Buffer
- 30' Front Setback (URA)
- 200ft. River Front Protection Buffer



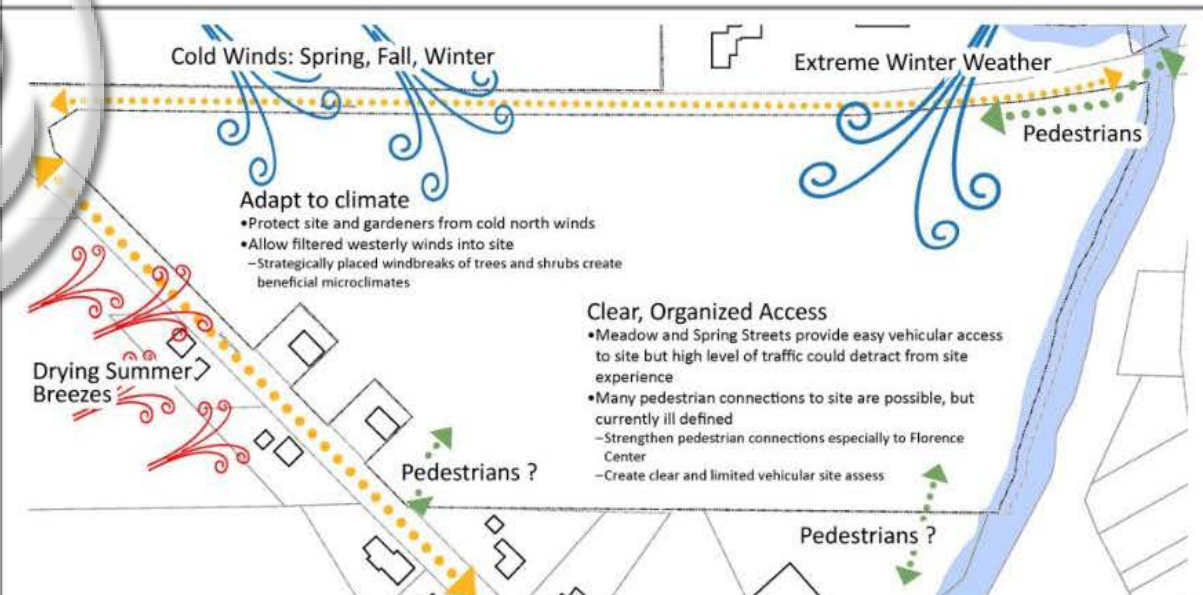
Water on the Farm



The Regulatory Landscape



Flood Plain



Access and Weather Patterns

Community Farm Master Plan



Mill River	Perennial & Tree Crop Farming/Productive Conservation Areas (7.9 acres)	Community Areas and "Neighborhood" Centers	Crop Producing Trees/Shrubs	20'x20' Garden Plots (360)
Property Boundary	Annual Commercial Farming Areas (2.5 acres)	Materials Stacking Areas	Trees/Shrubs for Conservation	10'x20' Garden Plots (60)
Parcel Boundary	Community Garden Area (7 acres)	Access Road		

