Lake Wise Info Sheet

Shoreland Best Management Practices for Lake-friendly Living.

Benefits

- Water Quality
- Wildlife
- Prevents Erosion
- Slow, Spread, Sink Stormwater
- Visual Appeal
- Low Cost
- Low Maintenance
- Protection & Resiliency

Acceptable BMP under the Vermont Shoreland Protection Act

Related Info Sheets:

Lakeshore Buffers

Bioengineering

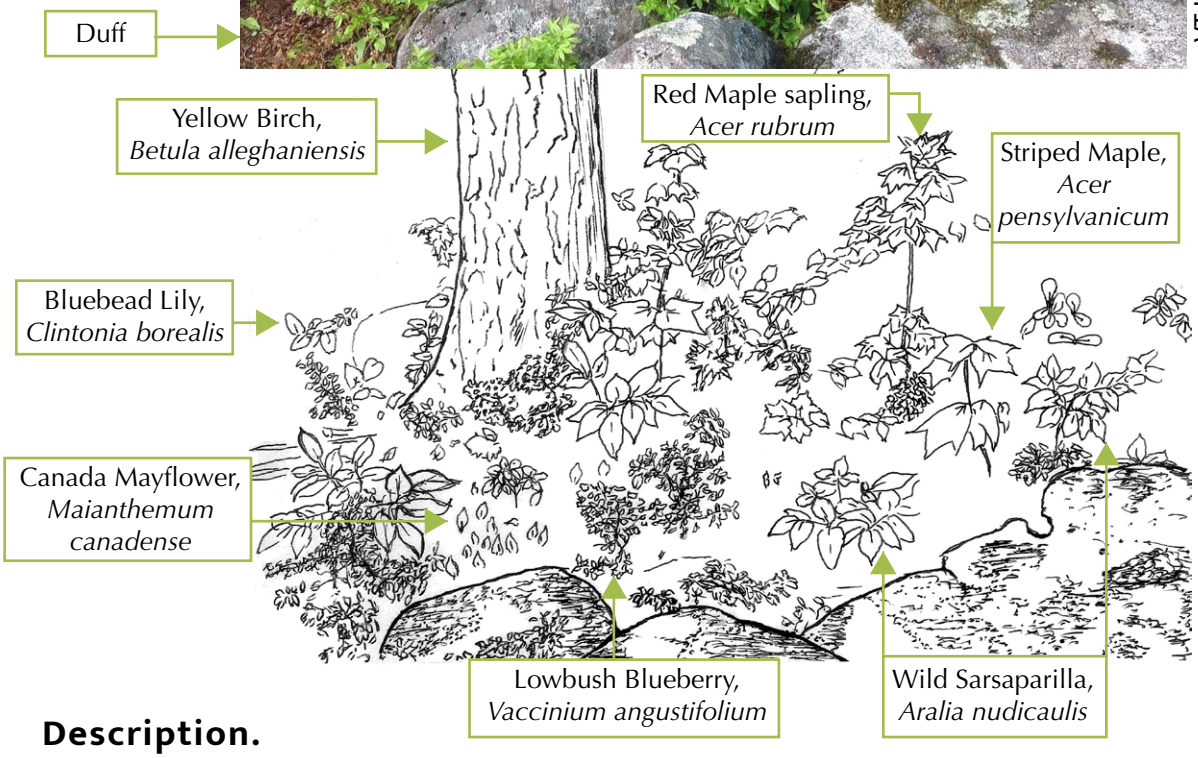
Managing Invasive Plants

RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

A natural woodland community growing along a Vermont lakeshore.

VT Lake Wise Program



Description.

Natural communities are made of plants and animals growing and living together in landscapes characterized by specific soil, water, and climate conditions. Native shoreland vegetation is essential for protecting lake water quality and wildlife habitat. Vermont has over 800 lakes with several natural lakeshore communities, ranging from cobble and sandy beaches to wetlands to northern hardwood forests. Planting native species and protecting and encouraging natural plant communities along Vermont shorelands is one of the most important things we can do to protect lake health, clean drinking water, biodiversity, and recreational opportunities.

