

2018 Stormwater Public Education and Outreach Program Summary

Section 1- Public Education and Outreach

Stoughton is a member and actively participates in MAMSWaP (Madison Area Municipal Storm Water Partnership) with specific interest in broadening our Public Information and Education Outreach message.

Through MAMSWaP: we have 259 Facebook followers. As part of the PlantDane program we sold 9,169 plants to 283 participants and 1,332 plants were donated for civic projects. The Leaf-free Streets program issues rain text alerts to 350 people. The Storm Drain Art Program painted 20 locations; 2 in Stoughton. A rain garden workshop was conducted with 28 participants. The winter salt training session had 42 participants.



Lawn & Garden Pesticides

A SERIES OF WATER QUALITY FACT SHEETS FOR RESIDENTIAL AREAS

Pesticides are chemicals used to kill or repel pests. Pesticides include herbicides (which kill plants), insecticides (which kill insects) and fungicides (which kill fungi).



This fact sheet describes a variety of non-chemical methods of pest control. It also provides tips for using pesticides in an environmentally sound way. In virtually every case, non-chemical methods should be tried before resorting to pesticides.

The pesticides used in a yard are poisons and may pose a health threat to the person applying them if not handled carefully. They also pose a threat to animals, plants, and insects beyond the intended pests. Honeybees are an example of non-target organisms. They are very susceptible to many household pesticides such as carbaryl (Sevin) and chlorpyrifos. Other non-targets include ladybird beetles, which are a natural biological pest control, and fish, which can suffer direct poisoning from the household insecticides permethrin, resmethrin, pyrethrin, and rotenone washed into a stream or lake.

Until recently, groundwater was thought to be immune from the many chemicals used on lawns and gardens. However, contamination may occur when polluted surface water moves through the soil to the water table.

Integrated Pest Management

When we see weeds or insects invading our favorite plants, our first response is often to apply a pesticide. Some people even apply a pesticide to prevent invasions by pests. Both of these automatic responses lead to unnecessary pesticide use. A better approach is Integrated Pest Management (IPM).

IPM is an ecological approach to pest management that integrates cultural, mechanical, biological and, as a last resort, chemical control methods.



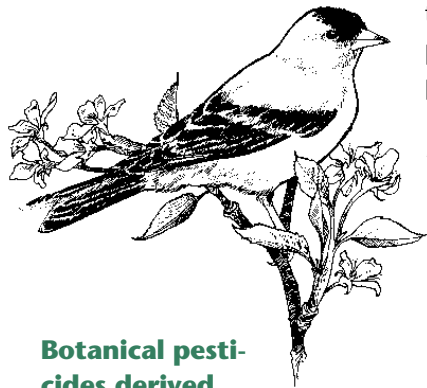
Steps to Follow in Integrated Pest Management:

- 1 Learn about plants and their pests.
- 2 Select the right plants for the location.
- 3 Frequently inspect plants to see if pest levels are increasing or decreasing.
- 4 Identify pest symptoms. Knowledge of pests, their life cycle, and the damage they cause is essential for effective pest management.
- 5 Determine if control measures are really needed. For example, this can be determined by counting the number of insects present and looking carefully at the amount of damage they are causing. Most plants can

- 6 tolerate a considerable amount of feeding by insects before any serious damage occurs.
- 6 When treatment becomes necessary, select methods that are least disruptive to natural controls and least hazardous to human health and the environment. Start with cultural, mechanical, or biological controls.
- 7 Evaluate your treatment to see which methods worked best.

For details on pest control methods, see inside...





Botanical pesticides derived from plants (such as rotenone, nicotin, ryania, pyrethrum, and sabadilla) are not any safer to people or non-target organisms than many synthetic insecticides. They are, however, short-lived and break down quickly in the environment.

CULTURAL CONTROL

Cultural pest control methods attempt to create optimal growing conditions for plants and unfavorable conditions for pests. Methods include:

For Gardens ...

- Select disease-resistant varieties.
- Plant varieties adapted to the geographic and soil conditions.
- Maintain a rich, fertile soil, with the proper pH for the plants being grown.
- Rotate plants to disrupt the life cycle of pests (called crop rotation).
- Plant and harvest early to promote healthier, stronger plants and avoid peak insect populations.
- Remove pest-infected plant residue in the fall.
- Plant a wide variety of crops to reduce potential pest problems.
- Evaluate the availability of sunlight and water. Most garden plants need plenty of each to help control pest problems.

For Lawns ...

Proper mowing heights are important. Set the mower to cut at 2 to 2½ inches. Mow often, each time the grass reaches 3 to 4 inches. (It's important not to cut more than one-third of the height.) On troublesome spots, remember that improper light, moisture or soil conditions discourage good turf. Use of shade-tolerant grasses, bringing in topsoil, or switching to alternative groundcovers may be the answer.

BIOLOGICAL CONTROL

Numerous organisms feed upon or infect insect pests. These biological controls frequently prevent the insect population from reaching damaging levels. Three types of natural enemies are:

- Predators – such as ladybird beetles, ground beetles and birds that consume many pests in their lifetime.

- Parasites – such as the trichogamma wasp, which will generally consume one individual insect pest during its own lifetime.
- Pathogens – such as fungi, bacteria, and viruses which infect many insect pests simultaneously.

Minimizing the use of pesticides on lawns and gardens allows these natural enemies to thrive, helping to keep pest populations in check.

MECHANICAL CONTROL

- Practice the vanishing art of hand-weeding. When health, expense, environmental consequences, and even time are considered, small problems with lawn weeds are handled in no better way.
- Till the soil in weedy areas, rather than using herbicides.
- Like hand-weeding, a few large insects (such as certain caterpillars) may be easily removed by hand in little time.
- Use mulches to reduce weed problems, conserve moisture, and prevent soil erosion.

CHEMICAL CONTROL

When you have accurately identified a pest in damaging numbers (above the plant's tolerance threshold) and other controls have failed or are impractical, carefully choose a pesticide. Pesticides are usually effective only during certain stages of a pest's life and at specific concentrations. If possible, select a pesticide that is designed to kill only the insects, weeds or disease organisms causing the damage. Less toxic pest control products include:

- Microbial insecticides – Those derived from microorganisms such as *Bacillus thuringiensis*.
- Inorganic insecticides – Some oils and soaps kill pests on contact and pose little threat to the environment. Insecticidal soaps destroy pest membranes and are effective against soft-bodied insects.

PESTICIDE APPLICATION

Use pesticides only when other control methods fail. Extensive use of pesticides can kill beneficial organisms that help keep pest populations under control.

- Read the label carefully – it tells how, when, and where to use the product.
 - Apply the amount specified on the label and apply only to the plants and areas listed. Over-application is a waste of money and an environmental hazard.
 - Wear protective clothing as directed on the label. Do not wash clothing contaminated with pesticides with other clothing.
 - Make sure the pesticide is designated for use on the pest you want to control. Do not mix different pesticides unless instructed by the product directions.
 - Keep pesticides in their original containers, so you know what they are and how to use them. (It's also the law.)
- Do not apply pesticides if rain is forecast (unless specified on the label). Some pesticides do need to be watered-in after application, but rain or watering can wash others off plants, decreasing effectiveness, and possibly contaminating lakes and streams. (Read the label!) Never spray pesticides on breezy days. The spray drifting in the wind poses a serious danger to non-target plants and animals – including those in the neighbors' yards.
 - Never apply pesticides to bare ground or eroded areas. When it rains, pesticides can easily be washed off these sites with eroding soil. Never apply pesticides near wells, streams, ponds or marshes unless instructions specifically allow for such uses.

Consider this principle of ecology – everything is linked to everything else. Because of this, pesticides can often have unintended consequences. For example, don't be surprised if songbirds leave the yard after pesticides have been sprayed. Many birds are directly harmed by pesticides; others leave because the insects they feed on have been killed.



PESTICIDE STORAGE AND DISPOSAL

HANDLING PESTICIDES PROPERLY

- Don't buy more pesticide than you need. Disposal can be a problem.
- Store pesticides where children and pets can't get at them.
- Never dispose of excess pesticides by dumping them on the ground.

While pesticides are broken down to non-toxic compounds by microorganisms, excessive amounts applied to the soil can "overload" this natural system and contaminate drinking water.

- Consider sharing left-over pesticides with neighbors. (The pesticides must be in their original containers and registered for use in Wisconsin.) If you cannot give them away, apply them later according to label instructions.
- Never dispose of unwanted pesticides in the ditch, gutter, or storm sewer. Such practices allow the hazardous chemicals to move directly into streams and lakes where they can harm fish and wildlife. In addition, pesticides dumped down the household drain

can kill beneficial organisms that help purify the waste water in treatment plants or a septic system.

- Participate in a Clean Sweep Program for collection of unused pesticide products, or call your county UW-Extension or local Department of Natural Resources office for an alternative.
- When a pesticide container is empty, fill it up with water three times, each time pouring the rinse water into the spray tank when preparing the solution for final application. Triple-rinsing is important, because some chemical residues may remain in a container even though it appears empty.
- Dispose of empty, triple-rinsed pesticide containers as instructed on the label. Small containers can be wrapped in layers of newspaper or in a plastic bag and placed in the garbage on the day of pickup. Never burn or bury empty pesticide containers. The fumes from burning pesticide residues may be toxic. Buried containers could leak pesticides into drinking water.



Thinking Twice and Acting Sensibly

When pests invade lawns and gardens, consider the full range of pest control options. In many cases pesticides will not be necessary. When pesticides must be used, follow label directions carefully to

minimize harm to people and beneficial plants and animals. For more information on alternative pest control methods and proper application of pesticides, contact your county UW-Extension Office.

This publication is available from county UW-Extension offices or from Extension Publications, 630 W. Mifflin St., Madison, WI 53703. (608) 262-3346.

A publication of the University of Wisconsin-Extension in cooperation with the Wisconsin Department of Natural Resources.

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Illustrations: Carol Watkins

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Editing and design by the Environmental Resources Center, University of Wisconsin-Extension.



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**GWQ011 Lawn & Garden
Pesticides**

DNR WT-529-99

R-09-99-10M-30-S

**UW
Extension**





Lawn Watering

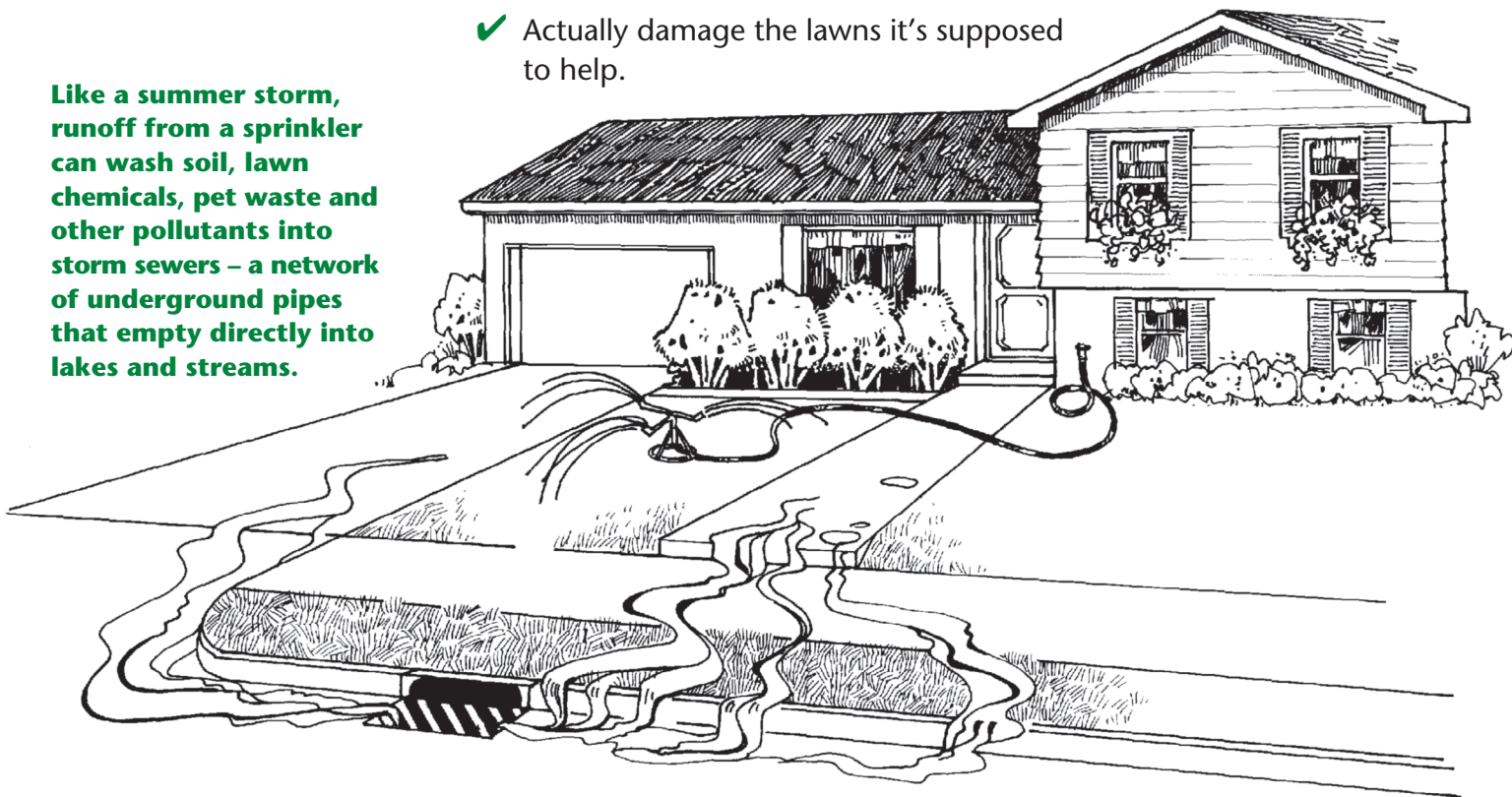
A SERIES OF WATER QUALITY FACT SHEETS FOR RESIDENTIAL AREAS

For decades, American cities and suburbs have grown and spread into the surrounding countryside. With this growth has come an unprecedented seeding and sodding of the landscape – literally millions of acres have been turned into bluegrass lawns. For many homeowners, the residential lawn is the symbol of a well-tended property.

