



Managing Iowa Acreages

U.S. Department of Agriculture
 **NRCS** Natural Resources
Conservation Service

Helping People Help the Land

www.ia.nrcs.usda.gov



www.agriculture.state.ia.us

Congratulations . . . you just bought yourself a nice piece of property in the country. Or you are at least seriously considering it. If you've never lived on an acreage, you probably have a lot of questions and are not sure where to go for the answers.

Questions like: How do I take care of this pond? How do I best take care of all this yard? Can this property support a few horses? What are the fencing laws in this area? Now that I have all this property, what's the best way to manage it? Are those pretty flowers really noxious weeds that are threatening the productivity of my land and my neighbor's?

As you've probably begun to figure out, there's a lot to know about owning and managing land. This booklet will get you started on some key land management issues and direct you to other resources for more help.

Where to begin

Start by looking at what you have. Make a sketch and a few notes about your property. In your sketch, show property boundaries, fences, buildings, wells, septic system, streams, ponds or wetlands, bare ground, weeds, lawn, pasture or cropland, trees or shrubs.

Identify your goals

What do you want to do with your acreage? Graze livestock? If so, what kind and how many? Do you want an attractive spot for wildlife? If so, what kind? Good water quality for fishing? Restoring prairie? Something else?



Then you need to ask yourself, can this land support your goals? You may need some assistance from the local Soil and Water Conservation District (SWCD) or USDA-Natural Resources Conservation Service (NRCS) office (found in blue part of the phone book or at <http://offices.sc.egov.usda.gov>) to help you identify the productivity limitations of your property.

Once you've decided on your realistic goals, you'll need to develop a management plan for reaching them. Again, that's where the local SWCD and NRCS come in. Even if you like things just the way they are on your property, you will need to do something for weed control or protecting water quality. This booklet, as well as the local conservation experts, are here to help you develop the different aspects of your management plan.

Who is NRCS? The Natural Resources Conservation Service (NRCS) is an agency of the U.S. Department of Agriculture. Since the aftermath of the Dust Bowl, our main charge has been to help private landowners identify natural resource concerns, and put together a plan for repairing and protecting the resources on their property. Those who know us typically think we only work with farmers, but NRCS also works with cities and counties, non-profit groups and businesses, schools and other conservation groups throughout Iowa.

Who is IDALS-DSC? The Iowa Department of Agriculture and Land Stewardship—Division of Soil Conservation (IDALS-DSC) is responsible for state leadership in protecting and managing soil, water and mineral resources in Iowa. We assist soil and water conservation districts and private landowners to meet their agricultural and environmental protection needs.

Managing Iowa Acreages

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Retain Your Rain

So you've made that move to the country. You've no doubt designed a home-
stead that is comfortable, functional and adaptable to lifelong needs. You have
established systems for water, electricity, mail delivery and have a septic system
design. You may have developed an outdoor living area which includes a deck
or patio, planned your driveway, and even constructed an outdoor burning and
recycling system.

But have you developed a storm water management plan? The average rainfall in Iowa is 32 inches per year. What does that mean for your acreage? A one-inch rain event on one acre of land is 27,150 gallons of water that somehow needs to be managed. Multiply that one-inch rainfall by 32 inches per year and you have 868,844 gallons of water falling on just one acre of your property. Developing a storm water management plan will help ensure that your property remains the beautiful setting you designed.

What can you do?

Now is the time for you to take responsibility for the rain that falls on your property. In urban areas, storm water is traditionally directed to surface waters via storm sewers, mainly to control flooding. On your acreage, however, the main objective should be to protect water quality. That can be accomplished by:

- Retaining water on-site.
- Mimicking the hydrology of the native ecosystems.
- Infiltrating more rainfall.
- Shedding less water to surface waters.

In Booneville, Iowa, a traditional grass lawn filters storm water to native plants and grasses, slowly releasing water to a rock chute retention basin.