Community Farm Master Plan

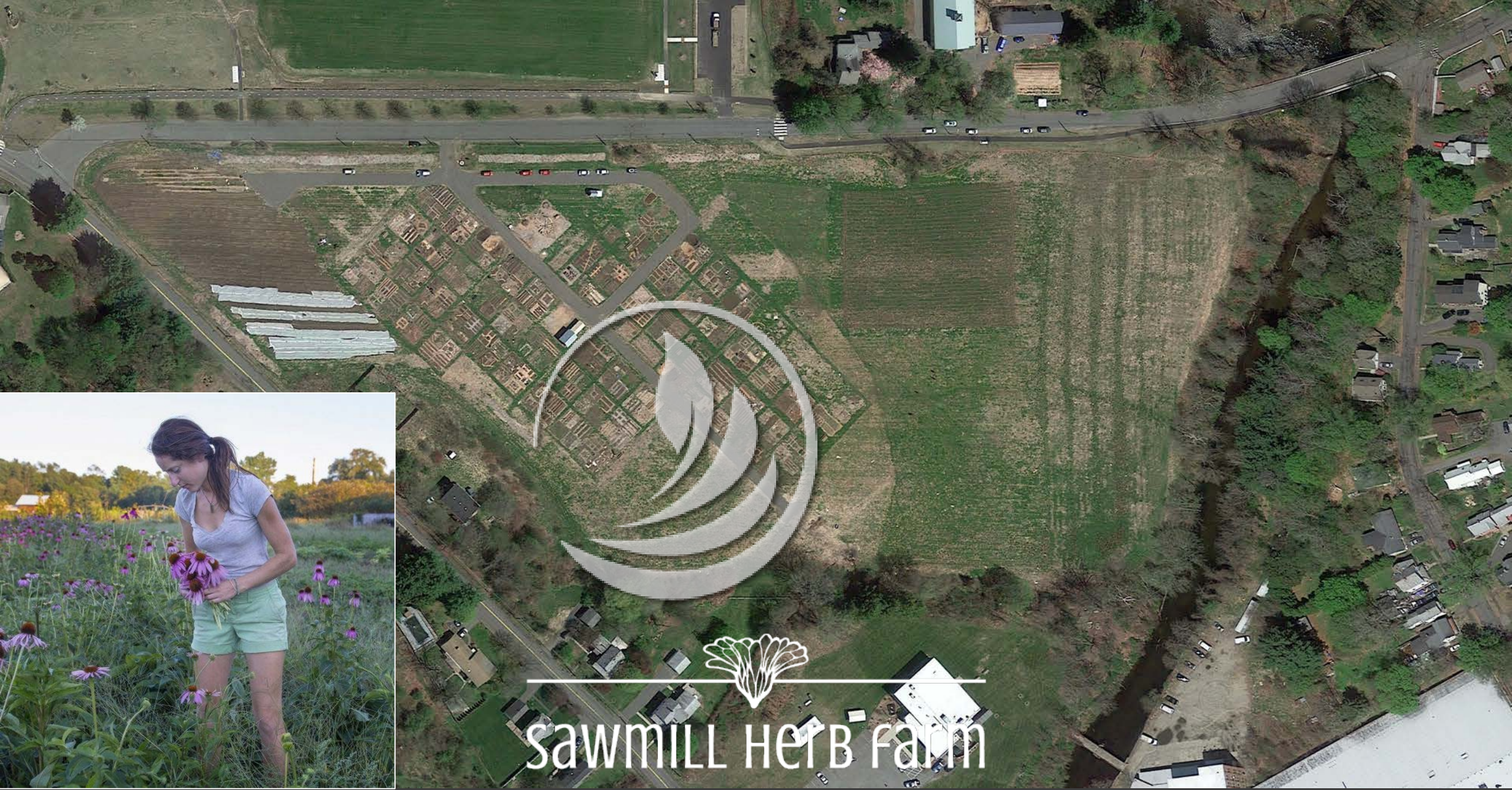
GrowFood
NORTHAMPTON




SAWMILL HERB FARM



 **SMITH
COLLEGE**



Sawmill Herb Farm

Farm Patterning



AREAS

Annual/ Perennial	- 27,800 ft. sq. (.64 acres)
Annual/ Perennial Overflow	- 36,600 ft. sq. (.84 acres)
Perennial Buffer	- 64,400 ft. sq. (1.42 acres)
Main Crop Zone	- 116,350 ft. sq. (.94 acres)

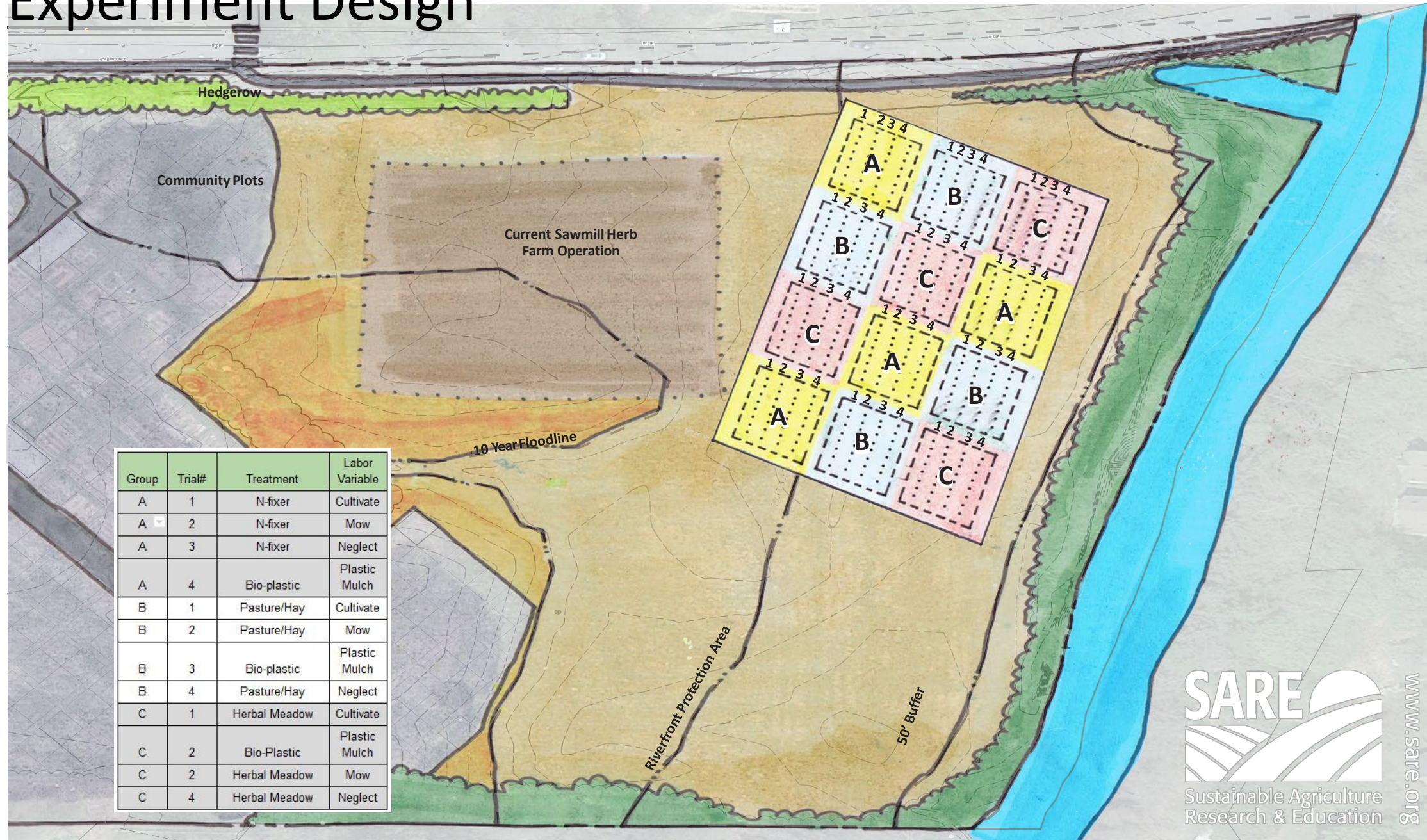


Sawmill Herb Farm



Elemental Design
Grow Food Northampton
June 30, 2017

Experiment Design



Group	Trial#	Treatment	Labor Variable
A	1	N-fixer	Cultivate
A	2	N-fixer	Mow
A	3	N-fixer	Neglect
A	4	Bio-plastic	Plastic Mulch
B	1	Pasture/Hay	Cultivate
B	2	Pasture/Hay	Mow
B	3	Bio-plastic	Plastic Mulch
B	4	Pasture/Hay	Neglect
C	1	Herbal Meadow	Cultivate
C	2	Bio-Plastic	Plastic Mulch
C	2	Herbal Meadow	Mow
C	4	Herbal Meadow	Neglect

SARE
Sustainable Agriculture
Research & Education

www.sare.org



sawmill herb farm



Experimental Plot Locations
OFRE Grant
12/15/17

Elderberry *Sambucus* spp.