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

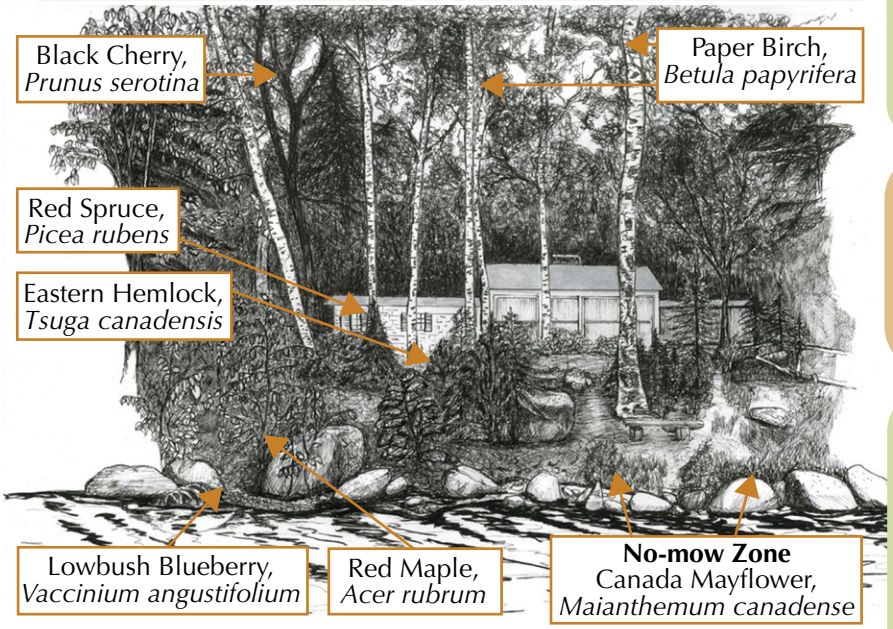
Graphics by Greenleaf Design, LLC

Lake Wise Info Sheet

RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

VT Lake Wise Program



An example of a naturalized shoreland. This camp shares the shore with a woodland community and has all five tiers of vegetation, including a duff layer, herbaceous ground cover, woody shrubs, saplings and understory trees, and mature canopy trees. The Vermont Shoreland Protection Act protects this shoreland vegetation, but does allow for some thinning and pruning up.

For example, 60% of protein for freshwater fish comes from insects that have fallen into the water from their near-shore native plant host.

Lakeshore natural communities.

Many of the natural communities that grow along Vermont lakeshores, like the forests and woodlands, have five tiers or layers of vegetation: **canopy, understory, shrub, ground cover, and duff layers.**

On some lakeshores, the natural vegetation may only include some of these layers, such as a Hemlock forest with little shrub or ground cover, yet the needles have made an absorbent, spongy layer of duff that protects the shoreland soils from eroding and degrading water quality and habitat. Marshes, grasslands, and shrub swamps may not have a canopy or understory, but they provide ample soil stabilization, water filtration, and habitat with their dense, multi-layered vegetation.

The problem.

About 45% of Vermont lakeshores have been developed in ways that have cleared the shores of their natural communities.

The solution.

You. It's up to you to protect the the future of Vermont lakes. Revegetating and restoring lakeshore natural communities depends almost entirely on the voluntary actions of property owners.

Gardeners. Gardeners and landscapers can help safeguard lake ecosystems by encouraging the reduction of lawns and promoting native plants. Ask about renaturalizing your shore, no-mow zones, and supporting biodiversity.

Go native. Native plants fuel the food web and are essential to healthy lake ecosystems and habitat for all wildlife.

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

Graphics by Greenleaf Design, LLC

Lake Wise Info Sheet

RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

Intervale

Local Resources.