Unfortunately, keeping the lawn emerald-green, barefoot-soft and dandelion-free requires a significant amount of attention, and can have serious impacts on lakes, streams and groundwater. Water from a sprinkler flowing down one driveway might not seem like a big problem. But careless watering on hundreds of lawns can:

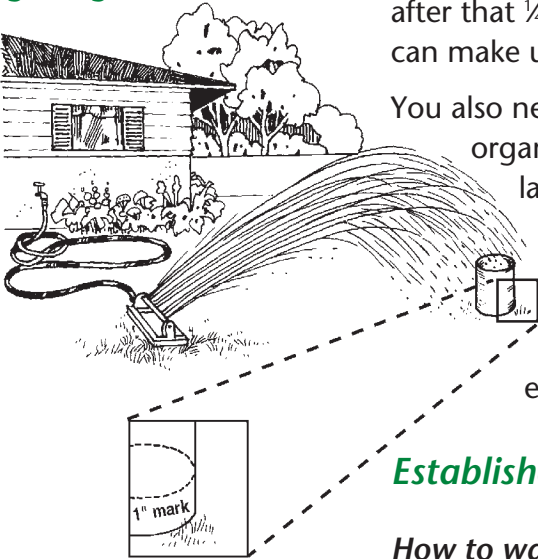
- ✓ Wash pollutants into lakes and streams.
- ✓ Deplete water supplies.
- ✓ Actually damage the lawns it's supposed to help.

Like a summer storm, runoff from a sprinkler can wash soil, lawn chemicals, pet waste and other pollutants into storm sewers – a network of underground pipes that empty directly into lakes and streams.



Because lawn watering can have far-reaching effects, there is growing interest among horticulturists, environmentalists, public utility managers and homeowners in how to water correctly. This publication offers practical lawn watering tips that will save water, help keep our lakes and streams clean, and produce healthy, attractive lawns.

A container with a once-inch mark placed under your sprinkler will help gauge how much water your lawn is getting.



A healthy lawn requires about one inch of water per week. As a general rule, apply the water all at once rather than in several light waterings. Before you water, do some arithmetic. If it just rained $\frac{1}{4}$ inch, you probably only need to apply $\frac{3}{4}$ inch with the sprinkler. Use common sense, however, and consider the weather forecast. If there is a good chance of rain soon after that $\frac{1}{4}$ -inch rainfall, don't water at all. If the rain doesn't come, you can make up the difference.

You also need to know your lawn. For example, sandy soils with little organic matter will require more water, heavy clay soils less. Sloping lawns are normally drier than level, low-lying ones. Lawns under large trees, especially during cool weather, may need little or no watering. Avoid watering during the middle of the day when evaporation rates are highest and the water you use will do the least good. Early morning watering will minimize evaporation and help newly seeded areas through the day's heat.

Established lawns

How to water

- It's best to water established lawns at the rate of one inch per week, applied all at one time to promote deep rooting. Frequent, light waterings favor shallow roots and plants unable to tolerate dry periods.
- Water early in the morning. If watering is done in the evening, grass stays wet all night, thus increasing risk of disease.

Keep in mind...

- Established, healthy lawns can survive several weeks of dormancy during summer with little or no water.
- Watering early in the morning puts less strain on public water supplies because the peak load is during evening.
- Excess water can keep the soil too moist, which damages roots.

If you use sod instead of seed...

How to water

- ✓ Soak newly laid sod with one inch of water. Use a marked container to measure the amount applied.
- ✓ Water lightly every other day for two weeks after sodding. When grass is established, water according to the guidelines for established lawns.

Keep in mind...

- ✓ Excess water can drown sod in poorly drained areas, or cause erosion between or under pieces of sod on slopes.

Newly seeded grass

How to water

- Mulch newly seeded areas with straw, marsh hay or lawn clippings to reduce evaporation from the soil surface.



- Light watering every other day is generally sufficient as long as the soil was moist at seeding time.
- Water less frequently when the grass reaches two inches high.

Keep in mind...

- Overwatering can wash away seeds, cause seeds to rot before they germinate, increase the chances of disease, or slow the growth of new grass.
- Grasses in Wisconsin lawns grow best in cool weather. Plant seed in spring (late April to mid-May) or fall (late August to mid-September) when it's cooler and more rain can be expected.
- When selecting seed, consider bluegrass and fescue mixes, which tend to be more drought-tolerant than ryegrasses.

Let grass grow taller

- To promote deep rooting and lawns that tolerate dry conditions, mow grass no shorter than two inches.
- Taller grass shades the soil surface, thus reducing evaporation and sprouting of weed seeds.

Use chemicals wisely

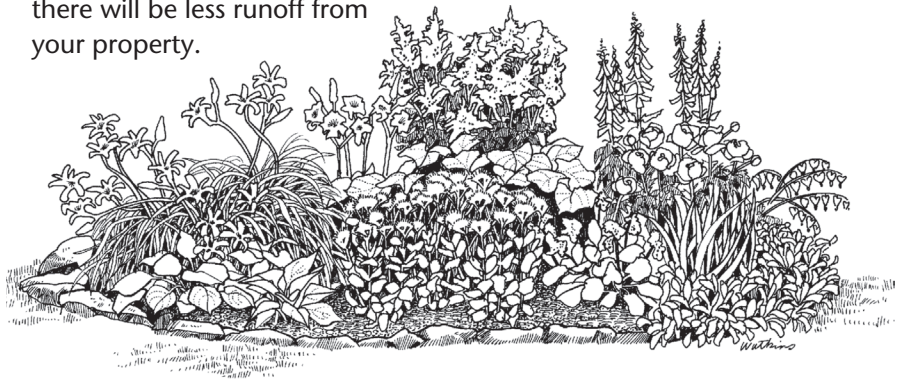
- Proper fertilizing promotes deep roots and drought tolerance. Improper fertilizing can have the opposite effect.
- Don't fertilize a dry lawn – high concentrations of nutrients tend to draw moisture out of grass.
- Control weeds to reduce competition for soil moisture. This may be done by hand, or with careful use of broad-leaf herbicides.

Consider the weather

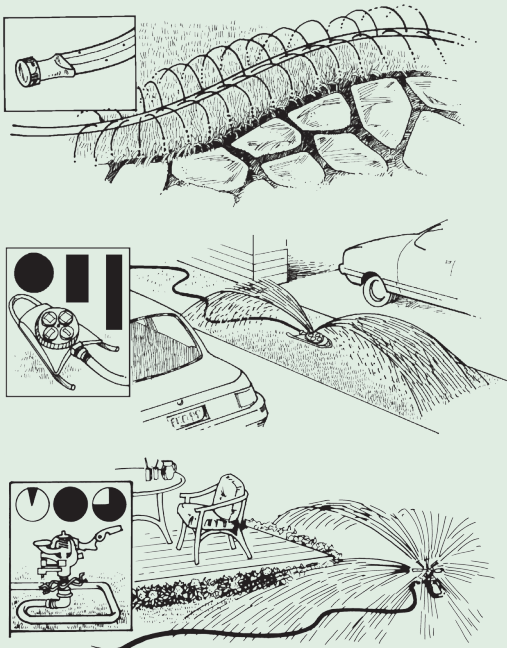
- Don't mow during the heat of day, especially when conditions are hot and dry; newly cut grass blades lose water quickly.
- Don't water if a one-inch rainstorm has occurred in the last week. Also, postpone watering if the forecast calls for rain in the next few days.

Be creative

- Plan and establish a landscape that has less lawn and requires less water and maintenance. Consider plant groupings that include drought-tolerant species and organic mulches that help keep the soil moist.
- Direct downspouts away from foundations and driveways to planting beds and lawns where the water can soak in. Besides more efficient use of water, there will be less runoff from your property.



- Learn to live with temporary brown-outs. A few weeks of dormancy will not hurt the roots of a healthy lawn.



Tips on sprinklers and efficient watering

Hardly anyone has a perfectly rectangular or circular lawn. Fortunately, there are many sprinkler types to deal with odd angles. (A few are shown here.) Over time, savings on your water bill will pay for the investment on several types. Other tips for efficient watering include:

- ✓ Consider a timed sprinkler, which automatically shuts off after a desired rate of application.
- ✓ Use a sprinkling can or hand-held hose to specifically target small areas where use of a sprinkler is wasteful.
- ✓ Aerate your lawn to improve water penetration and reduce runoff.
- ✓ Avoid using a conventional sprinkler on the strip of lawn between the sidewalk and street. Runoff from this area travels quickly and directly to the gutters and storm sewer. A soaker hose might be the best option.
- ✓ Don't forget to turn the sprinkler off! Forgetfulness can result in a trail of water flowing from your property.

**WE'VE ALL
SEEN IT...**

While everyone recognizes that this is a waste of water, other problems caused by careless watering are harder to see. Water flowing down the gutter often carries soil, pet waste, lawn chemicals and other pollutants into storm sewers, which empty into nearby streams and lakes.



Sprinkler runoff makes a natural problem worse. While occasional midsummer rainstorms wash pollutants into lakes and streams, careless lawn watering can create a “rain-storm” every day throughout the summer. This additional runoff occurs during the hottest weather and low water conditions in streams and lakes – prime conditions for growth of nuisance algae and aquatic weeds.

**...that trail
of water
flowing in
the gutter
on a clear
day.**

Water running off your yard can also erode soil from adjacent undeveloped lots, waterlog sensitive plants, or wash away fertilizers that have been recently applied to lawns and gardens. We can all help minimize these problems by following the common-sense tips in this fact sheet. The result will be healthier lawns and cleaner water.

Thinking things through

In the end, lawn watering is probably governed more by one’s point of view than anything else.

For example, a dry lawn has a blue-green color and does not spring back when you walk on it (your footprints remain). A lawn during mid-summer dormancy is a brownish green. To some people, neither of the above is acceptable. However, except under extreme circumstances, even the natural brown-out does no harm. And no amount of mid-summer watering will allow our cool season grasses to look as good as they do during spring or fall. By September, in fact, lawns that were watered throughout the

summer generally look no better than lawns that weren’t. In other words, a naturally brown lawn in August is not a sign of neglect.

Those who want the green look throughout the summer can benefit from the lawn watering tips inside. Those who are inclined to simply wait out the seasonal changes can be confident that they’re not going to harm a healthy lawn.

Above all, heed the suggestions and restrictions of your local water utility during droughts. If you have a private well, don’t jeopardize neighborhood supplies by unnecessary watering.

This publication is available from county UW-Extension offices, Cooperative Extension Publications – 1-877-947-7827, and from DNR Service Centers.