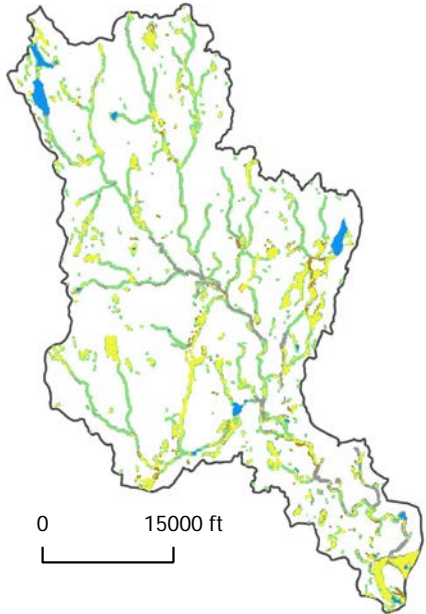
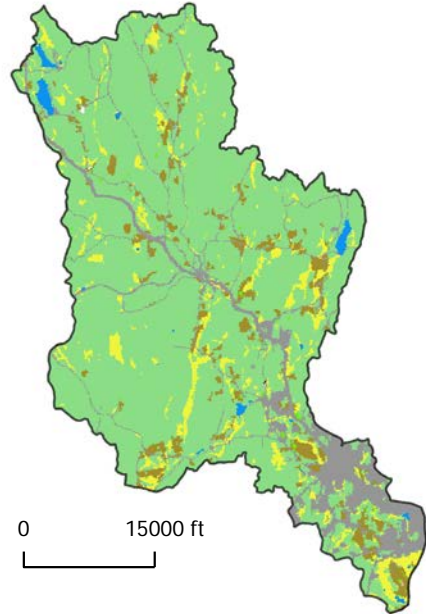
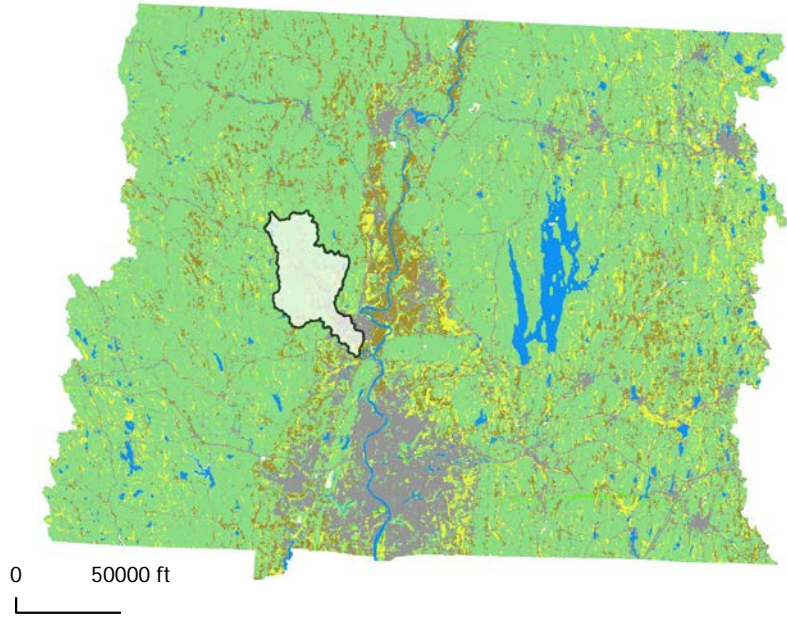
Elderberry Planting



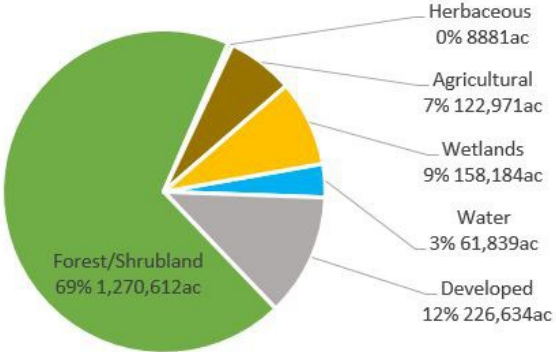
Elderberry Planting



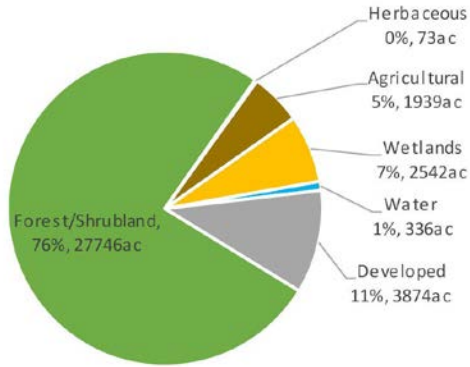
Land Use Within Connecticut and Mill River Watersheds



