



PLANNING AND INSTALLING A XERISCAPE LANDSCAPE

City of Fargo – Forestry Department, 402 23rd St. North

The word Xeriscape comes from the word *xeric* meaning dryland and *scape* from landscape. Xeriscaping has been used in the Rocky Mountain and South western areas of the United States where water is a critical resource. Water conservation is important anywhere we live and as the City of Fargo and other North Dakota cities grow, wise water use is even more important. In the City of Fargo, water bills almost double during the months of May through September due to outdoor watering. Xeriscape landscaping uses trees, shrubs, perennial plants and grasses that are adapted to local climatic and soil conditions and have a low water requirements to maintain a healthy and attractive appearance. A beautiful landscape doesn't have to conflict with the goal of stretching our water supplies.

What a Xeriscape is not:

- Large areas of gravel or rock
- A prickly vision of a desert landscape
- More gray than green
- All dry and dusty
- A “zeroscape”

Xeriscape promotes the overall conservation of many resources including water, fertilizers, fuels, labor, time and money. Therefore, Xeriscaping implements these savings through time tried and tested horticulture practices and landscape design. This booklet is designed to help guide you step-by-step through the Xeriscape design and planting process. Showing why its important to save water but also how to achieve an attractive and self-sustaining landscape.

XERISCAPING EQUALS CENTS AND TIME... NATURALLY!

1.) SAVE WATER . . .

The efficient irrigation and gardening practices that are at the heart of Xeriscaping help conserve precious water supplies.

2.) SAVE TIME . . .

Xeriscape takes a common sense approach to landscaping that reduces watering and mowing time and grows easier to maintain each year.

3.) SAVE MONEY . . .

Xeriscape can reduce your water and maintenance costs from 30-70%

4.) INCREASE YOUR HOME'S VALUE . . .

A good Xeriscape can increase your property value by as much as 10%

DESIGN STAGE



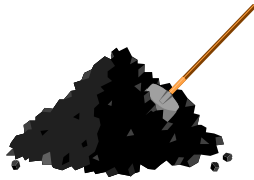
STEP 1 . THE PLANNING AND

- A. Survey and inventory your existing landscape or new home site by drawing it out onto graph paper (1:10 scale or 10 squares/inch seems to work best). Map all structures, property lines and existing landscape features to the nearest foot(Each square = 1 foot using the above scale)
- 1) Draw in the house print, windows, sidewalks, doors, driveways, patios, fences, dryer vent, water faucets, eave down spouts, utility lines- overhead and underground(1-800-795-0555) and place a North arrow for direction indicator.
 - 2) Make several copies of the plan as completed. Use this drawing as a base map. The purpose of separate copies of base map are keep information uncluttered if placed all on one map.
 - a) **Water and drainage:** On one of the copy base map, identify the water drainage patterns from the site. This can be done with arrows to show from and to where the water flows in a heavy rain. Identify the areas where water sits for extended period, small hills and other water related areas.
 - b) **Existing trees, shrubs and perennial plants** should be placed on another copy of the base map. Make notes on condition and whether some should be removed or receive special care.
 - c) **Activities/Uses:** Personalize the landscape to meet your needs you have various activities and uses. Write these on another copy of the base map and with circles and arrows to indicate the area and circulation patterns within the yard. Use circles to indicate childrens play area, private patio or cookout area, unsightly areas to be screened, private or public areas. Also, place areas with valuable views that you want protected or enhanced: Park view, View of the river, or attractive landscape in the neighbor's home
 - d) **Sun & Shade:** On another map Show the predominate lighting in your yard: Shaded, Partial Shade or Full Sun. Indicate changes from morning to afternoon.
 - 3) The next step is to put all this information together in a formal plan. You may choose to draw up the plan yourself or have a landscape designer/architect draw it up. In either case the information gathered will be useful in developing the actual landscape plan. One other suggestion is to drive around and look at other people's landscapes. Pick out ideas that you like and would like to make apart of your landscape.

B. Laying the site out: Once a rough plan(s) have been drawn, a garden hose or a can of spray paint can help you visualize how the planting areas will appear with the rest of the landscape.

- 1) Take the garden hose and a tape measure. From the plan, measure the border of the planting area out and lay the garden hose on the border's edge. The hose will allow you to adjust and change the curves. When the planting area's edge is set, mark it with spray paint and the hose can be removed.
- 2) Call 1-800-795-0555 before doing any digging or tillage. If there are any potential interferences trees and shrubs can be moved over a couple of feet one way or another. Holes for perennial plants rarely interfere with underground or above ground utilities.