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R-09-99-10M-30-S**

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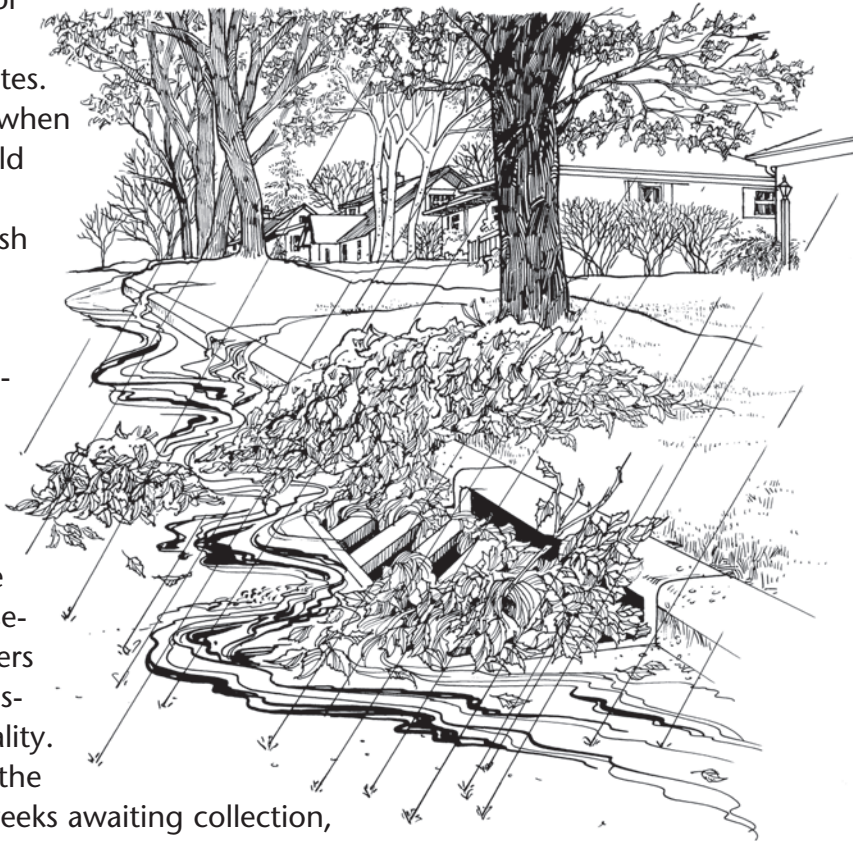


Managing Leaves and Yard Trimmings

A SERIES OF WATER QUALITY FACT SHEETS FOR RESIDENTIAL AREAS

Anyone who has a yard knows that leaves, grass clippings, twigs and branches can present a challenge. This has been especially true since 1993, when state law banned yard waste from landfills, some of which were seeing a fifth of their capacity consumed by yard wastes. Gone are the days when these materials could be set out in bags with the weekly trash and buried in the town dump.

While many municipalities offer periodic collections of leaves and trimmings in spring and fall, this service has significant consequences for taxpayers and, perhaps surprisingly, for water quality. Carelessly piled by the street for days or weeks awaiting collection, leaves and grass clippings are a rich source of unwanted nutrients for streams and lakes when rain washes them into storm sewers.



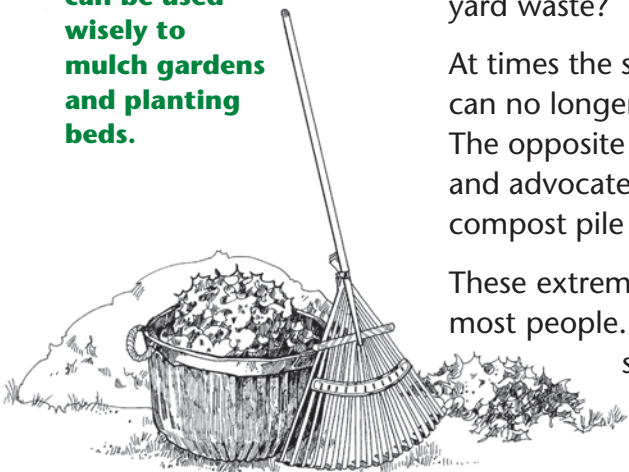
Leaves and yard trimmings can be harmful to lakes and streams after washing into storm sewers, or they can be used wisely to mulch gardens and planting beds.

Is there a simple, economical, environmentally sound approach to reducing yard waste?

At times the subject seems polarized. Some people complain because they can no longer put grass clippings, leaves and twigs out with the weekly trash. The opposite camp accepts no compromise with environmental correctness, and advocates fence-to-fence prairie or woodland plantings with a backyard compost pile for every leaflet, grass blade, or eggshell.

These extremes might be right for a few, but neither will be practical for most people. Fortunately, there are other choices. This fact sheet takes a straightforward look at the subject of yard waste reduction.

Not everyone will adopt every one of the ideas presented. But most people will find at least a few of the ideas useful.



IT CAN BE DONE

Some yard wastes may seem difficult to deal with. So, it's not uncommon to hear people ask questions like "Where are people supposed to go with that stuff?" or "What are our taxes being used for?"

But the "problem" of "yard waste" can be looked at from a different perspective. For example, where does the time or money come from to mow and possibly bag grass clippings twice a week in June, because the lawn is too large and has been fertilized too much? Compare the time spent dealing with yard wastes to the time and costs of maintaining a lawn: time mowing, watering, trimming and treating with fertilizers and pesticides along with the costs of power mowers and trimmers and the gas to run them.

No matter what you do or grow in your yard, it is going to require some time and money. The real question is the nature of

the investment. Short of doing what is now illegal (slipping yard waste into the regular trash), yard management remains a matter of choice. Generally, however, it is becoming harder to maintain a yard that fails to address some measure of yard waste reduction at home.

Streetside pick-up for community composting may still be an option for some, but it is certainly not a service that uniformly benefits citizens. The same can be said of yard waste drop-off sites, because public employees, machinery, and lands must still be committed.

Leaves and yard trimmings thus invariably create some costs for the individual, the community, and the environment. However, these can be managed in ways that achieve greater overall benefits than was true in the past.

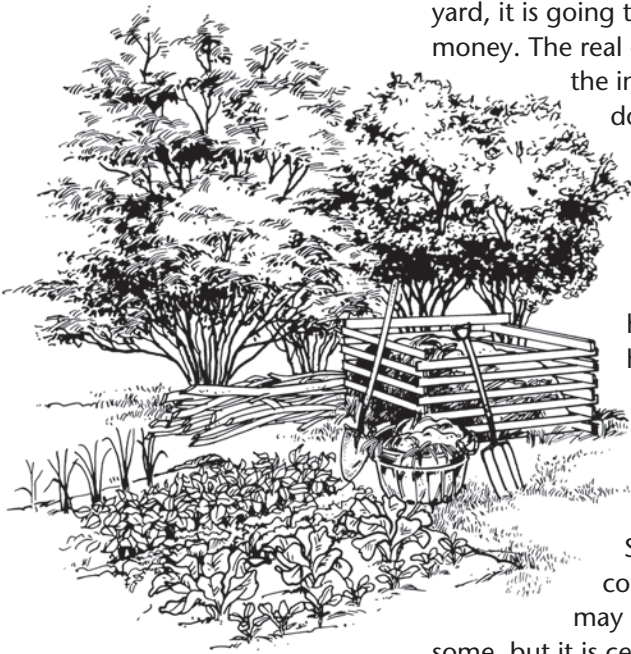
COPING WITH LEAVES AND TRIMMINGS

People have different strategies for dealing with leaves and trimmings. Some choose simply to pay the expenses by using large bagging mowers and power chippers or hauling clippings away. Others choose to expend more effort than money, by mowing frequently in fall to shred leaves, or managing compost bins. Still others choose to avoid practices known to create yard waste – excess fertilizing that produces excess lawn growth, for example, or landscaping with large or disease-prone trees and shrubs. Finally, some may philosophically shift and regard former "wastes" as resources. Letting clippings lie on the lawn, for example, or replacing lawns with natural planting beds will generate little waste and hide a lot. In reality, most people will probably opt to do a little of each.

THE INCREDIBLE, VANISHING YARD WASTE

Yard trimmings do not magically disappear, but natural processes reduce much of the waste pretty quickly. Hence the wisdom of banning yard wastes from landfills. When just cut or raked, grass clippings, leaves and branches do indeed occupy a surprising volume. But if homeowners mow their lawns properly for example, so as not to remove more than $\frac{1}{2}$ of the blade length, then grass clippings will disappear in a couple of days as they dry and filter down to the soil surface for decomposition.

Take that same grass and rake or bag it, however, and it will be around for a while – even with properly managed composting. Putting clippings in the street constitutes a nuisance . . . piling them up in one location kills the grass . . . moving a pile means extra work . . . keeping bags in the garage leads to odor as clippings "ferment" away . . . and placing bags in the driveway means an unsightly obstacle until collection day.



MAKING CHOICES

One misguided response to the problem of yard wastes would be to have a lawn devoid of “waste-producing” trees, shrubs, and flower beds. If grass clippings from the all-lawn yard were left in place, that would mean no more leaves and trimmings to contend with, right? Wrong.

Weeds will invariably spring up between cracks, adjacent to buildings, and in small groups where they should be pulled or dug rather than poisoned. With only a lawn border-to-border there is no place to go with pulled weeds.

There is also the matter of leaves blowing in from elsewhere, or being dropped from neighbors’ trees along with twigs, petals, cones, pods, nuts, crabapples, and other seeds or fruit. Is it really worth the frustration when perimeter planting beds would recycle some of these materials naturally?

Vacations or prolonged rains can also be problematic for those seeking a “waste-free” expanse of lawn. When the grass



gets too long, clippings will simply have to be collected. Then what does one do with them? Driving grass clippings away consumes time and gas, and can make a mess inside the car. Even if a community picks them up, bad timing could dictate prolonged storage in plastic bags.

Having spaces in the yard to recycle leaves and grass clippings as mulch can quickly begin to look better, figuratively, when the above are considered – and, literally, when colorful flowering plants adorn the landscape.

Transportation and yard waste

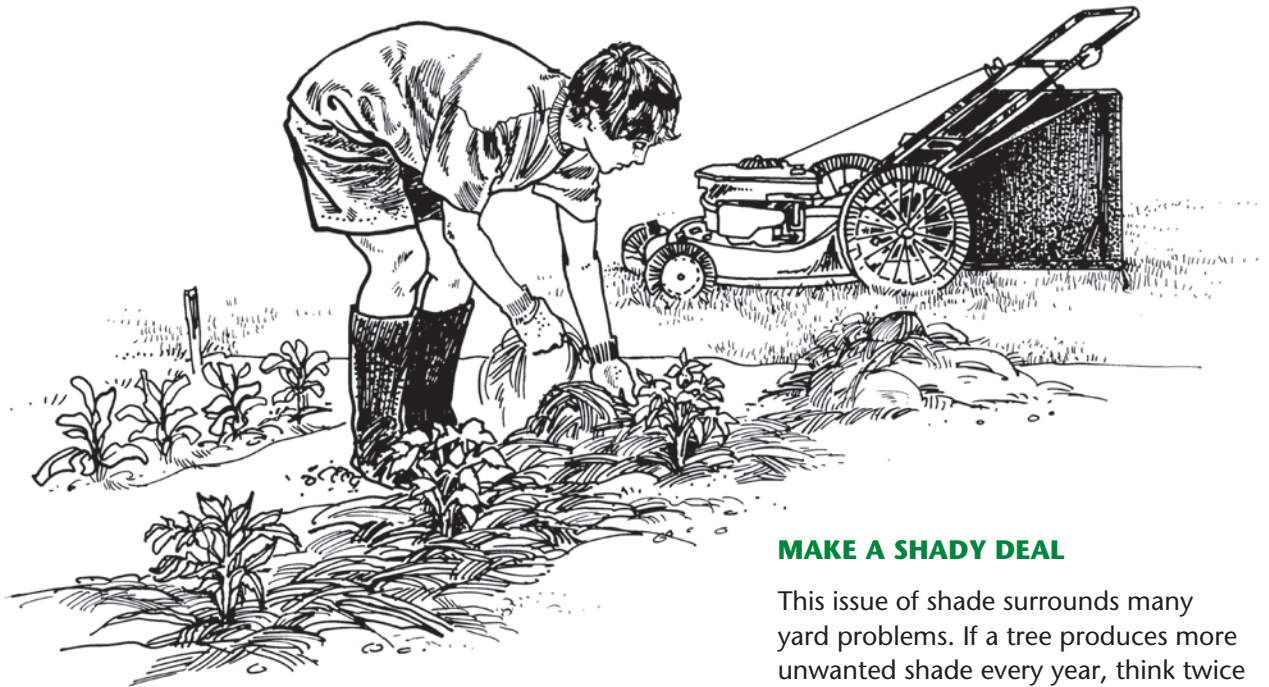
Some communities collect and compost yard “wastes” for the convenience of their residents. But somehow this practice has inappropriately come to be viewed in certain circles as “environmentally friendly.” In reality, it is a compromise between collection for landfilling and at-home recycling.

Consider this: In urban areas with air quality problems, does it make

good sense environmentally to place yard wastes at the edge of the street for municipal pick-up...then truck them far away to a community compost site... only to have citizens make subsequent trips in private vehicles to pick up the compost and bring it back home? Similarly, does it make sense to drive leaves, clippings and brush to a central collection point, where large trucks take them somewhere else for shredding and land spreading?

The time, vehicle trips, air pollutant emissions, and consumption of fossil-fuels stack up as do the costs, merely to recycle and reuse a renewable natural resource (compost). And, unless collection is timely, streetside placement of leaves and grass clippings also concentrates these materials where they are more subject to washing into storm sewers. Even if picked up, soluble nutrients within them may first wash away with rainwater to degrade lakes and streams.





USE THOSE MARVELOUS MULCHES

If you bag grass clippings, use them as mulch in vegetable gardens to retain moisture and keep weeds down. Leaves can also be an excellent mulch. Use them to protect roses and other plants over winter. An abundance of fall leaves is a factor that prompts many people to consider formal composting, but simple mulching would be an easier first alternative. Using a mower to shred

leaves greatly reduces volume and exposes more leaf surfaces to speed up decomposition.