Check out local conservation nurseries for native plant stock (not a complete list):

- **Your Natural Resource Conservation District (NRCD)**
- **Intervale Conservation Nursery, Burlington, VT**
- **Champlain Valley Native Plant Nursery, Poultney, VT**
- **Vermont Wetland Plant Supply, Orwell, VT**
- **Miller Hill Farm, Sudbury, VT**
- **Northeast Pollinator Plants, Fairfax, VT**
- **Full Circle Gardens, Essex Junction, VT**

See a more complete listing of native plant suppliers on the **Lake Wise Lake Resources web page**.

How to: Re-establish native species on a lakeshore.

Native plants growing along undeveloped shorelands represent the naturally occurring species for that area and the species that grow best together, making up a natural plant community. Look to those species when making your plant selections for renaturalizing your shoreland.

If you need help identifying plants, visit the **Native Plant Trust** to find native species and identify plants with their **Go Botany** and **Garden Plant Finder**. **Seek by iNaturalist** is an excellent plant identification app for your smartphone. You can also contact the **Lake Wise Program** or a **County Forester** for help.

Buying native plants.

Make a plant list based on your observations of natural plant communities growing around your lake to ensure that you buy the right plants for your site conditions.

Native plants are available at most Vermont nurseries. If possible, prioritize true native plants. There are many cultivars of native plants, or 'nativars', available at nurseries, but these can vary widely from the native. If you do go with a nativar, select one that most closely resembles the true native to provide greater benefits to pollinators and other native insects and wildlife.

Most nurseries sell container (potted) plants. Potted plants can be planted anytime during the season. Conservation nurseries also sell plugs, bare root plants, and live stakes. Plant bare root or live stakes in early spring or late fall when they are dormant. Water often.

Harvesting native plants.

Transplanting or allowing natural succession of native plants to occur are also great ways to establish natural plant communities.

Early spring and late fall are optimum times to dig up and transplant species because plants are dormant. When harvesting native plants from natural areas, be sure it is on your property or you have permission from the landowner. Only harvest plants from areas where there are robust populations so that you do not deplete the local naturally occurring population.

For more information on planting and no-mow zones, see **Lakeshore Buffers, Lake-friendly Yard Maintenance,** and **Live Stakes & Fascines**.

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

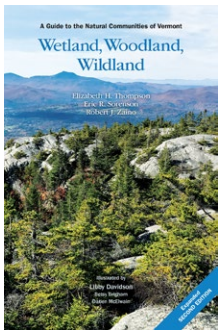
Graphics by Greenleaf Design, LLC

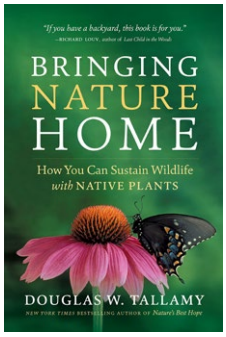
Lake Wise Info Sheet

RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

Native plant reading resources.





VT Fish & Widlife; Tallamy

Wetland, Woodland, Wildland: A Guide to Natural Communities of Vermont by Elizabeth Thompson, Eric Sorenson, and Robert Zaino is the leading resource on natural plant communities in VT.

Bringing Nature Home by Doug Tallamy and his research are excellent resources on how wildlife and our world depend on native plants where we live.

WHY NATIVE?

Many plants used in landscaping are non-native and provide less food and habitat for wildlife. Some aggressive and invasive non-native plants have escaped cultivation and threaten native species and biodiversity. Avoid Rugosa Rose, Periwinkle, Japanese Honeysuckle, Purple Loosestrife, Norway Maple, Burning Bush, and Bishop's Weed. No **Vermont Shoreland Protection Permit** is required to remove plants listed on the **VT DEC Noxious & Nuisance Plants**.

Selecting species based on soil moisture - right plant, right place.