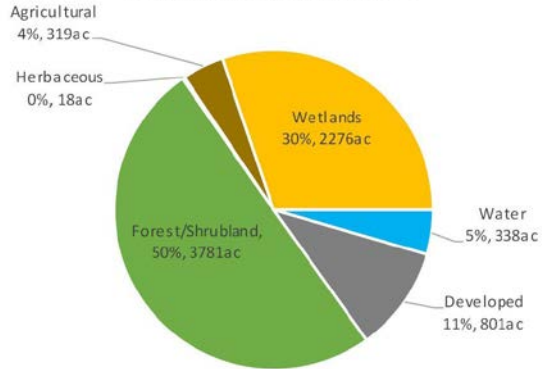
CT River Valley



Mill River Watershed



Within All Regulated Areas

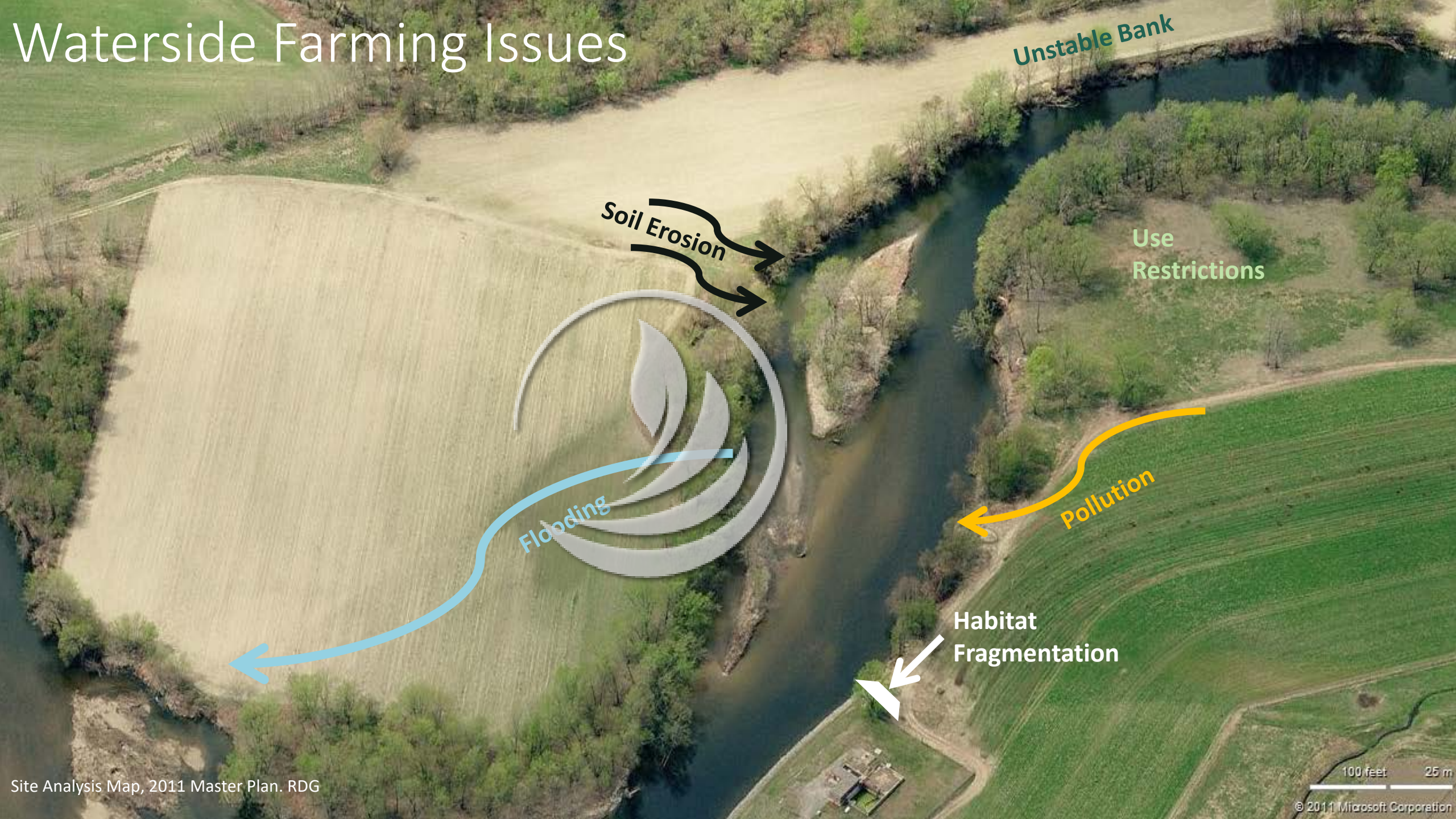


Flood Damaged Farm



Photo: Robin McDermott, Small Step Farm. Roxbury, VT 8/30/11. Yestermorrow.org

Waterside Farming Issues



Unstable Bank

Soil Erosion