Shredded leaves knifed (lightly dug) into annual flower or vegetable gardens make a good organic fertilizer and soil conditioner.

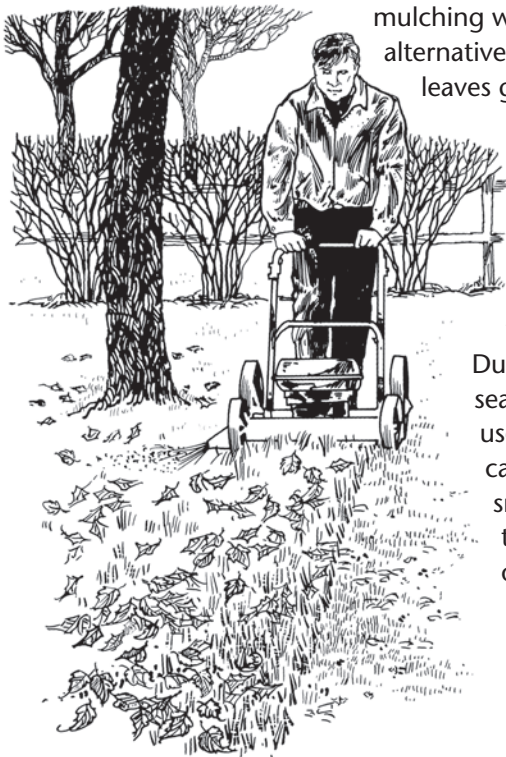
During the spring planting season, leftover leaves can be used to lessen seedling injury caused by late freezes and to smother emerging weeds. In time, you may develop your own favored alternatives.

MAKE A SHADY DEAL

This issue of shade surrounds many yard problems. If a tree produces more unwanted shade every year, think twice about the constant pruning (and the waste it produces). Consider instead more shade-tolerant ground layer plants as alternatives to your thinning lawn. If sun-loving plants are a real priority, perhaps you can find a place for them in another part of your yard, or, as a last resort, you might consider removing the trees. Consider, too, that the north side of many houses has too much shade for a healthy lawn. Landscaping that works beneath trees could also be effective there.

LEAVE 'EM

Natural decomposition will usually take care of grass clippings if they are simply left in place. Planting beds around tree bases and woodland landscaping are especially good at allowing most materials that fall from within them to simply be left there. "Leave 'em" is also practical advice when it comes to the chore of fall raking. Periodic mowing to chop up modest amounts of leaves reduces lawn raking and provides a good source of organic fertilizer. Just don't allow the leaves to mat and make sure that ample grass shows through them.



SEND THEM TO BED

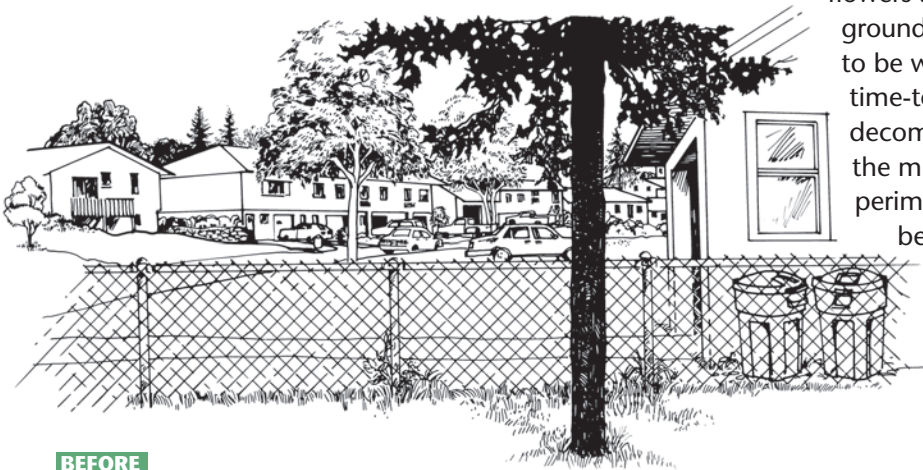
The benefits of planting beds quickly become evident. Such areas not only recycle their own leaves and twigs, but can accept material from other areas as well. Leaves, twigs, pulled weeds, clippings from lawn areas that occasionally get too long, and even an apple core or banana peel produced while working can be recycled there. Alternative ground layer plants (ground covers, flowers, native spring ephemerals) allow yard wastes to disappear quickly. The decomposing "wastes," in turn, benefit plantings because of their organic fertilizer value, enhancement of soil moisture and potential to keep weeds down.



FOSTER LIFE ON THE EDGE

Perimeter planting allows leaves and trimmings to be spread out and around so they do not accumulate to problem levels. Certain plantings will also enhance privacy, landscape variety, and songbird habitat. Because they routinely contain

flowers and other ground covers likely to be watered from time-to-time, decomposition of the mulches with-perimeter planting beds is often accelerated.



BEFORE

A lawn that extends to the edge of a property often ends up as wasted space and sometimes exposes less-than-attractive views.



AFTER

Perimeter plantings screen undesirable views, enhance privacy, and provide space for recycling leaves and yard trimmings.

DON'T GET CARRIED AWAY

Now, more than ever, composting seems so environmentally conscious . . . so earthy . . . so responsible. It certainly is positive to create a resource on your own property from something that in the past was often hauled away as a waste. Plus, composting can be captivating, becoming a hobby for certain people.

That's fine, but think about it. Deciding to rake or bag grass clippings is (again) a personal choice. However, grass clippings are best left on the lawn. Collecting them solely for the sake of composting is environmentally unsound. First, it means the need to fertilize more, since grass clippings left in place provide half the lawn's nitrogen needs during the growing season. Second, the organic, slow release fertilizer in the clippings will likely be replaced by more soluble chemical fertilizers that could reach surface waters or groundwater from lawns more readily. Finally, though generally positive, composting concentrates waste in a specific area, requiring more careful management.

This is not to discourage formal composting. But it is important to recognize that compost is an easily misunderstood term.

Compost, the noun, simply means a mixture of decayed organic matter. *Compost*, the verb, refers to its production. The term was not meant to be narrowly constrained. Yet many people think of composting as taking place only in bins or piles established for that purpose and conducted by highly dedicated or knowledgeable people.

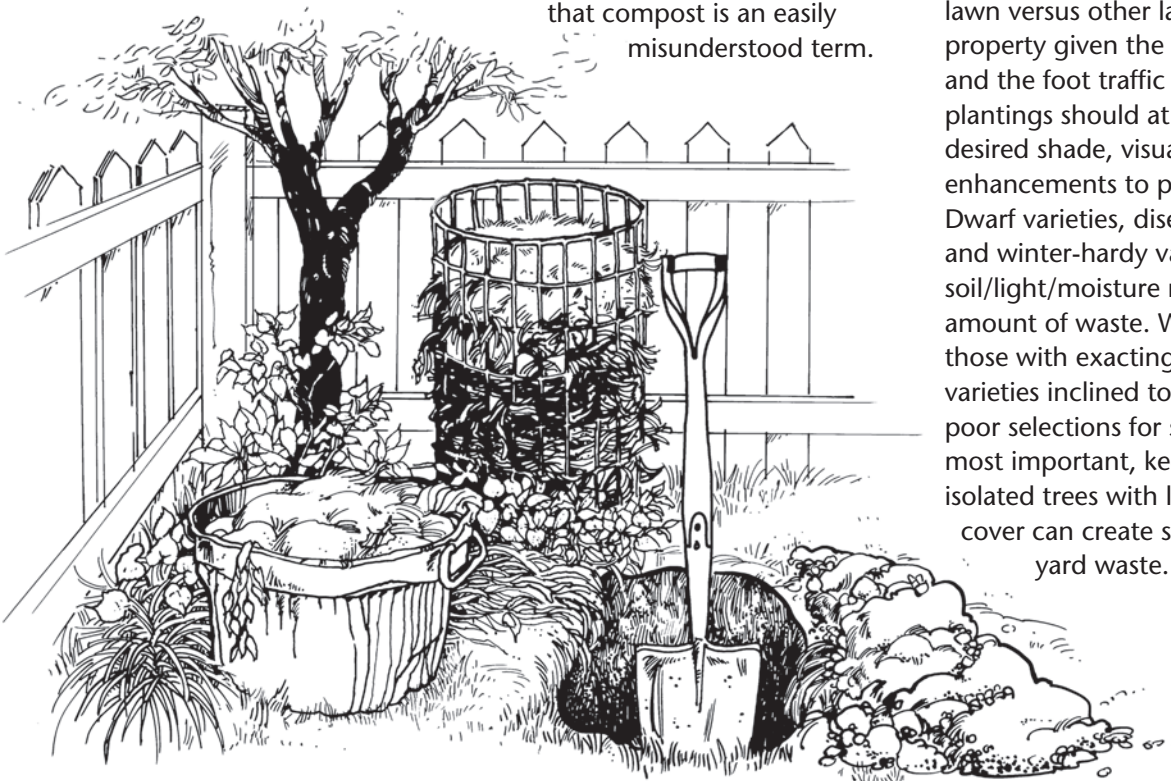
In reality, composting does not have to be a time-consuming chore or a leisure-time hobby to be successful. The decomposition involved is a natural process that takes place not just in bins, but also in planting beds, lawns and gardens.

(Note: Formal composting generally requires a 4'x4'x4' bin (or a similar-sized pile) that is managed by layering, watering, and turning materials to speed decomposition and avoid odor. Contact your county UW-Extension office or local DNR office for more information.)

PLAN ON IT

Leaves and yard trimmings are inevitable. Only you can plan the right amount of lawn versus other landscaping for your property given the types of family uses and the foot traffic expected. Woody plantings should at maturity provide for desired shade, visual screening, and enhancements to property appearance. Dwarf varieties, disease resistant varieties, and winter-hardy varieties with suitable soil/light/moisture needs can reduce the amount of waste. Weak-wooded plants, those with exacting requirements, and varieties inclined to grow very large are poor selections for smaller yards. Perhaps most important, keep in mind that isolated trees with lawn for a ground cover can create significant work and yard waste.

Backyard corners, wire enclosures and trench composting can handle leaves and trimmings, but landscape planning with an eye to recycling these materials can be a simpler solution.



GO FOR THE GOLD

Native landscaping enthusiasts often cite the richness and diversity of fall prairie and woodland colors – gold, copper, and bronze – while other parts of the landscape turn dull brown. From the perspective of managing leaves and trimmings, alternative plantings have value whether they are native or simply more natural than lawns. Wooded residential lots, especially, are usually the most expensive and sought-after. Fortunately, such lots can be created over time as opposed to being cleared and converted to traditional landscaping. In terms of wildlife, water quality and even economics, converting golden landscapes to ordinary lawns is unwise.



LOOK TO THE FUTURE

Things may be going fine now in your conventionally managed yard, which is mostly lawn. But what if something happened and you could no longer provide the time, energy, or investment necessary for that spotless carpet of green?

What if you wished to sell? Do prospective buyers view a lawn as an asset, or as commonplace? Comparatively, how would they view flowing beds of perimeter plantings adrift with varying colors and

textures, shady groupings of mature trees, and vegetatively screened privacy for the backyard? Which would songbirds prefer?

Planning for the yard does not have to involve complex or expensive renderings by a landscape expert, though doing things well from the beginning should be viewed as an investment. Sometimes decisions can be governed by common sense as much as anything else.

Simple is better

In many respects, *“the simpler the better”* is a truism that applies well to managing leaves and yard trimmings.

- Grass clippings left in place generally require no further attention and fertilizer applications can be reduced to mid-October (and maybe early June). Raked or bagged clippings make excellent mulch for gardens.
- Short of full-scale composting, a small wire enclosure can accept a surprising amount of vegetation for recycling throughout the growing season.

Materials seem to “shrink back” between additions as simple, low effort composting works away.

- Landscaping that incorporates planting beds is a key to dealing with leaves and trimmings, which can be spread out over or rotated among planting beds. If chopped into smaller pieces, they will decompose even faster.
- Unwieldy-looking branches can quickly become neat little piles or handfuls of twigs when cut up. The



time taken may be less than managing the lawn replaced by woody borders.