After the information above is collected, you are ready to develop your water efficient landscape. There are specific *Xeriscape* principles that will reduce water waste, and increase efficient water use in the landscape.



STEP 2 . PREPARING THE SITE FOR PLANTING

The predominate soils of the Red River Valley are clays which can be easily water logged in wet seasons and hard as brick in dry seasons. Clay soils have a smaller pore space or air space between mineral particles. It is in this space that oxygen and water move. Both oxygen and water are important for root and total plant growth. In wet conditions the pore space is filled with water and little oxygen which can limit growth.

1. **Soil Improvement:** The heavy Fargo clay soils are fertile soils but tend to become compacted causing: a) lack aeration to plant root and beneficial soil organisms and b) the soils become water logged, ponding in low areas and excessive storm water runoff. Over a long period of time, the plants will eventually die. These conditions can be improved to maintain porosity in clay soils by several practices in soil preparation. The cure is a combination of tillage, incorporation of organic matter and encouragement of soil microorganisms and earthworms. There are several practices that can alleviate these problems.

- a) Low areas may require filling in or leveling through grading the drainage away from this area.
- b) Create mounded plantings by adding soil to planting areas to cause excess water to the turf grass areas. The added soil should be a sandy-loam mixture which allows better soil porosity. The existing clay soil base must be tilled before soil is added for mounds.

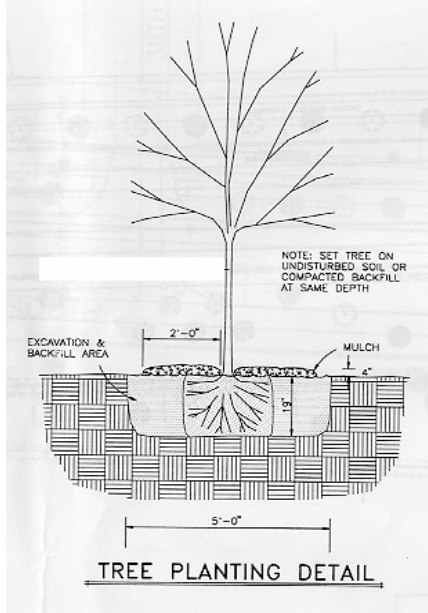
- c) Adding soil amendments to heavy clay soils and tilling will improve soil aeration. Organic amendments include aged manure, peat moss, compost, woodchips, leaves/needles, etc. Adding these organic elements with sandy loam soil will ameliorate the existing soils.
- d) In existing turfgrass lawns, use a core aerator that pulls out soil plugs and deposits them on the surface in Spring or Fall. Add a layer of loam soil or compost $\frac{3}{4}$ -1 inch thick across the lawn surface and water in well. If there are dead areas this is the time to reseed.

2. Establishing watering zones for the various water requirements of the landscape means planting areas are divided into various water use zones. Examine your map showing the drainage, water collection areas and low spots. Most new yards in Fargo drain to the edges, property lines, backyard or alley, and to the street curb in the frontyard. These areas are subject to more available water than the higher, drier sites. Less water will be required for plants in this area in most years, but plants must be tolerant of high water levels in wet years. Filling low areas and changing the drainage patterns is an option also. When setting up the various water use zones, consider the conditions for both wet and dry years. Consider where the source of water will be whether city water from an outdoor faucet or a rainbarrel reservoir.

- 3. Select the right plant for the right place:** Now that you have designated the water use zones of the various planting areas, you are ready for the next steps.
- A. Check each of your planting areas on the sun / shade exposure to determine which of the low water use plants will do the best in a sunny area. If there is full sun exposure for more than 60% of the daylight hours only plants that prefer full sun should be used. If there is full shade for more than 60% of the daylight hours only plants that prefer full shade should be used. If there is about equal sun and shade exposure, partial shade plants should be used.
 - B. There are other microclimatic features of the landscape that compliment certain plant growth requirements such as protection from wind, snow cover areas and soil conditions. On the other hand, make notes of runoff areas from driveways where oil or road salt may limit certain plant growth.
 - C. After knowing which plants will grow, the next step is to select those plants that you like and will be aesthetically attractive in the landscape. There are several different ways of accomplishing this task, “since beauty is in the eye of the beholder”. You will find below a list a few suggestions in guiding you through this step.
 - 1) Selected plants for mass type planting, not one here and one here. It is more pleasing to view groupings of plants and flowers with identical texture, color and form.
 - 2) Use a graduated design of plants with the tallest in the back of the planting area and gradual lower plant materials in front to the shortest plant as a border. In a planting area that is viewed from more than one side, place the tallest plants in the middle and gradual shorter down to the border.