Use Restrictions

Pollution

Habitat Fragmentation

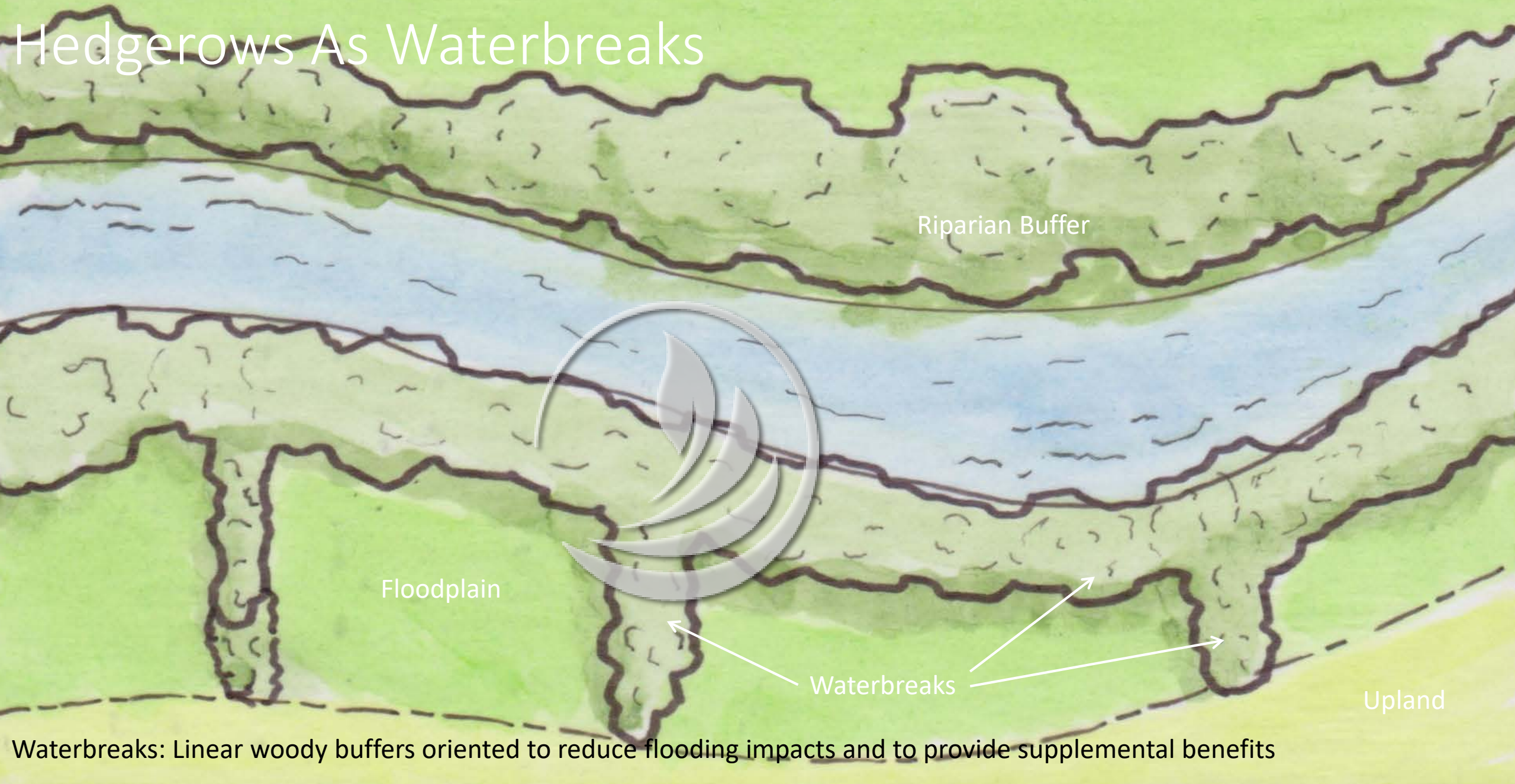
Flooding



Buffers help farms perform more like forests

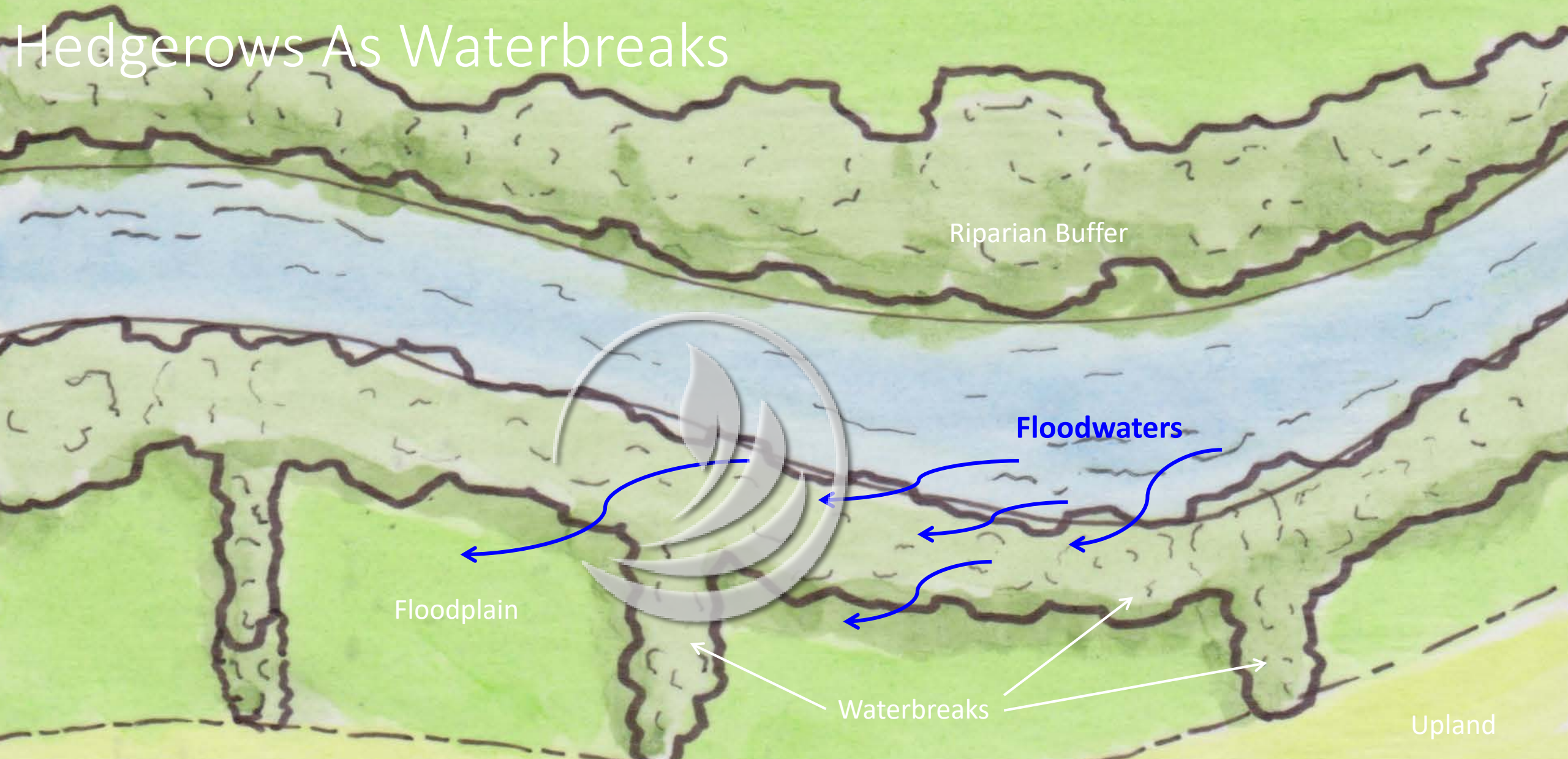


Hedgerows As Waterbreaks



Waterbreaks: Linear woody buffers oriented to reduce flooding impacts and to provide supplemental benefits