Well-drained soils

Trees.
Sugar Maple
Black Cherry
American Beech
Red & White Oak
Paper Birch

Shrubs.
Witchhazel
Highbush Blueberry
Nannyberry Viburnum
Hobblebush
Alternateleaf Dogwood
Beaked Hazelnut

Perennials.
Columbine
Beardtongue
Black-eyed Susan
Bunchberry
Wild Ginger
Christmas Fern
Big Bluestem
Woodland Sedges

Wet or moist soils

Trees.
Black Willow
Green Ash
Northern White Cedar
Swamp White Oak
Cottonwood

Shrubs.
Winterberry
Red & Silky Dogwood
Black & Red Elderberry
Shrub Willows
Buttonbush
Sweetgale

Perennials.
Cardinal Flower
Blue Flag Iris
Joe Pye Weed
Swamp Milkweed
Turtlehead
Ostrich Fern
Bluejoint Grass
Marsh/Meadow Sedges

Shallow, rocky soils

Trees.
Eastern Red Cedar
Red Spruce
White Pine
Balsam Fir
Gray Birch

Shrubs.
Bush Honeysuckle
Lowbush Blueberry
Common Snowberry
Sweetfern
Mapleleaf Viburnum
Fragrant Sumac

Perennials.
Wild Bergamot
Butterfly Weed
Mountain Mint
Common Yarrow
Heath Asters
Blue & White Wood Aster
Wood Ferns
Indiangrass

Tolerant of many soils

Trees.
Red & Silver Maple
Yellow & River Birch
Hemlock
Basswood
Quaking Aspen

Shrubs.
Serviceberry/Shadbush
Highbush Cranberry
Gray Dogwood
Black Chokeberry
Arrowwood Viburnum
Striped & Mountain Maple

Perennials.
New England Aster
Goldenrod
Canada Anemone
Canada Mayflower
Sarsaparilla
Partridgeberry
Cinnamon Fern
Switchgrass

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

Graphics by Greenleaf Design, LLC

Lake Wise Info Sheet

RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

growth key:
slow < 1 foot/year
fast ~ 1-2 feet/year
rapid > 2 feet/year

TREES	soils	growth
Red Maple, *Acer Rubrum*	wet to dry adaptable	fast, 35'-50' early-mid succ.
Sugar Maple, *Acer saccharum*	well-drained moist, rich	fast, 60'-80' mid-late succ.
American Beech, *Fagus grandifolia*	well-drained, moist	slow, 50'-70' mid-late succ.
Eastern Hemlock, *Tsuga canadensis*	wet, moist, rocky, shallow	slow, 60'-80' late-succ.
Black Cherry, *Prunus serotina*	well-drained rich, adaptable	fast, 30'-60' early-late succ.
Green Ash, *Fraxinus pennsylvanica*	moist, tolerant of flooding	rapid, 50'-70' early-late succ.
White Pine, *Pinus strobus*	dry, moist well-drained	fast, 60'-90' early-late succ.
Basswood/Linden, *Tilia americana*	well-drained, moist, deep	fast, 50'-70' mid-succ.
Red Oak, *Quercus rubra*	wet to dry adaptable	rapid, 60'-80' mid-succ.
Paper Birch, *Betula papyrifera*	well-drained adaptable	fast, 25'-45' early-mid succ.
Yellow Birch, *Betula alleghaniensis*	moist, wet well-drained adaptable	slow, 40'-60' early-late succ.
Red Spruce, *Picea rubens*	dry, moist rocky, shallow	slow, 30'-60' mid-late succ.
N. White Cedar, *Thuja occidentalis*	moist, well-drained, alkaline	slow, 20'-60' early-late succ.
E. Red Cedar, *Juniperus virginiana*	dry, moist, rocky, adaptable	fast, 40'-50' early-late succ.
Balsam Fir, *Abies balsamea*	moist, well-drained rocky, acidic	slow, 35'-60' early-late succ.

Native plant lists.

For a more complete list, visit the **Native Plant Trust Plant Finder.**

Natural succession.

key: succ. = successional

Succession is a natural process of inevitable change within a plant community. Early, mid, and late successional species refers to where they fit into the evolution of a forest from widespread disturbance - such as clearing for farm fields or fire - to mature forest. As a landscape fills in with more plants, the sun loving ones may get shaded out by taller shrubs and trees, giving way to more shade tolerant species. However, seeds on the ground are easily brought to life with a small disturbance that causes a change in sunlight, such as a broken branch or fallen tree.