Practices you can adopt to allow water infiltration:

Restore Soil Quality. This refers to the ability of soil to perform its functions. Soil is important in managing storm water runoff and in supporting trees, shrubs, lawns and gardens. To maintain soil quality, it is important to not leave the soil bare, exposed to wind and water, which causes erosion. Compaction is another aspect of soil quality. Lack of pore space in the soil reduces water intake and movement through its layers. Increasing and maintaining organic matter content is the other key aspect of soil quality. Organic matter gives the soil the ability to absorb and hold rainfall so it can infiltrate into the soil. To restore soil quality:

- Increase organic matter content in the soil. Compost, or decomposed organic material, is a great source of organic matter.
- Establish vegetation to cover bare soil.
- Use native landscaping strategically to manage rainfall and diversify the landscape. Natives have a deep root architecture that increases infiltration.
- Perform deep tillage or deep tined aeration, if you have compacted soils.

Rain Gardens. Rain gardens are concave gardens landscaped with perennial flowers and native vegetation that soak up rain water. They are strategically located to capture storm water runoff. Rain gardens fill with a few inches of water after a storm and then water filters into the ground.

Bioswales. Bioswales are areas of native vegetation that can take the place of road ditches or low-lying areas in your yard. They have the

ability to infiltrate low flow events, but can also convey high flow events. Deep-rooted native plants will allow for better water infiltration. Before planting native vegetation in road ditches, contact a roadside vegetation manager or county engineer, since road ditches are usually state or county property.

Perform a Rain Water Audit

Become familiar with the amount of water that falls on your property and how much runs off during an average rain event. Fill out a rain water audit at www.jcswcd.org.

The rain water audit asks a series of questions about your property, including size, layout, lawncare practices and vegetation. Once you have familiarized yourself with landscaping features that can improve water quality and quantity, you can then return to the rain water audit and run the model with your new features in place.

More Info Online

More information about infiltration-based conservation practices can be found on the Iowa NRCS website. Visit www.ia.nrcs.usda.gov/features/Backyard.html online to see fact sheets, success stories and photos of rain gardens, bioswales, native landscaping and other practices.

Rain Garden



Low-Maintenance Lawns

Many acreage owners are looking for simple, lost-cost ways to maintain their lawn. There are several ways to reduce the time, cost and environmental impacts of your lawn. This may include choosing a low-maintenance lawn, reducing the size of your lawn, or doing both.

Conventional lawns can be a lot of work, and the practices needed for upkeep of conventional lawns can have adverse impacts on the environment. These include:

- Increased water consumption due to watering.
- Increased air and noise pollution from gas-powered mowers, trimmers and other equipment.
- Pesticide use causes potential risks to health and the environment.
- Applied fertilizers can leach into groundwater and enter streams and lakes through storm water runoff.

What is a Low-Maintenance Lawn?

Low-maintenance lawns are made up of a diverse mix of hardy, drought-tolerant, slow-growing and low-height turf grasses, fescues, and wear-tolerant broadleaf species. A sampling of these grasses includes Blue Grama, Sideoats Grama, Little Bluestem, Buffalo Grass, Fescue varieties and Prairie Dropseed. These species require less mowing, fertilizing and watering than conventional lawn species. Without mowing, Buffalo Grass grows to only about four to five inches, while Prairie Dropseed may be up to three feet tall. For maximum benefit, select a mix of species that are suited to your needs, climate, soil type, soil pH (acidity) and the amount of sun or shade.



This Dallas County acreage incorporates native grasses, trees and shrubs.



One drawback of a low-maintenance lawn is appearance. A low-maintenance lawn typically appears less uniform than a conventional lawn. Is a less-than-perfect lawn appearance worth the savings in time and costs, and the gain in environmental benefits for you?

Reduce the Size of Your Lawn

A great way to reduce the size of your lawn is to establish native grasses, plants and trees. Steep slopes and small or narrow areas are the best places to replace conventional turf grass with native plants and grasses. Replace areas that you don't use for recreation or other purposes with natives.