Hedgerows As Waterbreaks



Floodplain

Riparian Buffer

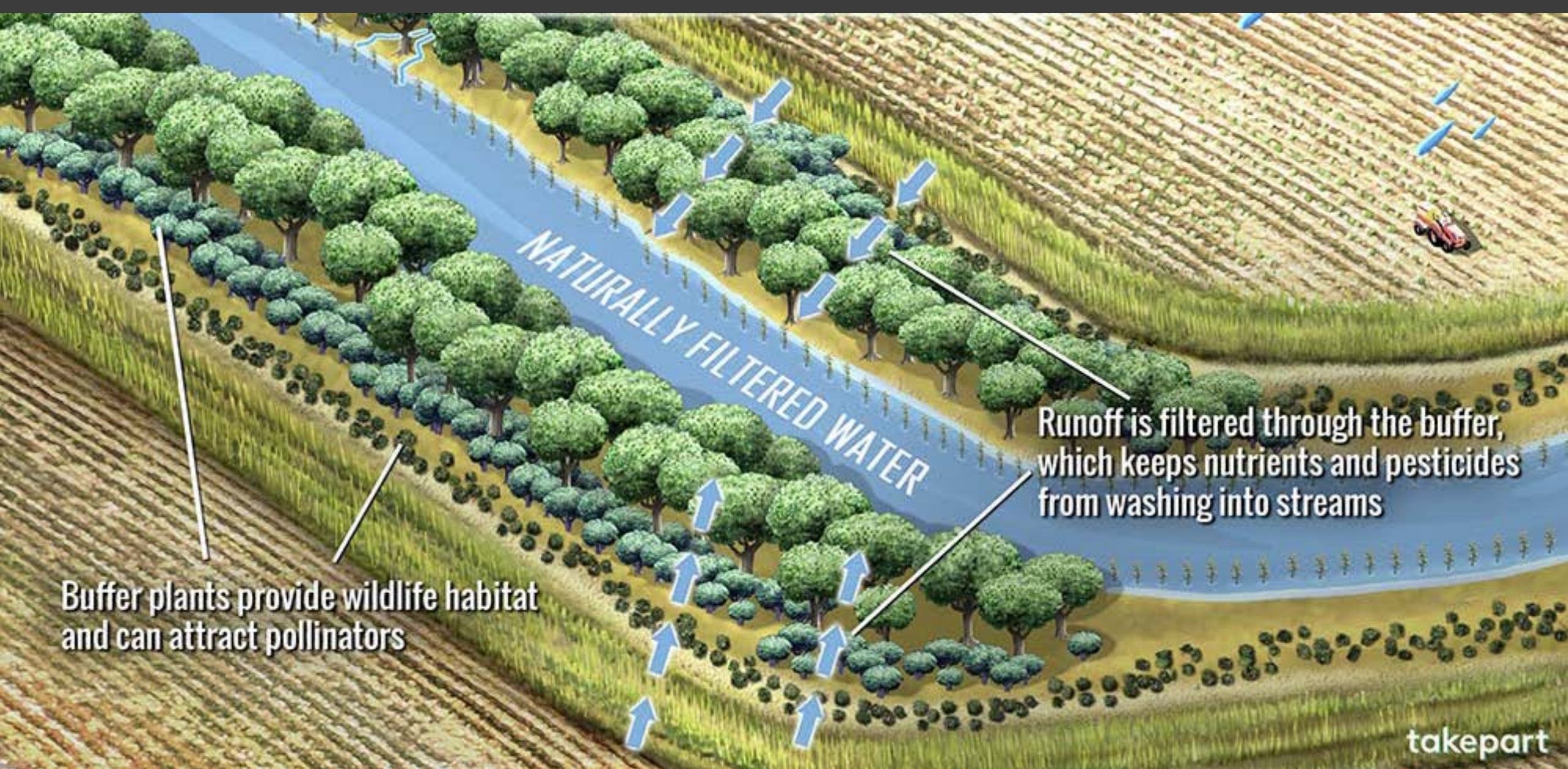
Floodwaters

Waterbreaks

Upland

Waterbreaks: Linear woody buffers oriented to reduce flooding impacts and to provide supplemental benefits