Design your planting plan to work with the natural succession of a community. For example, start with full-sun perennials, shade-tolerant shrubs, and trees. Once the trees grow up and create shade, the shrubs will adapt, and you can swap out full-sun perennials for shade-tolerant perennials, moving your full-sun perennials elsewhere.

VT Lake Wise Program

Paper Birch canopy in a naturalized shoreland at Boulder Beach State Park, Lake Groton.

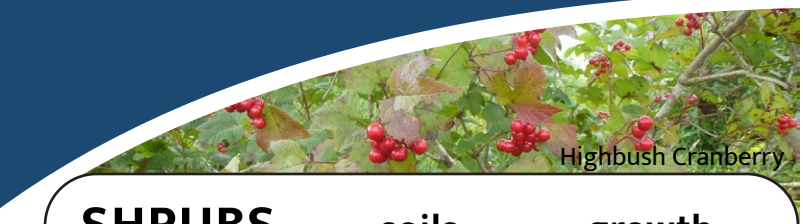
VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

Graphics by Greenleaf Design, LLC

Lake Wise Info Sheet

RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland


Highbush Cranberry

SHRUBS

SHRUBS	soils	growth
Serviceberry, *Amelanchier spp.*	wet to dry, adaptable	slow, 10'-25' sun-p.shade
Black Chokeberry, *Aronia melanocarpa*	wet to dry, adaptable	fast, 3'-6' sun-p.shade
Buttonbush, *Cephelanthus occidentalis*	wet, moist, tolerant of flooding	fast, 3'-8' full sun
Silky Dogwood, *Cornus/Swida amomum*	wet, moist, adaptable	fast, 3'-8' sun-p.shade
Red Osier Dogwood, *Cornus/Swida sericea*	wet, moist, adaptable	fast, 3'-8' sun-p.shade
Beaked Hazelnut, *Corylus cornuta*	well-drained, dry, moist	slow, 4'-12' sun-p.shade
Bush Honeysuckle, *Diervilla lonicera*	wet to dry, adaptable	fast, 2'-4' sun-p.shade
Witchhazel, *Hamamelis virginiana*	wet to dry, adaptable, flood, drought	slow, 6'-15' sun-shade
Winterberry, *Ilex verticillata*	wet, moist, adaptable	slow, 4'-10' sun-p.shade
Sweetgale, *Myrica gale*	wet, moist, adaptable	slow, 2'-4' sun-p.shade
Elderberry, *Sambucus nigra, racemosa*	moist, wet, adaptable	fast, 4'-8' sun-p.shade
High & lowbush Blueberry, *Vaccinium corymbosum, angustifolium*	wet to dry well-drained, rocky, acidic	slow, 3'-8' or 1'-2' sun-p.shade
Arrowwood, *Viburnum dentatum*	wet to dry adaptable	fast, 6'-10' sun-p.shade
Highbush Cranberry, *Viburnum opulus var. americanum*	wet, moist	fast, 5'-12' sun-p.shade


Partridgeberry

HERBACEOUS/ GROUNDCOVERS

plant	soils	growth
Common Yarrow *Achillea millefolium*	moist, dry, adaptable	1'-3', summer sun-p.shade
Columbine, *Aquilegia canadensis*	moist, dry adaptable	8"-24", spring sun-p.shade
Windflower, *Anemone canadensis*	wet to dry, groundcover	1'-2', summer sun-p.shade
Swamp Milkweed, *Asclepias incarnata*	moist, wet, adaptable	24"-42", sprng sun-p.shade
Bunchberry, *Cornus canadensis*	moist, cool, rich, acidic	4"-6", spring p.shade-shade
Joe Pye Weed, *Eutrochium spp.*	moist, wet, adaptable	3'-8', summer sun-p.shade
Blue Flag Iris, *Iris versicolor*	moist, wet, adaptable	1'-3', summer sun-p.shade
Cardinal Flower, *Lobelia cardinalis*	moist, wet, sandy	2'-3', summer sun-p.shade
Wild Bergamot, *Monarda fistulosa*	moist, dry, well-drained	24"-42", smmr sun-p.shade
Cinnamon Fern, *Osmunda cinnamomea*	moist, wet	2'-4' sun-shade
Switchgrass, *Panicum virgatum*	wet to dry, adaptable	3'-6', fall full sun
Beardtongue, *Penstemon digitalis*	moist, dry, adaptable	1'-3', spring sun-p.shade
Christmas Fern, *Polystichum acrostichoides*	wet to dry	8"-16", evrgrn p.shade-shade
Little Bluestem, *Schizachyrium scoparium*	wet to dry	1'-4', fall sun-p.shade
Goldenrod, *Solidago spp.*	wet to dry, adaptable	1'-3', fall sun-shade
Asters, *Symphyotrichum spp.*	wet to dry, adaptable	1'-4', fall sun-shade