Natives have a root architecture that increases soil organic matter, builds soil quality and helps retain and infiltrate storm water. They save time and money by eliminating or significantly reducing the need for fertilizers, pesticides, watering and lawn equipment. Consider devoting 30 percent or more of your lawn to native landscaping and, if possible, direct runoff toward native landscaped areas. Some nurseries offer seed mixes featuring lower growing native species (4 feet or less) with a more uniform appearance. For more information about establishing native landscapes, refer to "Seeding Native Landscapes" at www.ia.nrcs.usda.gov/news/brochures/publications.html.

Iowa Stormwater Management Manual

Another reference guide is the Iowa Stormwater Management Manual. Find this online at www.ctre.iastate.edu/PUBS/stormwater/index.cfm. Click on "2E-6 Native Landscaping" for information on native turf lawns.

Plant Native Trees and Shrubs. Another way to reduce the size of your lawn is to plant native trees and shrubs. Native trees and shrubs are adapted to Iowa's extreme weather, less likely to be stressed than non-natives, more resistant to insects and disease, and they increase wildlife habitat. They also provide similar environmental benefits as native plants and grasses, such as reducing soil erosion, cutting energy costs and improving water quality.

For well-drained sites, examples of native trees that we recommend include: red, white, black and bur oak, black cherry and walnut. On wetter sites, plant silver maple, cottonwood, sycamore, swamp white oak and pin oak.

Another way to reduce your lawn size and, at the same time, provide shelter for your home, is to establish a windbreak or shelterbelt—a linear planting of multiple rows of trees or shrubs. Windbreaks are a benefit in reducing energy costs. The shelter they provide can reduce winter heating and summer cooling costs by up to 40 percent. Windbreaks can serve as living snow fences to protect your homes, driveways, livestock or roads from snow drifts, and they benefit acreage owners by reducing soil erosion and attracting wildlife.

For a complete list of trees and shrubs, go online to www.ia.nrcs.usda.gov/plants.html and click on "2007 Iowa Woodland Suitability Recommendations."

NRCS can help you decide what trees to plant on your acreage.



Windbreak



Buffer Your Banks

If you have a pond, lake, stream or other surface water on your property, it is important to keep that water clean. Reduce sediment, organics, nutrients, pesticides and other contaminants from running off into and polluting water.

The space alongside streams, lakes and wetlands is called a riparian area. Areas of vegetated land adjacent to water that intercept undesirable contaminants from runoff before they enter the water are called **riparian buffers**. Riparian buffers help control pollution and improve water quality. They are the native grasses, trees and shrubs that grow along the water's edge that control erosion and help keep water clean.

Native plants and grasses have deep root systems that help absorb storm water pollutants,

and assist in bank and slope stabilization. Try to commit at least 10 feet of space along the water's edge to riparian buffers. Generally, wider riparian buffers provide better wildlife cover and better fish habitat.

Buffers should serve as a final filtering out of sediment, fertilizers, pesticides and other pollutants before runoff enters the water. Upland, infiltration-oriented practices, such as native landscaping, soil quality restoration, rain gardens and bioswales should infiltrate much of the initial runoff.



The combination of native trees, shrubs and grasses in this riparian buffer reduces sediment and other pollutants entering the stream.



Above is before and after a riparian buffer was constructed along Bear Creek in Story County. The buffer on the right was established about four years at the time of the photo. The photo on the left was taken before trees and vegetation were established.

Benefits of Buffers

- *Improve fish and wildlife habitat.* Although riparian areas comprise a small portion of the landscape, they represent critical habitat for a diverse range of living creatures, including wood ducks, songbirds, frogs, insects and a variety of aquatic organisms. Keeping these areas healthy with good vegetation will provide food and cover for wildlife.
- *Reduce flooding and soil erosion.* Riparian buffers reduce erosion by slowing water movement, helping to stop embankments from cutting and eroding.
- *Reduce water pollution.* Healthy riparian areas filter out sediment, fertilizers, pesticides, pathogens, and other potential pollutants from streams and rivers.
- *Allow the soil to hold more water.* Native vegetation holds more water in the soil, slowly releasing it for longer season stream flows and groundwater recharge.