Riparian Buffers Provide Multiple Functions



Simple Vegetated Buffer



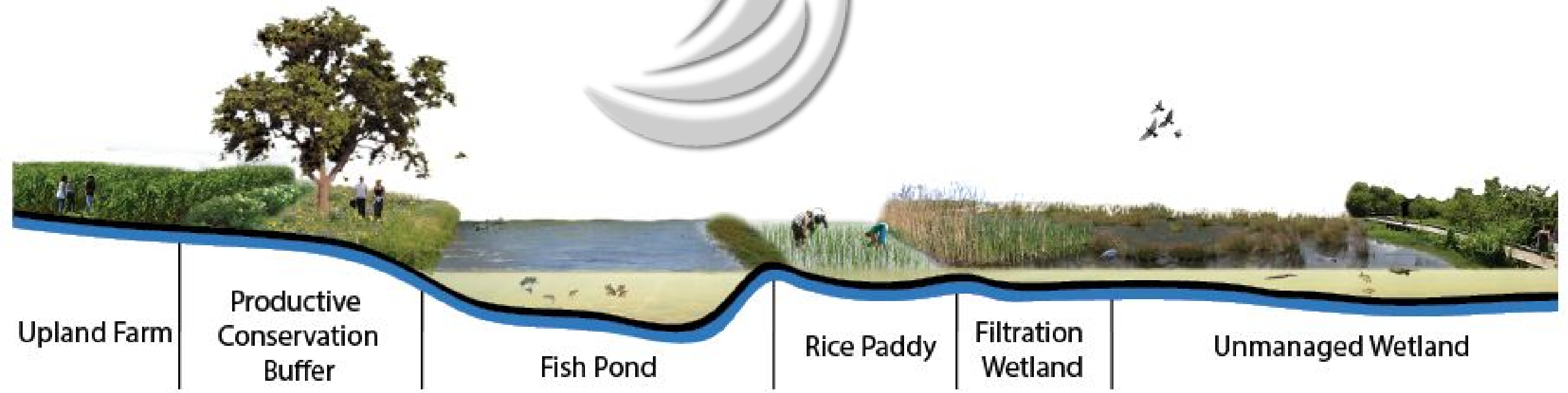
Productive Vegetated Buffers



Multiple layers of Production and Protection



Productive Conservation for Lakeside Farming



Upland Farm

Productive Conservation Buffer

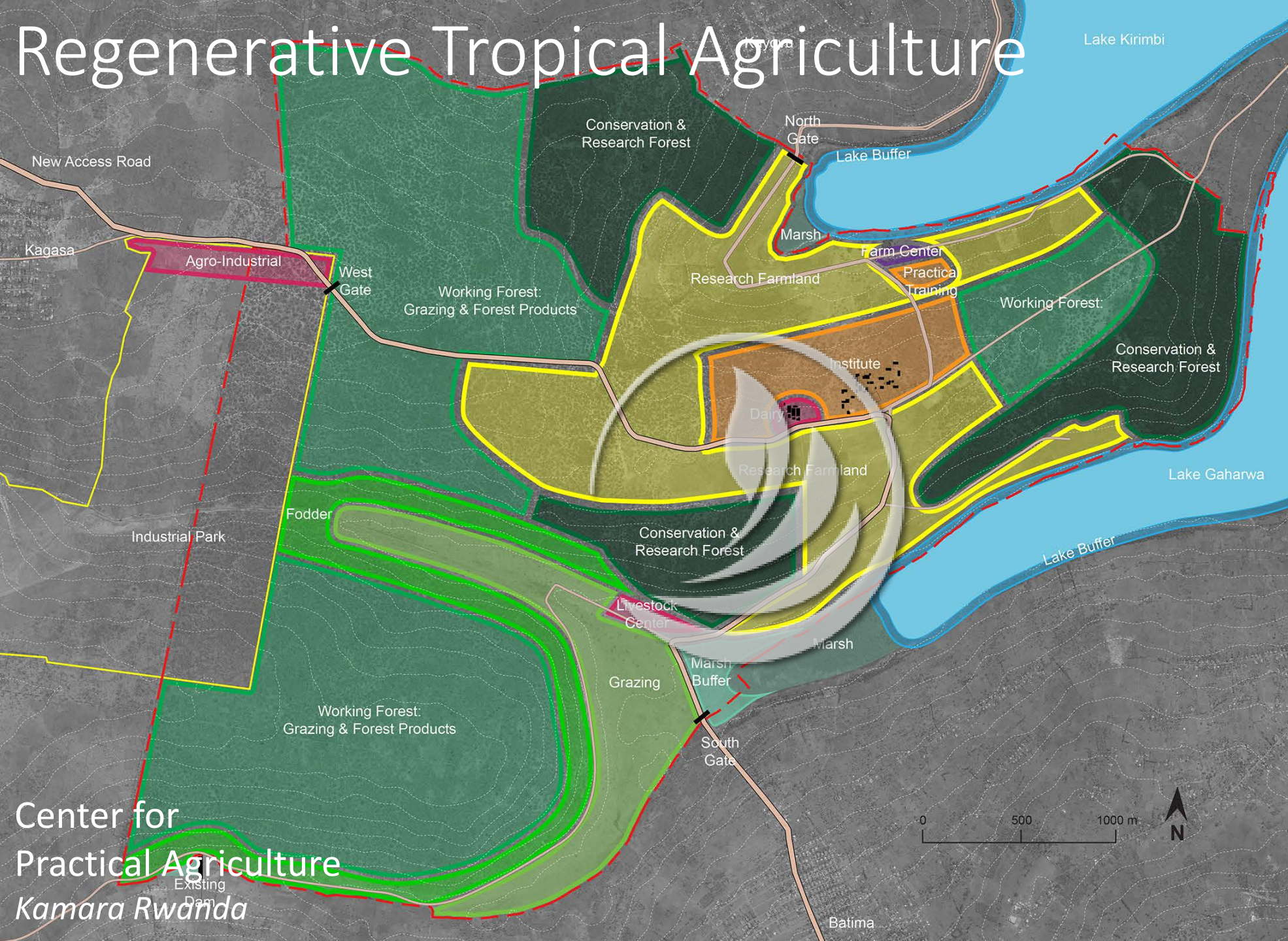
Fish Pond

Rice Paddy

Filtration Wetland

Unmanaged Wetland

Regenerative Tropical Agriculture



Center for
Practical Agriculture
Kamara Rwanda

Productive Buffers



- Buffering landuses
 - Moderating impacts
 - Filtering pollution
 - Reduce erosion
- Crop & Economic Diversity
 - Build soil
 - Natural medicinals
 - Niche foods/ season extension
 - High-value florals
 - Biomass production
 - Animal fodder
- Habitat
 - Beneficial species
 - Reservoir of local biodiversity
 - Reconnect habitat patches