- 3) Plant and flower texture is another characteristic to be concerned when selecting proper plant materials. When designing planting areas use a gradual change between textures of plant materials: from fine-to-medium-to-coarse-to-medium-to-fine. Refer to #1 and 2 above in the development of these gradual changes.

4. Planting recommendations



A. Dig a hole at least 12" wider than the spread of root systems.

B. Keep the roots moist. don't let roots become exposed to sun or wind for even a few minutes.

C. Loosen the soil at the bottom of the hole.

D. Plant at a depth should be where the first root at top of the soil ball is even with the existing grade.

E. Fill the hole 2/3 full with well-prepared soil.

F. Firm soil by filling hole with water; be sure that all air pockets are eliminated

G. Leave a 2" saucer shaped catch basin for watering.

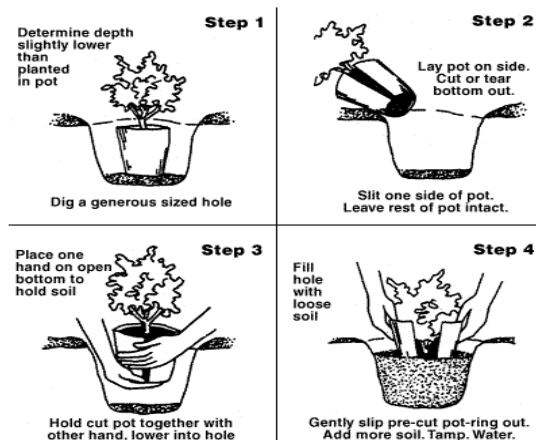
H. Stake large trees for the first growing season(do not allow wire to be next to the bark)

Perennial Herbaceous Plants

Fibrous roots (i.e. Carnations, mums, phlox, etc.) Need to be spread downward and not cramped. The crown(where roots meet stems) should be level with or slightly above the soil.

Long tap roots (i.e. Columbine, baby's breath, etc) should extend almost straight down. To avoid possible rotting conditions, place the crown just below the soil line.

Roots with eyes (i.e. Daylilies and peonies) are placed in a hole on a cone of soil with the crown just below ground level. Spread roots around the cone. Lightly cover the crown with soil.



5. Know your turf: Grasses require different amounts of watering. For example, more exotic varieties of Kentucky bluegrass require 32 plus inches of water seasonally. There are more drought tolerant varieties of Kentucky bluegrass, other cool-season and warm-season grasses available.

A. Cool-Season Grasses -- greens up in early spring and early fall, needs watering during dry periods to stay green:

Kentucky Blue Grass varieties: 'Kenblu', 'Ram', 'South Dakota Certified'

Tall Fescue: 'Bonanza'

Creeping Red Fescue: 'Dawson'

Chewings Fescue: 'Jamestown II'

Hard fescue: 'Reliant'

Crested Wheatgrass: 'Fairway'

**There are several cool season mixtures that are more drought tolerant than typical Cool-season mixtures commonly available.*

B. Warm-Season Grasses (green up in June and go dormant after first frost): blue and side-oats gramma, little and big bluestem, etc.

C. Existing turf management

A. Aerate the lawn in spring or fall

B. Interseed with grass seed after aeration:

1. Sunny sites ■ Kentucky bluegrass, fescue or blue grama grasses

2. Shaded sites ■ Creeping red or other fescue grass varieties

C. Light fertilization after aeration

6. Applying Mulch

The use of mulch to cover the soil around woody and perennial herbaceous plants provides several benefits to the planting areas. Mulches are important for conservation of the existing soil moisture, cooling of the soil and thus benefitting root growth, and controlling competing weed growth. Root growth of the plants have more favorable growing conditions and as organic mulches decay more organic nutrients are available for plant use. Healthier plants will provide a landscape as you have planned. Organic mulches include woodchips, leaf/needles, straw, wood grindings, etc. As these mulches decay they add organic matter into the soil. Organic mulches need to be applied at the minimum of 3-4" deep around trees and shrubs and 2-3 " deep around perennial plants.