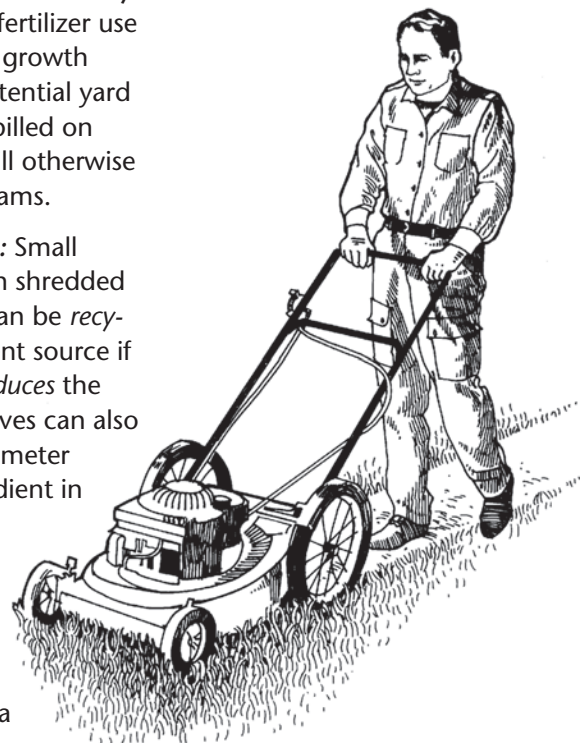
As with all forms of solid waste, reduction should be the underlying objective. It is both inefficient and uneconomical to have municipalities handle leaves and yard trimmings when this "garbage" can easily be *reduced, re-used* and *recycled* right where it is produced – in your own back yard. As you change attitudes and form a few simple good habits, some things will start looking less like wastes and more like resources. Here's how yard waste can become yard wealth:

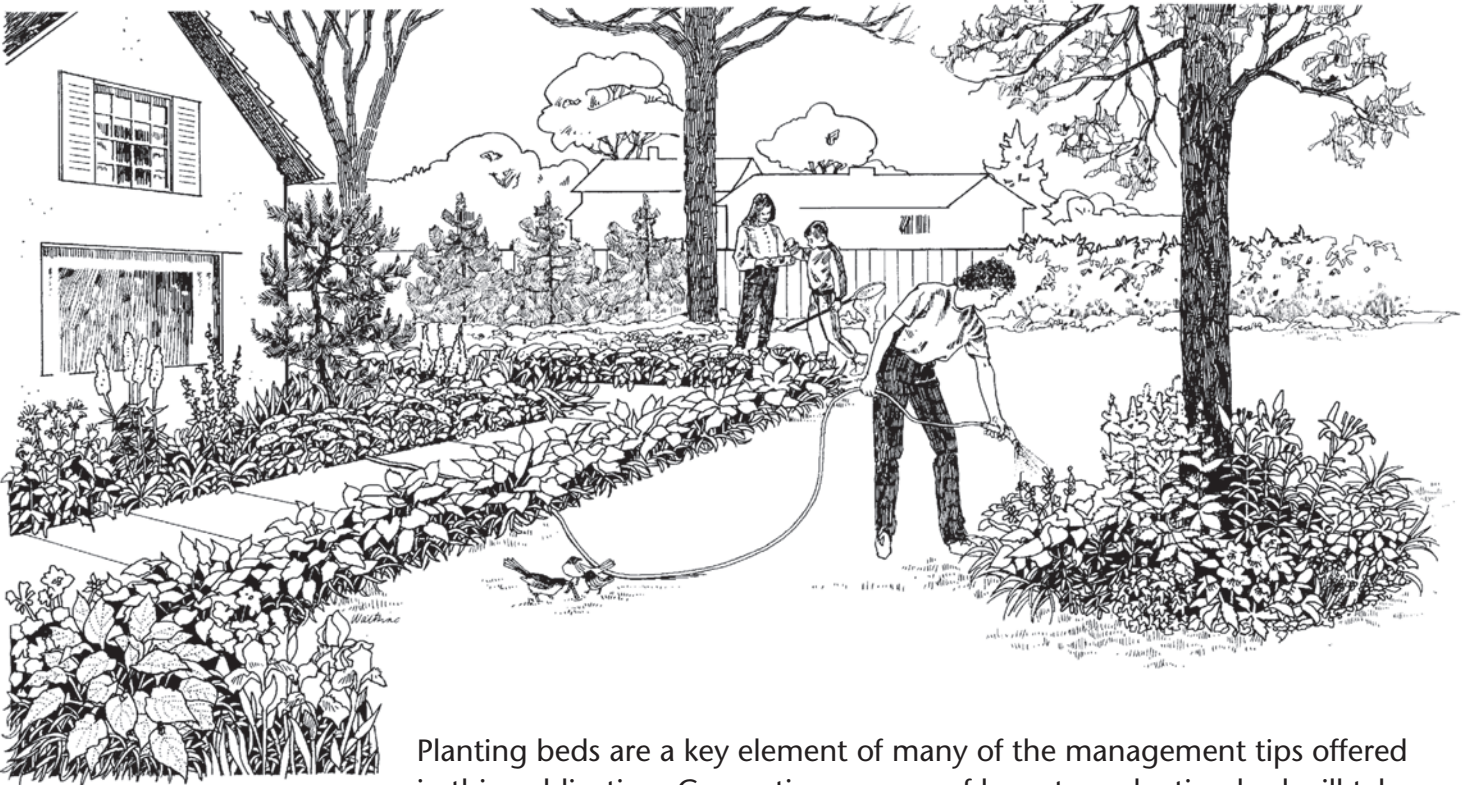
- 1) **Use Organic Mulches:** *Re-use* leaves, wood chips, grass clippings, and other yard trimmings as mulch to retain soil moisture, *reduce* weed growth, moderate daily and seasonal soil temperatures, and *reduce* soil erosion.
- 2) **Plant Ground Covers:** *Reduce* impractical lawn areas (steep slopes, shady areas, low spots) and keep tree roots moist and cool. Less lawn means fewer grass clippings. It also can *reduce* the amount of pesticide and fertilizer use.
- 3) **Direct Downspouts into Planting Beds or Lawns:** *Reduce* runoff from downspouts directed onto paved surfaces which can contribute pollutants to lakes and streams. *Re-use* the water on your yard rather than letting it run off.



- 4) **Collect and Store Rainwater:** Reduce stormwater flowing into lakes and streams and *re-use* it during dry periods. This time-tested idea works especially if you collect from a limited roof area and provide an overflow barrel.
- 5) **Try Natural Landscaping Concepts:** “Naturalize” at least a portion of your yard to *reduce* maintenance, grass clippings, and pesticide and fertilizer usage. Enjoy the attractive alternatives as your property becomes conducive to *re-using* and *recycling*.
- 6) **Landscape the Border of Your Yard:** Perimeter plantings provide a convenient place to *recycle* tree trimmings, leaves, and garden debris. Decomposition is speeded by cutting twigs and other materials into smaller pieces.
- 7) **Select Plants for Proper Size and Vigor:** Reduce trimmings by selecting dwarf varieties and always planning for the mature height of trees and shrubs before planting. Pest resistant varieties *reduce* both chemical usage and the dead wood from diseased plants. Avoid weak-wooded plants or those poorly suited to your climate, soil, light conditions, or topography.
- 8) **Put Downed Branches to Good Use:** For landowners with a fireplace, a key option to *reduce* the volume of trimmings will be apparent. Ashes can be *recycled* in compost or planting beds. Creative people may find that plant stakes, vegetable or vine supports, or related *re-uses* of branches are possible.
- 9) **Establish a Holding Area for Brush:** Use landscaping or a fence to visually screen an area which holds tree and shrub trimmings, until you can cut them and *recycle* them in planting beds or *re-use* them for other purposes.

- 10) **Manage Lawn Areas Wisely:** *Recycle* nutrients by leaving clippings on the lawn where they belong. If you must collect them, *re-use* the grass clippings as mulch or compost. Proper care keeps lawns growing vigorously, which greatly *reduces* diseases and pesticide use.
- 11) **Fertilize Conservatively and Carefully:** Test the soil and *reduce* fertilizer use to avoid excessive plant growth which contributes to potential yard waste. *Re-use* fertilizer spilled on paved surfaces which will otherwise wash into lakes and streams.
- 12) **Use leaves as a Resource:** Small amounts of leaves, when shredded with the lawn mower, can be *recycled* as an organic nutrient source if left on the lawn. This *reduces* the frequency of raking. Leaves can also be *re-used* to mulch perimeter plantings or as an ingredient in compost.
- 13) **Leave Space in Flower Beds or Gardens to Trench Compost:** *Recycle* nutrients back into the soil by digging a small pit or trench to bury and compost pulled weeds and garden or kitchen wastes. Composted organic matter improves the soil for next year’s plantings, which *reduces* fertilizer needs.
- 14) **Create a Compost Pile or Bin:** This is a means to speed up the natural process of decomposition. It focuses formal composting in one area of your yard where it can be screened from view.
- 15) **Plan and Evaluate Your Yard:** Reconsidering your routines may require a little time and discipline – as opposed to proceeding as usual. But good, environmentally friendly ideas should emerge. The key is to lessen the waste problem in some way by reducing, reusing, recycling, and *rethinking*.





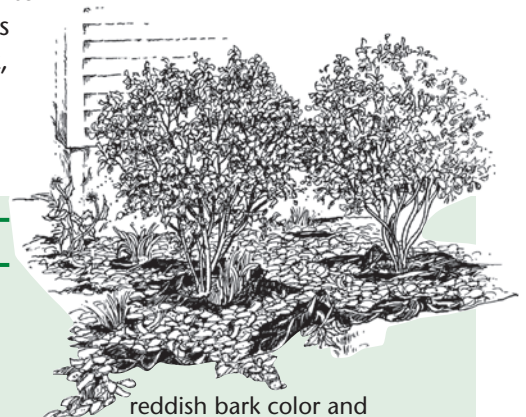
Planting beds are a key element of many of the management tips offered in this publication. Converting an area of lawn to a planting bed will take some planning and work, but the effort will more than pay for itself. Here's how to get started:

- 1) Get ready for some work, because "maintenance-free" landscaping just doesn't exist. However, future work with the planting bed should be less than that for the replaced lawn.
- 2) After deciding where the planting bed will go, place a rope, heavy string, or garden hose on the ground to define the area. This will also help you visualize the changes about to occur.
- 3) Calculate how much shredded bark you need to cover the area to an average of 6-inches deep. Though your border probably flows along some curves, try to approximate the area within it by measuring off a series of rectangles and calculating the square footage (length x width). When the surface area has been totaled, divide the number by two, which will give you cubic feet of bark required (at half-a-foot deep).
- 4) Buy the hardwood bark or arrange for its timely delivery. Bark in bags will usually be sold by the cubic foot. More likely, your project will require bulk-ordering the bark from a landscaping company. This will save you money and in most cases, offer the only practical means of getting large quantities on-site. You must generally know the number of "yards" needed, meaning cubic yards. This is easily obtained by dividing the number of cubic feet by 27.
- 5) Begin site preparation. Scalp a thin layer of sod from the area, or mow the grass as close as possible to the ground. Since it may be difficult to revise plans beginning with this step, keep in mind that you can always start a bit smaller and widen a planting bed over time. Future widening is common as plantings grow.

- 6) *If you have scalped the sod*, place it in a compost pile/bin or turn it upside down and leave it in place. The former requires more work; the latter perhaps a little more weeding in the short-term. *If you have mown closely*, cut a small trench into the sod (several inches deep and wide) along the rope border. Dig this long, winding “plug” out of the trench, flipping it upside-down and into the very edge of the planting bed. This method requires the least work initially, but sometimes more weeding of re-emerging grass.
- 7) Transplant your desired trees, shrubs, and ground layer plants, placing excess soil over the adjacent and soon-to-be-covered area of former lawn. Remember to consult planting guidelines for site suitability. Allow space for spreading ground-layer plants and mature tree- or shrub-size plants. If the bed is established in the fall, this is also a good time to plant bulbs for spring flowers.
- 8) Spread a thick layer of shredded bark mulch (6” or so) over the top of the planting bed, making sure that it hugs the transplants, but does not cover the leaves. Pull bark away from tree trunks and shrub stems and avoid letting large pieces weigh upon any fragile ground-layer plants.

Less bark can be used where the sod is scalped and removed/turned upside down; more may be required over closely mown turf. The trade-off is between the cost of additional bark thickness and the short-term maintenance to pull and re-smother emerging grass.

- 9) Water plantings as needed and eliminate grass or weeds. Once killed back, the weed and grass problem should diminish. Grass will sometimes start to spread into bark beds. Plastic or other edging can lessen this problem, but it does so at additional cost. Edging also prevents easily changing the size or shape of the bed over time.
- 10) Begin a routine of weekly watering and regular weeding, mulching, fertilizing, and transplanting flowers and ground covers. (Note that the bark’s relatively high carbon content will require the addition of fertilizer, particularly nitrogen, for many plantings). Mulching will help keep weeds down and conserve moisture, while providing organic fertilizer and recycling leaves and trimmings. Extra bark could be purchased to help with some of these things and to maintain a certain look, but isn’t necessary.



reddish bark color and prevent its natural weathering.

Caution: bark beds

One landscaping trend, which partially mirrors some yard waste reduction concepts, involves plantings within bark beds. Bark mulch can be attractive and possesses some excellent properties for establishing planting beds. However, because of maintenance requirements, problems can arise if bark is used as an end unto itself, rather than as an interim step toward planting beds that include ground layer plants.

Formal bark beds can be a legitimate choice for introducing trees and shrubs into a sea of lawn. Shredded bark

placed around freestanding trees can help conserve moisture and keep the weeds down. The bark also helps protect trees, especially young ones, from damage by lawnmowers or weed trimmers.