Stabilize Stream Banks

Without the proper vegetative protection, stream banks begin to down cut and become vertical, bare banks. When stream banks are too bare and vertical, water levels tend to bounce up and drop back down, sawing at the toe of the vertical bank, causing heavy soil erosion, polluting water, covering fish habitat and threatening property. Bare stream banks do not benefit as much from buffers, either.

To stop downcutting of a stream bed, a structural approach may be needed. Stream banks may need to be sloped back to a stable angle (3:1 or flatter); the toe—which lies at the bottom of the slope and supports the weight of the bank—needs to be armored; and then deep-rooted native plants and grasses need to be established on the banks.

If you have a pond that needs buffered or a stream that needs buffered or repaired, contact your local USDA-NRCS office for information about pond and stream protection options.

Protect Your Pond

Whether your pond was built to stop gully erosion, provide water for livestock or become a great fishing hole, it is now your job as a pond owner to maintain it. A pond has a natural ecosystem. When managed properly, it can offer wonderful recreational and environmental benefits, but when the natural balance is disrupted it can be an unsightly eyesore.

Pond maintenance involves inspecting different areas of the pond on a regular basis for signs of erosion, structural integrity, water quality decline, wildlife damage and aquatic weed control. Complex problems, such as a leaking pond, may require the assistance of a licensed engineer.

The spillway and the dike, or dam, are the two most significant features which need regular inspection. The spillway guides water to an area where flow won't compromise the dam or other pond structures. This structure is key to preventing failure of the dam. When inspecting the spillway (and the dam), make sure there is no woody vegetation. The root systems can weaken the structure. You'll also want to check for damage caused by burrowing animals.

Monitor the dike or dam for unusually soggy ground near the base, muddy water seeping through the dike, rills (long channels in the soil), soil slumping down the dike and wash-outs. Also, water can seep along the outside of a spillway pipe, carrying away soil and creating a hazard.

You should also closely monitor the pond for bank erosion. An unexpectedly heavy rain or spring thaw can intensify a small erosion problem without warning. Steep shores without vegetation can erode to cause cloudy water conditions and pond silting.

Pond owners should check the dike and side of ponds carefully several times a year. Establishing good grass cover helps prevent ero-

This pond is protected by native plants and grasses that absorb heavy rainfall and filter out pollutants before they can enter the pond.





sion on the exposed areas near and around a pond. Fill eroded areas and re-seed or place sod over bare soil. The roots will retain and stabilize the soil. If needed, use a temporary seeding of rye grass or other quick growing cover if it's too late in the year for good grass establishment.

Depending on location, pond water may have a natural green, olive or brown color. If you are concerned about cloudy water, it is important to determine the cause. Possible causes include shore erosion and runoff from nearby land, algae or plankton. Fill a tall jar with the cloudy pond water and inspect it under bright light. Algae or plankton will appear as green flecks or tiny moving organisms. If the cloudy conditions settle after a few days, the pond likely has a siltation problem.

Pond plants provide many benefits, including prime fish habitat, shade, erosion control, oxygenation and scenic beauty. Become familiar with the plants in your pond and determine if or when a plant is overabundant. If plants are interfering with common uses of a pond (fishing, swimming or irrigation), they should be identified and treated.

Many methods of aquatic weed control are available. Before selecting a treatment, determine if excess nutrients are entering the pond from a septic tank, agricultural operation or treated lawn. Substances like nitrogen and phosphorus create algae blooms and excessive plant growth. Nutrient sources should be controlled through careful management and/or buffers before implementing aquatic weed treatment, like weed pulling, herbicides or other environmental controls.

Floating weeds like duck weed and algae masses can be removed from the surface with a skimmer or rake. Aeration is an eco-friendly,

cost-effective, preventative and maintenance measure for these issues. Bottom barriers, hand-pulling of root systems and grass carp can be used to reduce submerged plant growth. Additionally, most ponds can be partially drained in the winter to kill aquatic weeds near the shoreline without disrupting fish and wildlife. However, carefully consider the pond depth to avoid winter kill of fish.

Want to Build a Pond?