■ Artificial mulches are usually plastic and come in various forms and thickness. Only a porous interwoven type should be used which allow aeration and the transfer of moisture from under the mulch. Plastic mulches collect excessive moisture under the mulch and soils become water logged. Using both organic and artificial mulches together increases the waterlogged condition and death of plants.

- Rock can provide an attractive contrast in the Landscape when used proportionally and with taste. Natural rock types occurring within the immediate area add to the attractiveness in the landscape. Excessive amounts of rock can build up heat in the soils around plants and scorch or cook plants. This defeats the purpose of xeriscaping, the well-being of plant materials and the attractiveness of the total landscape. The use of variable size rocks from pea rock to large boulders can be used together in a naturalistic design as a dried creek bed.

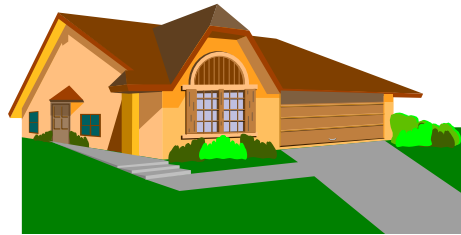
7. Efficient Irrigation

When you set up planting zones in your landscape, the irrigation system should be appropriate for the landscape design and the frequency of watering required.

- Tree, shrubs, flowers and ground covers can be watered efficiently with low volume drip emitters, micro-sprayers and/or soaker hose.
- Turf areas that require more water should be a sprinkle irrigation delivery system, separate from the lower water use zones.
- Lower pressure sprinkler heads are more efficient in the delivery of water with less fogging or misting that moves in a straight breeze.

--- Automatic rain sensor has a cup that collects rainwater and interrupts the irrigation cycle. As the collected water evaporates the irrigation cycle is continued.

STEP 3: PROPER MAINTENANCE



All landscapes require maintenance, even low maintenance landscapes. Xeriscapes promise lower water use, but also brings along lower maintenance. There is also a change in work loads associated with Xeriscape. Instead of spending time mowing the lawn there is a need to deadhead perennial flowers. There are educational materials available from NDSU Extension service on most gardening practices. Below is a list of several maintenance activities that are required for an efficient Xeriscape.

Turf

- A. Mow grass at a 1-2 inch height in the spring to warm up the growing points of the grass. In mid-June, raise the mowing height to 3-4 inches to allow less injury and quicker recovery. In September return to the of 1-2 inch height.
- B. Use a slow-release fertilizer can be better for the grass plant and less mowing.
- C. Use of a mulching mower will allow for better moisture retention and less water needed. Core aerate your yard once a year to lessen thatch build up.

Trees, Shrubs, and Perennial Plants

- A. Apply a root starter fertilizer during the first growing season. Fertilizers, watering, and cultivation will get your new plants off to a good start. Use a slow release fertilizer for perennial plants after the first season. Fertilize trees and shrubs only every 5 years or as needed.
- B. Deep watering is the key to a well-rooted healthy tree or shrub. Fertilizations are important when applied at the dripline of trees by using a root feeder 8-10" into the ground. Precalibrated fertilizer tablets are available for shade trees, evergreens and fruit trees.
- C. The object of pruning is to maintain the desired shape and size and to remove dead and diseased branches. Be sure wounds larger than 1" are covered with tree dressing to inhibit insects and disease.
- D. Inspect for insects or disease. When you identify a spreading pest problem, have the problem identified and find out the best control measures. Contact Fargo Forestry (241-1465) for tree pest identification and Cass County Extension Horticulturist (241-5707) for plant pest identification and control recommendations.

- E. Weed control should be minimized with the use of mulches, but they will periodically still occur. To control the spread of aggressive weeds, spot treatment may be required with selective herbicides.

More Xeriscaping Tips

• Terracing slopes will cut down on water runoff. Plant groundcover or spreading plants on slopes to reduce soil erosion and eliminate mowing.

• Frequent watering near your foundation can damage it. Be sure to plant shrubs away from the foundation and create a slope that takes water away from it.

• Tree shade lowers air and soil temperature. Evergreens are natural wind screens, while large deciduous trees provide summer shade.

• Mulches are multi-purpose performers in your landscape. They not only reduce water needs, they also hold down weeds and separate your dog's paws from the mud!