At times, however, a homeowner will emphasize the distinction between a bark bed and the lawn, with the bark bed figuratively becoming a brown throw rug within a carpet of green. Herbicides are sometimes used to kill invading weeds and grass, while other chemicals are used to maintain the

Poorly maintained bark beds, with the bark washing off, scraggly weed growth and black plastic exposed beneath the bark, can easily look like a neglected landscape island in a parking lot. Rather than being a means of reducing yard waste, bark beds can then become a source of extra weeds and extra work.

The general rule “Make Space, Not Waste” unifies the concepts governing yard waste reduction. Making space for leaves and trimmings in our yards seems unavoidable. We can no longer place these materials in landfills, but why did we ever want to, given the full costs? It just makes sense to minimize transportation and other tax-supported expenses tied to making wastes of potential resources.



Hiding leaves and yard trimmings where they can decompose out of view is one creative way to reuse and recycle resources that otherwise would become yard “waste.”

Everyone wants to minimize frustration and unnecessary work. So, simply make space. Many yards have odd corners, often fenced in, that trap leaves every spring and fall. These corners require frequent cleaning up, and often are hard to reach with the lawn mower. Why not establish a corner planting bed that will hide and recycle the leaves while sprucing up a little-used area of lawn? There are many other options for the yard: perimeter and other planting beds, flower and vegetable gardens, holding areas, compost piles or bins, and “hiding places” under evergreens.

So, look through this publication, think creatively about what will work for your yard, and make space while avoiding waste.

Fact sheets in the *Yard Care and the Environment* series are designed to illustrate principles of environmentally sound yard care. They provide specific information about pesticides, fertilizers, landscaping, watering and related topics. These and other publications can be obtained from your county UW-Extension office. Help is also available there regarding soil testing, pest identification, plant selection and other important items related to yard care and water quality.

This publication is available from county UW-Extension offices, Cooperative Extension Publications – 1-877-947-7827, and from DNR Service Centers.

A publication of the University of Wisconsin–Extension in cooperation with the Wisconsin Department of Natural Resources.

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Editing and design by the Environmental Resources Center, University of Wisconsin–Extension.



GWQ022 Managing Leaves & Yard Trimmings

DNR WT-490-97

R-09-99-10M-30-S



Take Action to Protect our Waters this Fall and Winter!

As the weather cools and the days of splashing around on the lake fade away it's easy to forget about the health of our waters. Take action to protect our waters by:

1. Keeping streets leaf-free this fall

In the fall, keeping leaf litter off of streets before it rains can reduce the amount of phosphorus in urban stormwater by 80% compared to no leaf removal!

Before the rain...

- **Safely remove leaves** from the street in front of your home.
- **Mulch or Compost leaves** on your property.
- **Sign up to receive Leaf-free Streets Rain Alerts** this fall (Oct. 1- Nov. 30). Alerts will be issued (via text or email) 1-2 days before a significant rain event reminding you that it's time to remove street leaves.

To learn more or to sign up for Leaf-free Streets Rain Alerts visit: www.ripple-effects.com.

2. Cleaning up pet waste

It is very important to continue to pick up after your pet all year long, especially during winter. Pet waste can become encased in snow and ice, and carried away with melt water when it warms up. The bacteria and nutrients found in the waste make their way to the nearest storm drain, and then flow into the nearest lake or stream.

3. Reducing salt usage

As snow season draws near, consider this: sodium chloride (NaCl) is the most common form of salt used for de-icing roads and walkways. It is used so much that it has become a water pollutant. It is very difficult and costly to remove once it is in the water, so prevention is very important.

This winter...

- Remove snow as soon as possible so that it is less likely to turn to ice.
- Treat before a storm to help prevent ice buildup so less de-icer is needed.
- Use sand for traction, it is safe and effective, but be sure to sweep up excess
- Consider using the following alternatives: Liquid magnesium chloride, calcium chloride, potassium chloride (all 3 work better than regular salt in colder temps), calcium magnesium acetate and potassium acetate.
- Read the label- know which ice melt product you are using, in what temperatures it will be effective, and how much to use.

Rain Barrels: An Old Idea Made New Again

Rain barrels help conserve water and make your plants happier.

Residential irrigation can account for 40% of at-home water consumption in a city. This can be a problem, particularly in summer when water shortages are most likely as the majority of outdoor water use occurs. Capturing rainwater from your roof top is a smart way to lower your water bill, help lakes, streams and rivers and lessen pressure on municipal water supplies.

A rain barrel or cistern is collects rain from your rooftop. The rain barrel is positioned under the downspout of a building to collect the rain that falls on that building's roof to be used later for lawn and garden watering or washing cars or windows—activities that would normally use tap water.

Why use a rain barrel?

- Rain barrels help decrease groundwater demand during the hot summer months, which means less water needs to be pumped, treated to drinking water standards and then pumped to households. Less pumping also means less electricity (for pumping) is used during critical summer periods. And, of course, saves you money on your water bill.
- Rain water is "soft" water, free of chlorine, fluoride, lime and calcium. Plants prefer the pH of rain water.
- Municipalities save on operating costs when less water is used, and in the long run it saves a great deal on infrastructure costs as this translates to fewer new wells, pumping stations and treatment facilities need to be built.
- Just one quarter inch of rainfall runoff from the average roof will fill a 55-gallon barrel. Attach a hose to the spigot or put your watering can under the spigot to use the water wherever you want.
- Collecting and using rainwater helps our lakes and streams, because storm water would otherwise run off into the storm sewers, carrying with it pollutants such as oil, bacteria, nutrients and more directly to lakes and streams.
- When cities use less municipal water, the impact on the environment is reduced as well. Drawing water from an aquifer, lake or river faster than it is naturally regenerated can adversely affect every living creature in the area.

Helpful Tips:

- If you don't have a model that uses a diverter, be sure to use a screen to keep mosquitoes, leaves and other debris out of the barrel and water.
- Use an overflow hose or other device to direct excess water away from house foundation when the barrel is full. Install a rain garden and direct overflow from your rain barrel and downspout to the rain garden.
- Monitor the barrel to ensure intakes and overflows aren't blocked and that it is not becoming a home for mosquitoes.
- Direct your home's downspouts to a grassy area away from your home's foundation if you don't have them directed to a rain barrel, rather than allowing storm water to flow to the street gutter.
- During the winter, make sure the rain barrel is drained and disconnected.

Water stored in a rain barrel or cistern is not potable, and should not be used as drinking water.

Rain Barrel Resources

Rain barrels are usually about 40-60 gallons. You can purchase commercially made ones, but many local groups sell them. You can also make your own if you have a barrel. The simple parts are available at any hardware store.



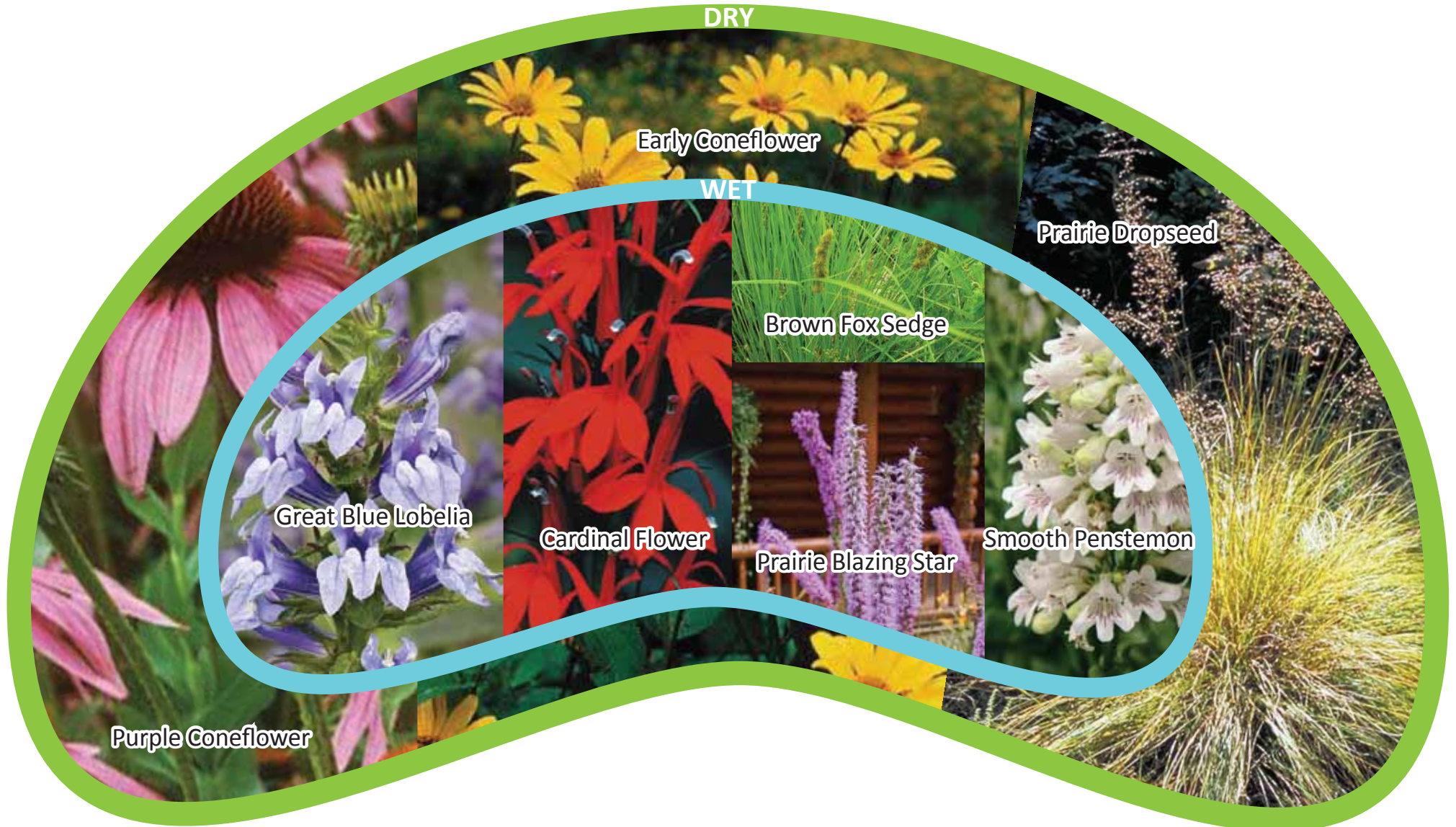
Rain Garden Mix - FULL SUN

Dry:

- Purple Coneflower - *Echinacea purpurea*
- Early Sunflower - *Heliopsis helianthoides*
- Prairie Dropseed - *Sporobolus heterolepis*

Wet:

- Great Blue Lobelia - *Lobelia siphilitica*
- Cardinal Flower - *Lobelia cardinalis*
- Brown Fox Sedge - *Carex vulpinoidea*
- Prairie Blazing Star - *Liatris pycnostachya*
- Smooth Penstemon - *Penstemon digitalis*





Rain Garden Mix - PART SUN

Dry:

- Purple Coneflower - *Echinacea purpurea*
- Silky Wild Rye - *Elymus villosus*
- Sky Blue Aster - *Aster azureus*
- Wild Columbine - *Aquilegia canadensis*

Wet:

- Arrow Leaved Aster - *Aster sagittifolius*
- Cardinal Flower - *Lobelia cardinalis*
- Long-beaked Sedge - *Carex sprengei*
- Woodland Sunflower - *Helianthus strumosus*