Not all acreages are suitable for a pond. If you are interested in building a pond on your property, here are a few considerations:

- The site must be suitable in terms of soil and geology to hold water.
- The source of the water must be adequate.
- The pond must be properly managed.

Visit your local USDA-NRCS office to speak with a conservationist about building and managing a pond.

Pond Maintenance Checklist

After storms or heavy rains:

- Inspect dike for erosion and leaking.
- Inspect quality of water entering the pond and reduce nutrient input, if present.

Monthly:

- Assess presence of pond plants; excessive growth typically occurs in mid- to late-summer.
- Maintain mown grass to stabilize dike; remove woody vegetation from dike.
- Check water temperature for fish habitat.

Seasonally:

- Inspect for wildlife damage.
- Repair or replace safety signs.
- Catch fish to determine population health.
- Inspect spillway for stability.
- Inspect fencing to restrict livestock from entering water.

Annually:

- Assess silting or changes in pond depth.
- Record maximum/minimum depths.
- Check water pH and adjust for fish habitat.

Productive Pastures

Sipping your morning coffee while overlooking a fog-drenched pasture is one of the benefits of owning your own scenic vistas. However, like the other features of your new acreage, it needs some attention to keep it properly maintained. How it's managed depends on how you intend to use it. Do you want horses? If so, how many? Do you have enough pasture to support your horses? Are you going to use it for wildlife habitat? Recreation? Something else?

If you intend to raise horses you should know the following:

- Pasture management for grazing is part art and part science. Regardless of all the tools available to you, your visual observation of the condition of your pasture before, during, and after grazing will lead to proper utilization of this valuable resource.
- A mature horse consumes 1.5-3 percent of his weight in forage dry matter each day.
- Cool-season grass species grow best during early spring and early fall.
- Warm-season grasses begin to grow in late spring.

Horse Pasture Needs

If the major nutrient source is pasture, a 1,000-pound horse consumes approximately 3,600 pounds of forage dry matter during a typical six-month grazing season. Thus, with average management, it would take about 2 to 3 acres of good pasture to meet the nutrient needs of a mature horse. Young horses can get by on less area, but realize they should be heavily supplemented to ensure appropriate growth and development.



Grass growing on this Dallas County pasture is low enough that the horses are nearly ready to be moved to a new cell.



Grazing Management

The timing of grazing has a long-term impact on your pasture. Grazing too early in the spring can reduce the yield potential of your pasture and is the most common pasture management mistake. Allow grass to grow before grazing a horse. This grass growth varies depending on the grass species. For example, allow brome and orchard grass to grow to a height of 6 to 8 inches before grazing is initiated.

To best protect your pastures from erosion and provide the most nutritional value for your horses, you should implement a rotational grazing system by dividing your pasture into cells. After a cell is grazed, move the animals to a fresh cell while the grazed cell rests and regrows. Allow the pasture to rest for at least 30 days or until the grass regrows to the original height. One good rule of thumb is that a horse should not remove more than 50 percent of the forage before rotating to a new cell.

Nutrient Management

A 1,000-pound horse can generate about 9 tons of manure per year. This is enough fertilizer for 1 to 2 acres of pasture. If manure is allowed to accumulate in piles, it will attract flies, harbor parasites and pathogens, generate offensive odors and create a pollution hazard. Rotational grazing is a pasture management technique that can be used to minimize manure build up and the cost of handling. To maximize pasture production, drag or harrow the pasture to break up the droppings

and more evenly spread the manure. Horses should not be placed in a pasture that has just been dragged, as dragging spreads parasites over a wider area of the pasture. The manure should be allowed to dry and start decomposing (during the summer about one day) before placing horses on that pasture. In rotational pastures, dragging after moving animals to the next paddock works well. To protect water quality and the environment, horses should not have free access to lakes, ponds, waterways or wetlands.

Implementing the Plan

Pasture management is more than just moving livestock from one pasture to another. It involves choosing and managing forages, soil fertility, fencing, water development and distribution, and much more. This booklet just highlights some of the first questions you need to ask yourself when developing your plan. You'll need to check with a grassland specialist or soil conservationist for help developing your pasture management plan.