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

Graphics by Greenleaf Design, LLC

Lake Wise Info Sheet

RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

VT Lake Wise Program

The elusive Pink Lady Slipper cohabitates in the Hemlock understory on this lakeshore.

VT Lake Wise Program

Pathway among Bunchberry flowers and Bluebead lilies.

Wildflowers.

Most wildflowers of mixed hardwood forests are herbaceous perennials. They store food in their roots, tubers, or bulbs when the sunlight reaches the forest before before the trees leaf out in early spring and after the leaves fall. Some wildflowers like Wild Leeks, Dutchman's Breeches, and Trout Lily photosynthesize only in the early spring, going mostly dormant the rest of the summer. Partridgeberry and wintergreen can grow with evergreens, such as in Hemlock forests where there is almost continual shade on the forest floor, because they photosynthesize at low rates throughout the growing season.

Native plant facts.

- A mature maple tree can uptake and transpire 17 to 37 gallons of water a day, while a large oak tree can uptake and transpire 79 gallons a day.
- The forest floor (duff) acts as an enormous sponge, typically absorbing up to 18 inches of rain before gradually releasing it to groundwater and streams.
- Trees lower energy bills by providing shade in the summer and wind protection and insulation the winter, reducing A/C and heating needs.
- There are measurable medical benefits for those who spend more than 15 minutes a day in naturally vegetated areas (not including lawns).
- 90% of insects that eat plants are specialized to feed on one or only a few types of native plants.
- Black Cherry trees host more than 450 species of butterfly and moth insects and provides fruit for more than 40 species of birds and many mammal.
- There are 45.6 million acres of lawn in the US, the largest 'crop'. If half of all lawns were renaturalized with native plants, then all the existing isolated natural areas would be connected through ecological corridors and would safeguard our country's water, plants, animals, and people.

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

Graphics by Greenleaf Design, LLC

Lake Wise Info Sheet

RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

WILDLIFE NEED NATIVE PLANTS -AND YOU CAN HELP!

The Monarch Butterfly, Danaus plexippus, is endangered and depends solely on milkweed, Asclepias syriaca, to lay its eggs on and feed as larvae. Milkweed is essential to the survival of the monarch - seed it into your gardens!

Wild Seed Project

The Luna Moth, Actias luna, evolved with the Shagbark Hickory, Carya ovata, and the larvae depend on the leaves. Caterpillars, like the Luna Moth larva, provide the greatest protein source for broods of all birds. Each pair of Chickadees needs to find 6,000 caterpillar larva over a 3 week period to feed their nest of young!

Doug Tallamy

Eastern Red Cedar, Juniperus virginiana, provides the only food source for the larval stage of the Olive Hairstrike Butterfly, Callophrys gryneaus. Cedar Waxwings are named after this tree because of their feeding habits on the berries. 96% of birds depend on protein from insects, such as the Olive Hairstrike caterpillar, to rear their young!

"To become naturalized is to live as if your children's future matters, to take care of the land as if our lives and the lives of all our relatives depend on it. Because they do."

- Robin Wall Kimmerer, Scientist, Decorated Professor, Member of the Citizen Potawatomi Nation

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

Graphics by Greenleaf Design, LLC