ADAPTED PLANTS THAT USE LOW AMOUNTS OF WATER



Very Low Water Zone should be the driest place in your yard, perhaps a hard to get at corner that requires a water hose. Relative to traditional landscaping, this zone provides the greatest water savings. You'll need to irrigate while your plantings get established. Once established however, this zone will require little, if any, additional irrigation water other than rainfall. Many shrubs, trees and ground covers do well in this area, while providing color and texture. Here are a few examples you might want to investigate further. They require 8-14" of water between May and October.

Trees: Russian-olive, bur oak, ponderosa pine, Rocky Mountain juniper

Shrubs and Climbers: Various peashrubs(*Caragana* spp.), Various Honeysuckle(*Lonicera* spp.), shrubby cinquefoil(*Potentilla* spp.) Savin and Pfitzer junipers(shrubby, spreading, low and creeping forms), Virginia creeper/woodbine,

Background & Mid-Size Perennial Plants(2-5 ft): Various yarrows, Siberian and spuria Iris, Prince's plume, Yucca(species- glauca only), musk mallow, little bluestem grass, feather reed grass, switch grass, Indian grass, Various Penstemons , rabbitbush, etc

Low Growing & Ground Covers(under 2 ft): Silver brocade Artemisia, prairie coneflower, various stonecrop (*Sedum* spp.), blue fescue grass, ornamental fescue grasses, various Penstemons, Creeping juniper, Common juniper, Creeping Savin juniper,

Low Water Use Zone include areas where irregular watering is required depending upon rainfall. Plants growing in this zone require more water than is available from natural precipitation. In planning this zone, take advantage or runoff from down spouts, driveways and patios to provide water. During very dry periods, supplemental irrigation may be necessary(14 to 18 inches between May and October.

Trees: Hardy varieties of apple and flowering crabapple, pin cherry, Manchurian apricot, Japanese tree lilac, Amur and Tatarian maple, Manchurian ash, Cathedral and Japanese elm, hackberry, Ohio buckeye, mugo and Scotch pine, Black Hills and Colorado spruce.

Shrubs and Climbers: Nanking cherry, Cotoneaster, golden currant, Meadowlark forsythia, Amur honeysuckle, dwarf palibin and late lilac, smooth and skunkbush sumac, redleaf, rugosa and other hardy roses, Vanhoutte spirea, wayfaring tree and nannyberry viburnums, shrub mugo pine.

Background and Mid-Size Plant (3 plus feet high): Purple coneflower, blazing star, bleeding heart, blue false indigo, anise hyssop, Russian sage, fireweed, oriental poppy, hardy daylilies, ostrich fern, gooseneck loosestrife, perennial flag, Queen-of-the-Meadow, gloriosa daisy, goldenrod.

Low Growing Perennial Plants and Ground covers (Less than 3 feet high): Chives, pink nodding onion, pearly everlasting, tarragon, Basket-of-Gold(Aurina), Goblin gaillardia, various bellflowers(Campanula), various pinks(Dianthus), Maltese Cross and Rose Campion, Snow in Summer, various cranesbills and Geraniums, spuria and blue flag Iris, spotted dead nettle, various thyme, Lily of the Valley, sea thrift (Armeria), variegated ribbon grass, snowdrop Anemone, red fescue, sideoats grama grass, Blue grama, buffalo grass.

Moderate Watering Zone should be the place closest to water source or runoff and requires more regular watering between rainfalls. This area requires regular monitoring to prevent wilting in drier periods. Micro climatic conditions such as shaded area, areas of extra runoff or water from down spouts can be utilized in providing the needed moisture. In wet periods these plants are relatively maintenance free. These plants require 14 to 20 inches of moisture from May to October.

Trees: Manchurian apricot, Ohio buckeye, green ash, hackberry, various apple varieties, linden or basswood, cottonwood, quaking aspen,

Shrub and Climbers: American cranberrybush (Viburnum), red osier and Siberian dogwood, staghorn and smooth sumac, Montgomery bush spruce, Jackman and solitary clematis.

Background and Mid-Size Perennial Plants (2 plus feet high): fernleaf tansy, Siberian Iris, Marshalls' Delight beebalm, various Hardy Hosta, Connecticut and Enchantment lilies, common peony, big bluestem grass, various columbines, gas plant.

Low Growing Perennial Plants and Ground Covers (Less than 2 feet high): Clara Curtis chrysanthemum, Virginia bluebells, maiden pink, blood-red geranium, western blue flag, various Hardy Hosta, wideleaf sea lavender.