Profitable Pastures

More detailed pasture management information is included in the Iowa NRCS publication *Profitable Pastures*. You can request a copy from your local NRCS office or download an electronic copy from <ftp://ftp-fc.sc.egov.usda.gov/IA/news/pasture-book2.pdf>. You should also check with your local NRCS office to see if there is financial assistance available for improving your pasture management through USDA programs like the Environmental Quality Incentives Program (EQIP).

Rural Responsibilities

What You Need to Know as a Rural Landowner	Who to Contact	Contact Information
Building Codes and Permits. Before building, contact your city or county planning department for zoning requirements and permits.	<ul style="list-style-type: none"> • City/county planning • Local building official • Iowa Department of Natural Resources (DNR) 	<ul style="list-style-type: none"> • 515-281-4736 (*NPDES Permit)
Buried Utilities. Iowa law requires that you contact the Iowa One Call notification system at least 48 hours prior to excavating.	<ul style="list-style-type: none"> • Iowa One Call 	<ul style="list-style-type: none"> • 1-800-292-8989
Fence Laws. Fences are the joint legal responsibility of two adjoining landowners.	<ul style="list-style-type: none"> • County recorder • Iowa Attorney General 	<ul style="list-style-type: none"> • 515-281-5351
Floodplain Protection. Permits may be required for work within a 100-year floodplain. Insurance and financing may be restricted.	<ul style="list-style-type: none"> • County planning/building • Iowa DNR 	<ul style="list-style-type: none"> • 515-281-5918
Open Burning. Permits may be required in sensitive areas. Bans may occur during fire hazard or air pollution periods.	<ul style="list-style-type: none"> • Local fire department • Local city/county ordinances • Iowa DNR 	<ul style="list-style-type: none"> • 515-242-5100
Septic Systems. Counties approve soil suitability, design and installation. Permits may be needed for repair and replacement of older systems.	<ul style="list-style-type: none"> • Local planning/building official 	
Stream Bank and Wetland Protection. Permits are required to fill, drain or dredge water areas, and to modify stream channels, stream banks or wetlands.	<ul style="list-style-type: none"> • Local USDA-NRCS office • Local SWCD 	http://offices.sc.egov.usda.gov
Trash Recycling and Disposal. Locate licensed landfills, private trash disposal companies and recycling. Burning or burying household trash on private land is not allowed.	<ul style="list-style-type: none"> • Recycling centers • Local garbage disposal companies • Licensed landfills 	
Water Quality. You are responsible for managing manure, erosion, pesticides and fertilizers to protect surface water and groundwater quality.	<ul style="list-style-type: none"> • Local USDA-NRCS office • Local SWCD • Local ISU Extension Office 	http://offices.sc.egov.usda.gov www.extension.iastate.edu

* A permit is required before discharging storm water from any construction activity that disturbs one acre or more of land. The permit is part of the National Pollution Discharge Elimination System (NPDES) permit program. More information about the program can be found at www.iowadnr.com/water/npdes/about.html.