DRY

Purple Coneflower

WET

Woodland Sunflower

Arrow Leaved Aster

Cardinal Flower

Long-beaked Sedge

Sky Blue Aster

Silky Wild Rye

Wild Columbine



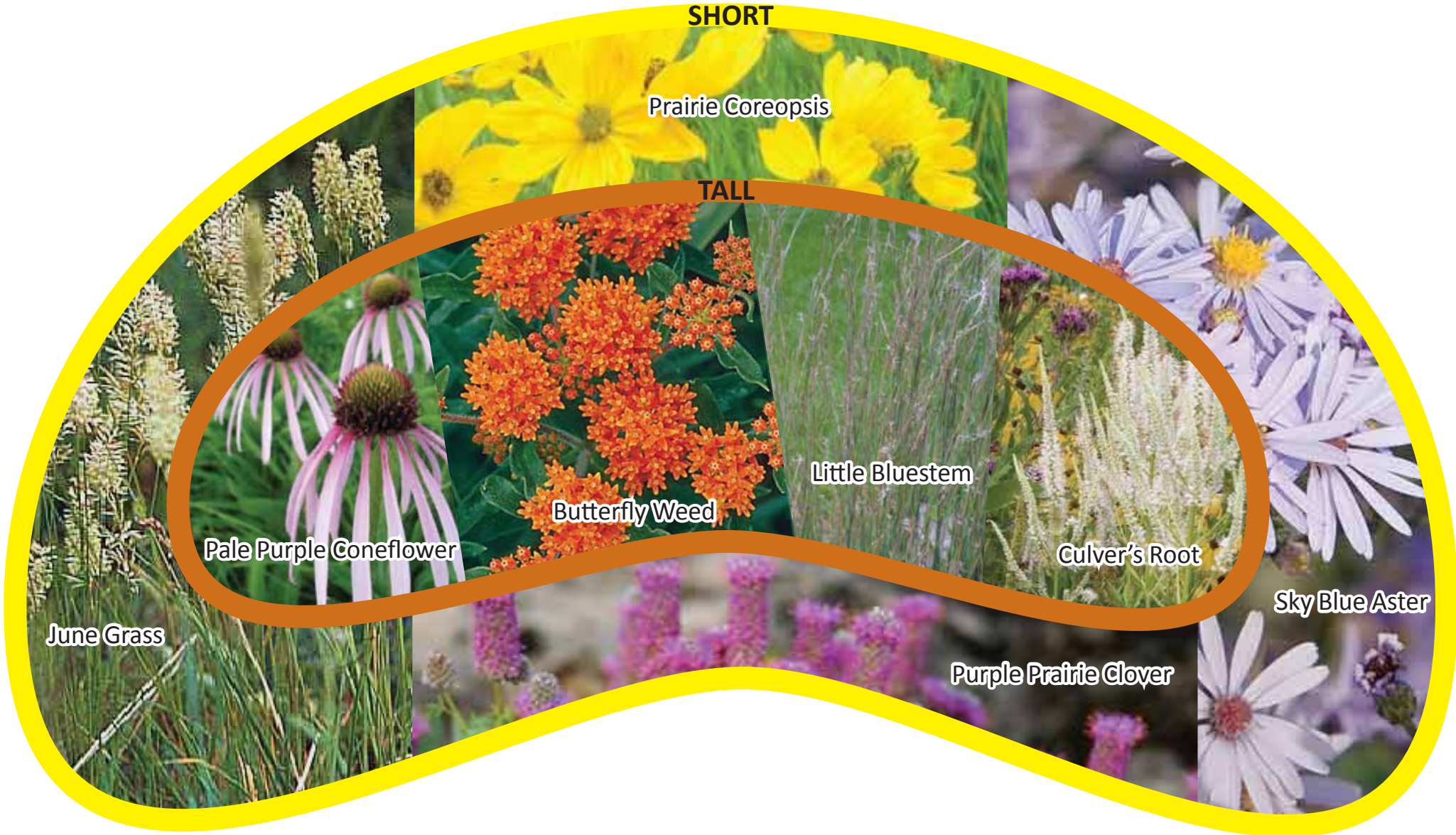
Short Prairie Garden Mix

Short:

- June Grass - *Koeleria cristata*
- Prairie Coreopsis - *Coreopsis palmata*
- Purple Prairie Clover - *Petalostemum purpureum*
- Sky Blue Aster - *Aster azureus*

Tall:

- Butterfly Weed - *Asclepias tuberosa*
- Little Bluestem - *Andropogon scoparius*
- Culver's Root - *Veronicastrum virginicum*
- Pale Purple Coneflower - *Echinacea pallida*



SHORT

Prairie Coreopsis

TALL

Little Bluestem

Butterfly Weed

Culver's Root

Pale Purple Coneflower

Sky Blue Aster

June Grass

Purple Prairie Clover



Bird & Butterfly Garden Mix

Short:

- June Grass - *Koeleria cristata*
- Sand Coreopsis - *Coreopsis lanceolata*
- Wild Lupine - *Lupinus perennis*

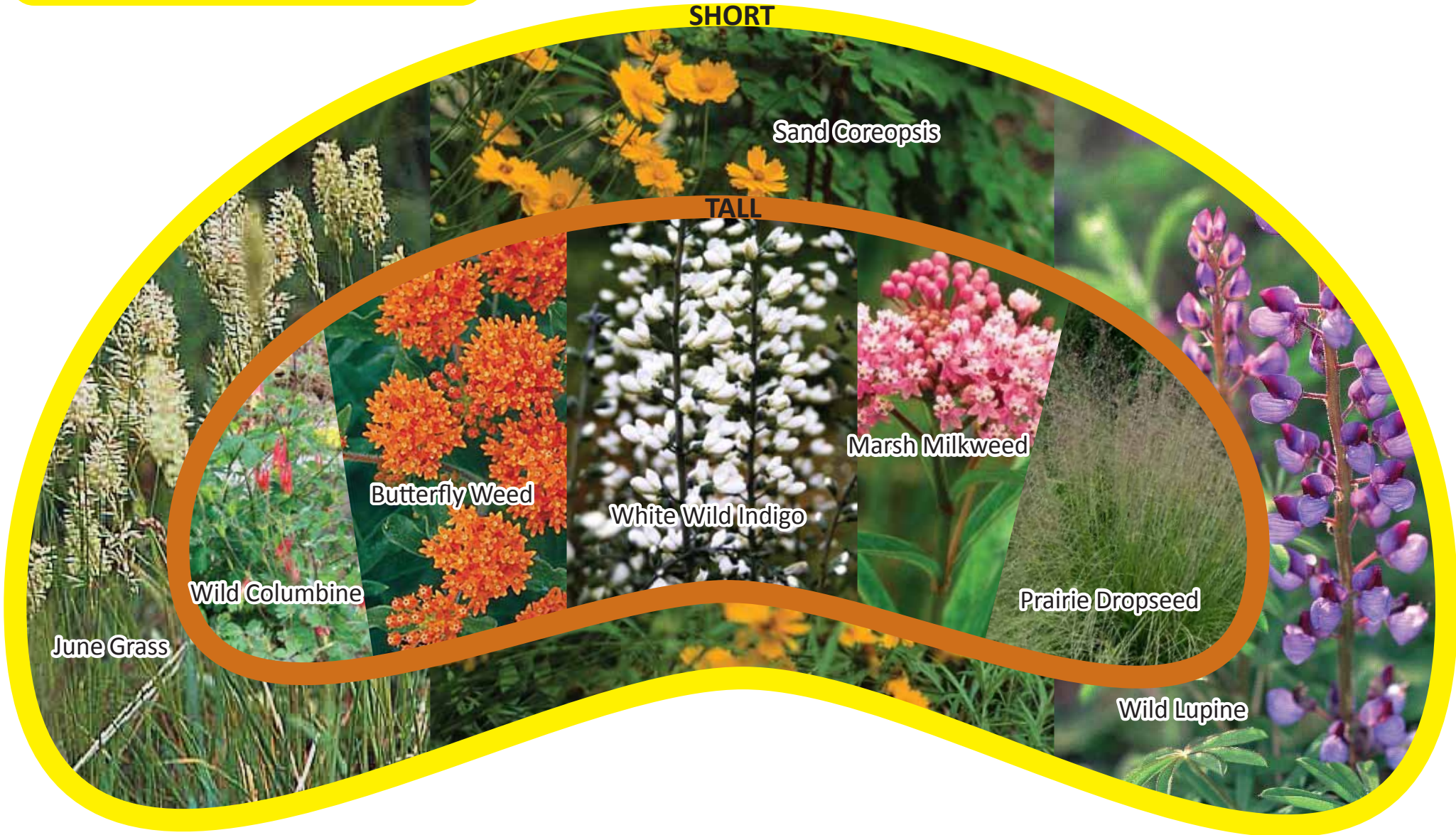
Tall:

- Butterfly Weed - *Asclepias tuberosa*
- Marsh (Red) Milkweed - *Asclepias incarnata*
- Prairie Dropseed - *Sporobolus heterolepis*

- White Wild Indigo - *Baptisia leucantha*
- Wild Columbine - *Aquilegia canadensis*

SHORT

TALL



Sand Coreopsis

Butterfly Weed

White Wild Indigo

Marsh Milkweed

Prairie Dropseed

Wild Lupine

Wild Columbine

June Grass

1. Recycle Oil

Old motor oil can be reprocessed and used again and again. Just put it in a container with a tight lid such as a plastic jug or metal can, and take it to a community oil recycling center. Don't pour anything else in with the oil because contaminated oil cannot be recycled.

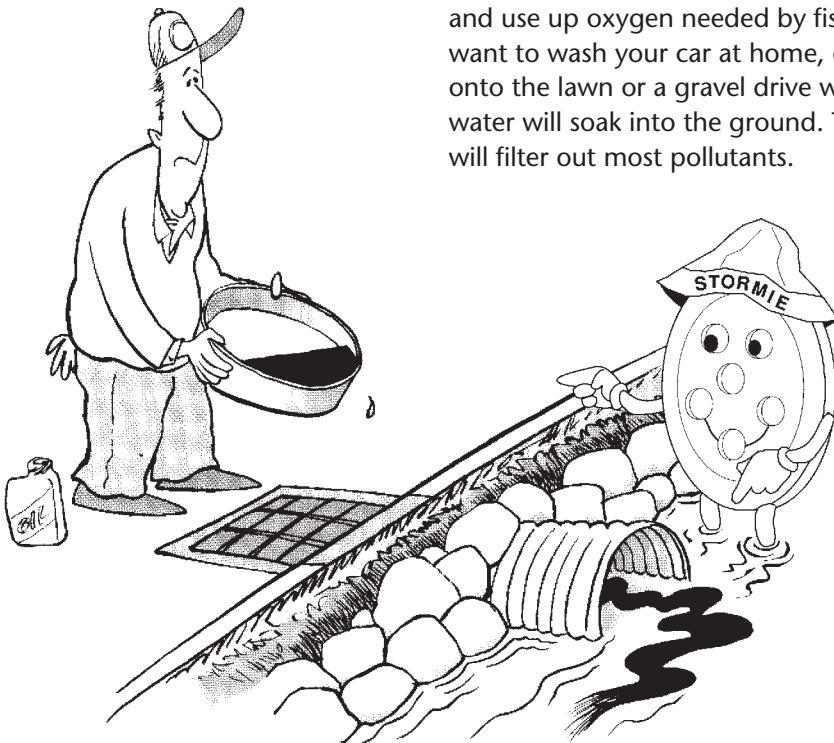
Recycling is the only safe way to get rid of used motor oil. Never use old oil to kill weeds or to oil roads. Oil poured down the storm drain ends up in our lakes and streams. The five quarts from your car could create an oil slick the size of two football fields or pollute a million gallons of drinking water.

2. Use Commercial Car Washes

Taking your car to a commercial car wash or spray booth is a good way to protect our lakes and streams. The dirty water from the car wash goes to a wastewater treatment plant where pollutants are removed.

If you wash cars on a paved driveway or parking lot, the dirty water ends up in our lakes and streams. In addition, phosphates in the soap you use act like fertilizer. Weeds and algae decompose and use up oxygen needed by fish. If you want to wash your car at home, drive it onto the lawn or a gravel drive where the water will soak into the ground. The soil will filter out most pollutants.

Anything dumped into a storm drain flows directly to a nearby stream or lake.



Thinking of having a car wash to raise money for charity? Team up with a commercial car wash and sell car wash tickets for an environmentally-friendly fund raiser.

3. Keep Your Car Tuned Up

Cars that run smoothly burn less fuel and causes less pollution. A tuned-up car saves you money by using up to 20% less gasoline. Regular tune-ups also reduce the amount of hydrocarbons, nitrous oxides and other pollutants that come out of your car's exhaust pipe. These chemicals pollute our water as well as our air. Hydrocarbons can cause cancer and nitrous oxide is one of the ingredients in acid rain. Acid rain increases the toxicity of other pollutants in street runoff, which adds to the risk of sickness or death for fish and other aquatic life.

4. Repair Leaks

Spots on your driveway or garage floor mean the engine, transmission or radiator in your car is leaking. Have the leak repaired right away. Then clean up the spot by using cat litter or another absorbent material to soak up the spill. Sweep up the cat litter and put it in a sealed bag in the trash for disposal. Do not scrub the spot with detergent and wash the dirty water into the street. Remember, all that dirty water ends up in lakes and streams.

5. Recycle Antifreeze

Recycling antifreeze can be a challenge. A few recycling sites now have separate tanks for antifreeze collection. Check with your local gas station or auto repair shop – they may accept used antifreeze.

Used antifreeze should not be flushed down the drain because it has pollutants that may cause problems for sewage treatment plants or septic tanks.

Antifreeze is very poisonous to people and animals. Because of its sweet taste and smell, antifreeze may attract children or pets and other animals. Drinking only three ounces may kill an adult and even less will kill children or pets.

6. Return Used Batteries

Return your used car or truck battery to the place where you bought it. Other retailers may charge you for disposal. Be careful – old batteries may leak acid. Wear gloves and goggles and put the old battery in a leak-proof container. If you drop it, neutralize any spilled acid with baking soda or lime.

Do not throw old batteries in the trash or bury them – you'll be breaking the law. Old batteries contain hazardous chemicals that can leach through the soil and pollute our groundwater.

7. Check Tire Pressure

One of the simplest and cheapest ways to prevent pollution is to keep your tires inflated. For every pound that your tires are under-inflated, your car loses 1% in gas mileage. Under-inflated tires also wear out sooner. The solution is simple – check your tire pressure frequently, especially as temperature changes in the fall and spring. Tires lose a pound of pressure for every 10-degree drop in temperature. By reducing the amount of gasoline your car burns, properly inflated tires reduce the amount of polluted exhaust that your car makes.