Design Guidelines for Productive Buffers

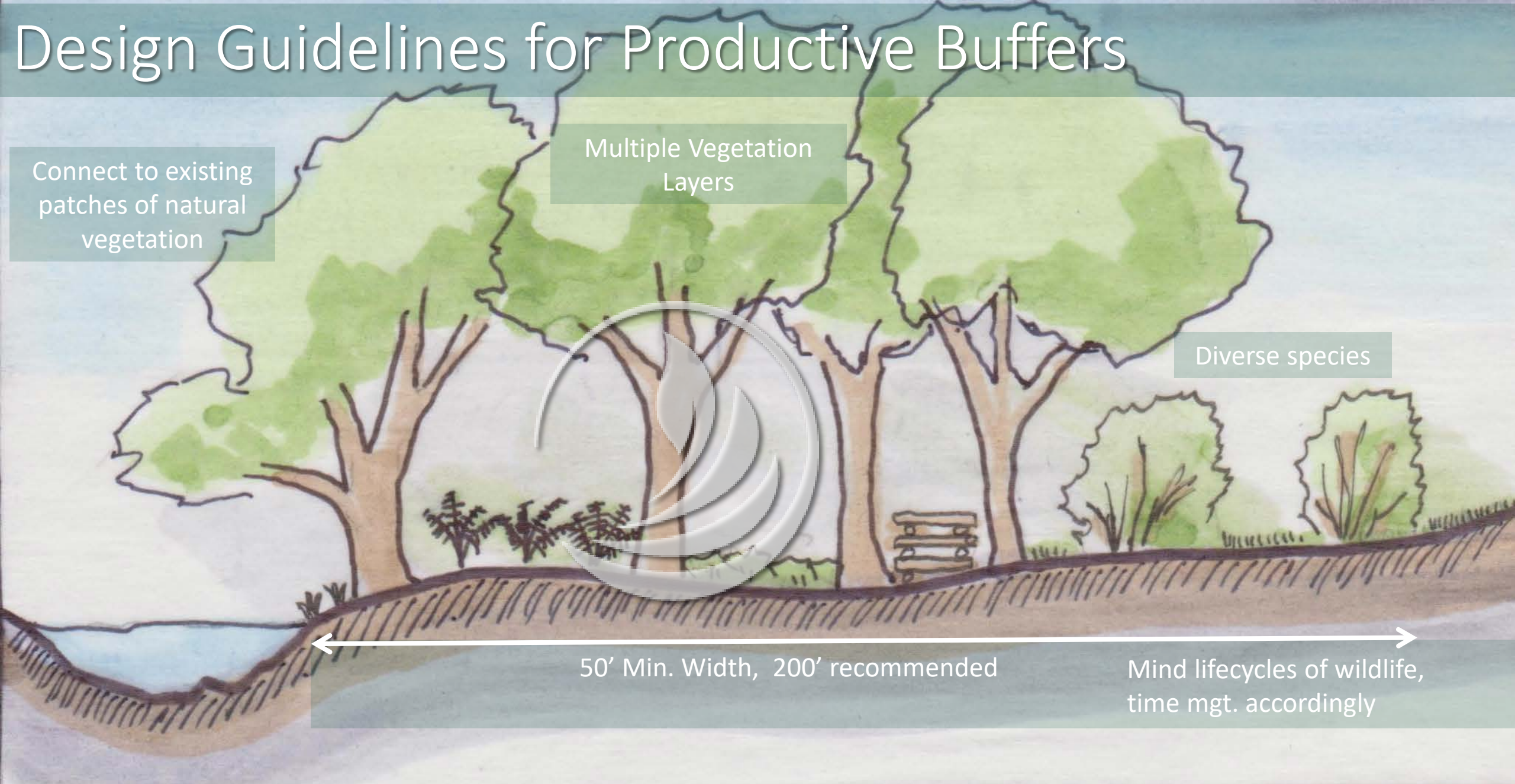
Connect to existing patches of natural vegetation

Multiple Vegetation Layers

Diverse species

50' Min. Width, 200' recommended

Mind lifecycles of wildlife, time mgt. accordingly



Productive Vegetated Buffers



Multiple layers of Production and Protection

Design Systems that Support What You Do Already



Layers of Production in a Riparian Forest

Nut & Fruit Producing
Canopy Trees

Perennial
Vegetables

Medicinal
Herbs

Mushroom
Logs

Multi-functional
Shrubs and Grasses

Walnut, Butternut & Kin *Juglan spp.*



Fine veneer and craft wood



Walnuts or Heartnuts with Herbal Understory



**Goldenseal cultivation
in a nut forest understory**

Image source: www.hardingsginsengfarm.com

Michigan Pecan *Carya illinoensis*



Black Locust

Robinia pseudoacacia



Mulberry

Morus rubra/ alba



Extended
ripening time



Unfurling Ostrich
Fern Fronds



Ostrich Fern



Riverside
Harvest Time



Fiddleheads
Ready to Eat

Stream-side
Ramp Patch



Flowering
Ramp

Ramps

Allium tricocum



Freshly Pulled
Ramp



Ramps Ready
for Market

**Log-Cultured
Shitake**



Mushrooms



**Wild
Morel**



**Mulch-Bed
King Stropharia**

Adapted to wet soils



Highbush Blueberry *Vaccinium corymbosum*



Pollination



**Commercial
Fruit production**



Blueberries

Black Currant



Autumn Olive,
Autumn Berry
Eleagnus umbellata



Hybrid Hazelnuts



Hazelnuts

Ripening
Hazelnuts

Photo: Mark Shepard



Commercial
Hazel Hedgerow

Karren Weisel © 2008



Hazels in
the Husk

Karren Weisel © 2008

Red Osier Dogwood *Cornus serica*



Uses of coppice materials



Level of Complexity and Scale

High diversity-small scale



Diversified forest garden requires sophisticated management

Low diversity- Broad scale



Production oriented forest farm has streamlined maintenance requirements

Campuses + Estates



Green Infrastructure



Productive Landscapes



Regenerative Agriculture