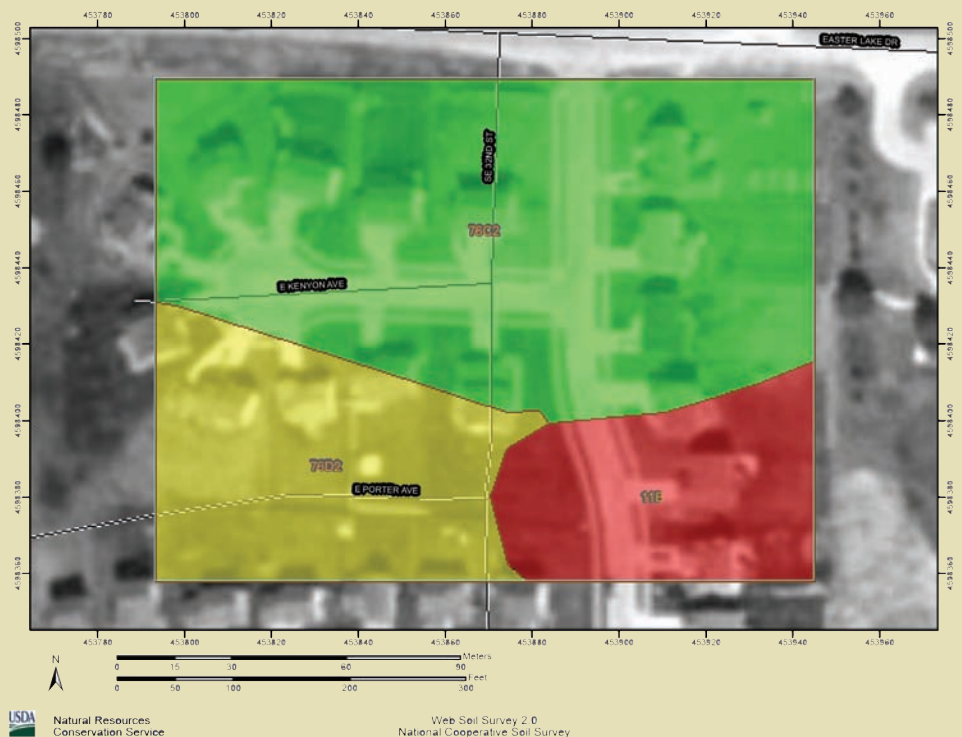
What You Need to Know as a Rural Landowner	Who to Contact	Contact Information
Water Rights. A permit is needed for commercial or industrial use of more than 5,000 gallons of water per day, more than one acre irrigated and for ponds.	<ul style="list-style-type: none"> • Iowa DNR 	www.iowadnr.com/water/wse/allocation.html
Weed Control. Noxious weeds crowd out forage and destroy wildlife habitat. Eradicate these invasive and destructive plants.	<ul style="list-style-type: none"> • Local weed control officer • Local ISU Extension Office 	www.extension.iastate.edu
Wells. As a private well owner, it is your responsibility to ensure that all well services are performed according to Iowa law.	<ul style="list-style-type: none"> • County sanitarian • Iowa DNR 	<ul style="list-style-type: none"> • 515-725-0337
Wildlife Protection/Endangered Species. The law protects threatened and endangered species. Your land management may be affected if these species are present.	<ul style="list-style-type: none"> • Local Audubon Society • U.S. Fish and Wildlife • Iowa DNR 	www.iowaaudubon.org www.fws.org/midwest www.iowadnr.com/wildlife/index.html

Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov>)

For information about soils in your area, visit the Web Soil Survey. Detailed soil maps are available for every acre in Iowa. With a few clicks of the mouse, you can obtain soil suitability ratings for building dwellings with or without basements, septic tank absorption fields, lawns and landscaping, pond construction and a variety of other considerations useful to rural lifestyles.

Soil Suitability Ratings

- Indicates soils are suitable for specified use
- Indicates soils are somewhat suitable for specified use
- Indicates soils are not suitable for specified use



**Sample Lawn and Landscaping
Soil Suitability Map**

Sources

The following sources contributed to this publication:

- *Tips On Land and Water Management for Small Acreages in Oregon*. Oregon Association of Conservation Districts. Washington County SWCD.
- *A Citizen's Guide to Maintaining Storm-water Best Management Practices*. Lake County, Illinois.
- *Rural Living...A Guide for South Dakota Rural Homeowners*. South Dakota NRCS.
- *Pasture Management for Horses on Small Acreages*. Colorado State University Extension.
- *Farm Pond Maintenance Routines*. Cornell Cooperative Extension.
- *Low-Maintenance Lawns*. John Deere Homestead Magazine.
- *Living On Acreages...What You Need to Know*. MidWest Plan Service. ISU.
- Iowa Department of Natural Resources
- Iowa Department of Agriculture and Land Stewardship-Division of Soil Conservation
- Iowa State University Extension
- Johnson County Soil and Water Conservation District

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