8. Use Up Paints, Polishes and Cleaners

Paints, polishes and special cleaners for cars are usually flammable and toxic. Try to buy only what you need. If large amounts are left over, donate them to a friend or a school auto-repair class.

To dispose of small amounts, leave the container open in a safe place away from children, pets, wildlife and flames. When the liquid is gone and the substance is hard, cap the container and put it in the trash. The potentially toxic ingredients are locked into the hardened material and are less likely to cause pollution. However, burning will release the toxic chemicals. If your community burns trash, ask the public works department how to properly dispose of these materials.

9. Substitute Shoveling for Salt

Salt may be an easy way to get rid of snow and ice, but it pollutes lakes, streams and groundwater. It also kills trees and grass as well as corroding auto bodies, metal bridges and underground cables. Shovel your driveway and sidewalk before the snow gets packed down and icy. If the pavement is still slick, use sand or sand mixed with salt to provide some traction and melt the snow. After the snow melts, sweep up the sand to keep it out of storm sewers and waterways.

10. Drive Less

Driving less is the best way to prevent pollution. Water quality tests show that the most polluted runoff comes from heavily traveled streets and highways. This runoff often contains enough zinc, lead or copper to kill fish and other aquatic life.

Is there a way you could help reduce water pollution by driving less? Could you walk, ride a bike, car pool or take the bus to work? If not every day, could you do this once or twice a week? Could you do several errands on your next shopping trip? Could you work at home one day a week?

Driving seems cheap and convenient, but many costs, such as road construction, are hidden in our tax bills. If we paid the full price of auto transportation at the gas pump, a gallon would cost \$4.50 or more.



Keep soil in its place - seed and mulch as soon as possible to prevent soil erosion.

You can have a *Ripple Effect* on Dane Co. waters!



Test your soil before applying
fertilizer to prevent over fertilization.

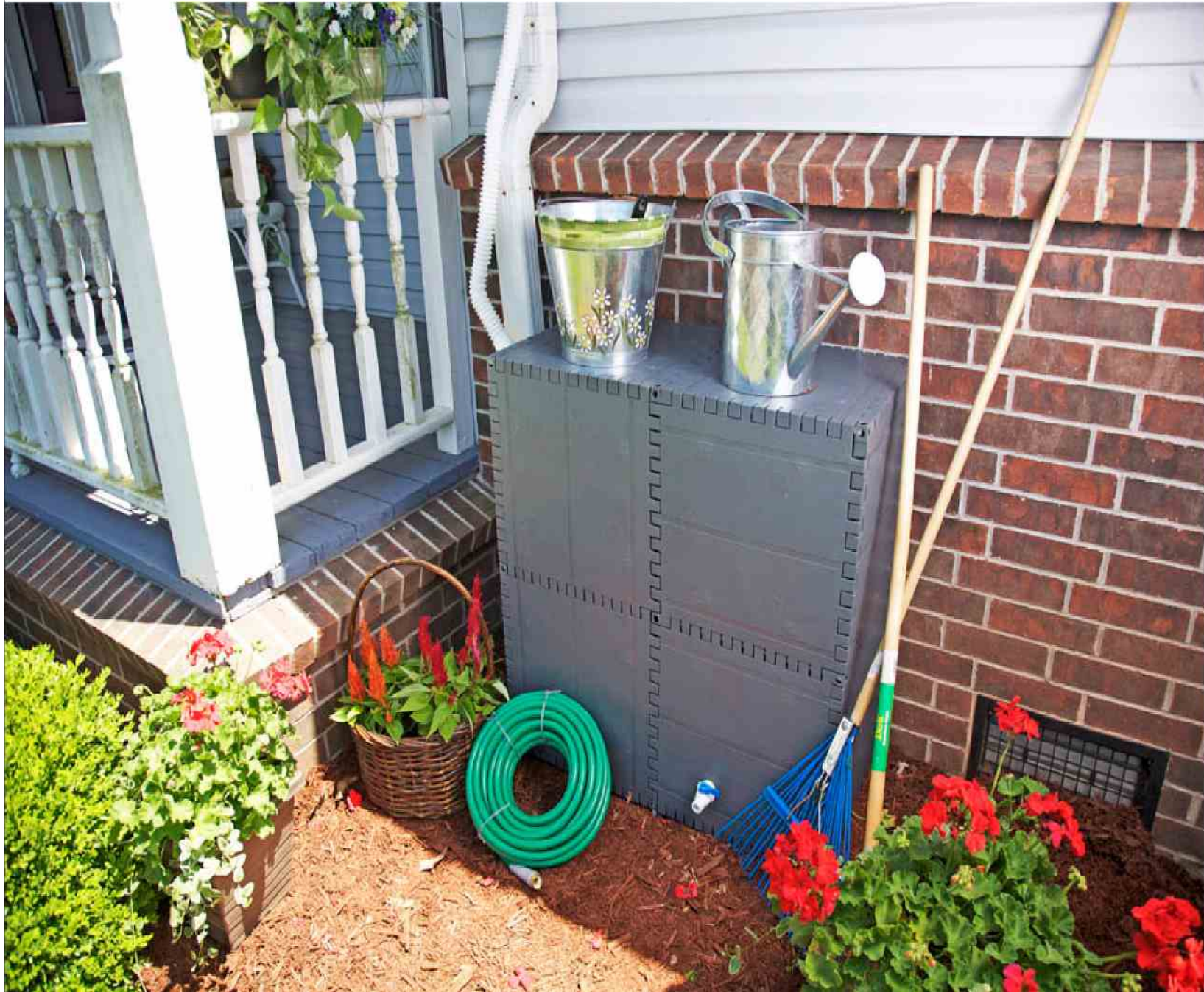
You can have a *Ripple Effect* on Dane Co. waters!



Keep pet waste from washing into our lakes-
pick up after your pooch.
You can have a *Ripple Effect* on Dane Co. waters!



Collect roof runoff - install a rain barrel.
You can have a *Ripple Effect* on Dane Co. waters!

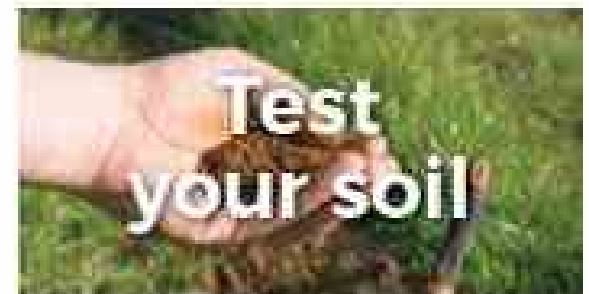


Build a Rain Garden! Not only are they beautiful, but they capture and clean stormwater runoff. You can have a *Ripple Effect* on Dane Co. waters!





SMALL ACTIONS MAKE A BIG DIFFERENCE!



Redirect downspouts away from pavement to natural areas where rain can soak into the ground. You can have a *Ripple Effect* on Dane Co. waters!



Photo courtesy of Rainscaping Iowa

Working to Keep Roads Safe while Protecting our Waters this Winter

Whether you're a fan of the snow or secretly hoping the mild fall will continue right into spring, winter is coming and City of Stoughton crews are ready. Our goal is to keep roads, parking lots and sidewalks safe this winter by using the right amount of salt. More isn't always better, especially when it comes to winter salt use. Excess salt can harm plants and animals, pollute our water, damage buildings and corrode vehicles, roads and bridges. Did you know that 1 teaspoon of salt can pollute 5 gallons of water? Once you put salt down, it doesn't go away. Instead, it travels into our lakes, rivers, streams and wetlands, putting our aquatic life at risk and endangering our freshwater resources. The good news is that a little salt can go a long ways if applied properly.

The City of Stoughton is using sensible salting practices such as calibrating our plow trucks to put down the proper amount of salt and pre-wetting salt as it's applied during the storm. Before the snow season, each truck is calibrated to only put down a specific amount of salt as it goes down the road. The truth is, we don't need to use that much salt to be effective. Our plow trucks put down roughly 300-400 lbs of salt per lane mile depending on the conditions. Furthermore, each plow truck is equipped with a spray bar that pre-wets the salt before it hits the road. The practice of pre-wetting activates the salt resulting in faster melting. It also helps the salt stick to the pavement making it less likely to bounce off the road before it can work.

These practices allow us to keep roads, parking lots and sidewalks safe while reducing salt use and our impact to our ponds, wetlands and the Yahara River. Please join us in our effort to become Salt Wise by taking some simple actions this winter:

- **Shovel:** Clear walkways and other areas before the snow turns to ice. The more snow you remove manually, the less salt you will have to use and the more effective it will be.
- **Scatter:** Believe it or not, just a coffee mug of salt is enough to treat an entire 20-foot driveway or 10 sidewalk squares.
- **Switch:** When pavement temps drop below 15, salt won't work. Switch to sand for traction or a [different ice melter](#) that works in lower temperatures.
- **Hire a salt wise applicator:** If you hire a contractor to remove snow and ice, let them know you are WI Salt Wise! Some local applicators have been trained in winter maintenance practices that reduce environmental impact. Ask if they've been trained and what practices they use.
- **Look** for proper salt use at the stores & businesses you visit. If they're using the right amount of salt, tell them thank you! If not, let them know about WI Salt Wise.
- **Be Salt Wise All Year:** The salt you put in your water softener ends up in local fresh-water streams. New, efficient softeners use less than one bag per month. If you're using more, have a professional tune up your softener or invest in a new, high-efficiency model.



Cleaning Up Stormwater Runoff

A SERIES OF WATER QUALITY FACT SHEETS ABOUT STORMWATER RUNOFF

What is stormwater runoff? It is the rain and melting snow that flows off streets, rooftops, lawns, and farmland. The flowing water carries salt, sand, soil, pesticides, fertilizers, leaves and grass clippings, oil, litter, and many other pollutants into nearby waterways. Since these pollutants are washed off a wide area and cannot be traced to a single source, they are called nonpoint source or runoff pollutants.

Storm Sewers – Rivers Beneath Our Feet

In developed areas, much of the land surface is covered by buildings and pavement which do not allow water to soak into the ground. Instead, storm sewers are used to carry the large amounts of runoff from these roofs and paved areas to nearby waterways.

Storm sewers are simply pipes laid underground, often below streets. Inlets or drains located along curbs and in parking areas collect the runoff, which then flows to nearby streams or lakes. A common misconception is that water running off streets goes into a sewage treatment plant. It does not. In fact, stormwater usually receives no treatment. Water that runs off lawns, streets, and parking lots flows directly into lakes and streams.

Stormwater is Not Clean Water

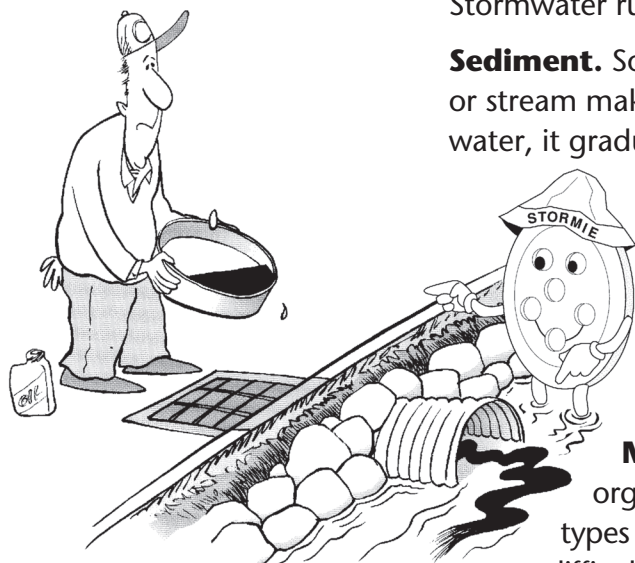
Stormwater runoff carries pollutants that seriously harm our waters:

Sediment. Soil particles washed off construction sites or farm fields into a lake or stream make the water cloudy or turbid. When sediment settles out of the water, it gradually fills in the stream or lake bed.

Phosphorus. This nutrient, often attached to soil particles, fuels the growth of algae and aquatic weeds. These plants are important in providing habitat for fish and wildlife. However, rapid and excessive growth of algae and aquatic plants can degrade water quality and interfere with swimming, boating and fishing.

Micro-organisms. Bacteria, viruses and other disease causing organisms make waterways unsafe for swimming, wading and other types of recreation. Some of these organisms, notably Cryptosporidium, are difficult to remove through water treatment and may endanger people who depend on drinking water supplies drawn from lakes or streams.

Toxic chemicals. Motor oil, lead from gas and auto exhaust, zinc from roof drains and tires, and pesticides in stormwater runoff may kill aquatic organisms or impair their health, growth or ability to reproduce.



Did you know that oil dumped into the storm sewer pollutes our water?

The Goals of Urban Stormwater Programs are to:

- Slow down water, decreasing its ability to cause erosion and carry pollutants.
- Reduce the amount of runoff by encouraging water to soak into ground.
- Prevent pollution by reducing the use of toxic chemicals, controlling erosion and by covering outdoor storage piles.
- Remove pollutants by routing runoff through settling ponds, grass filter strips or other treatment devices.

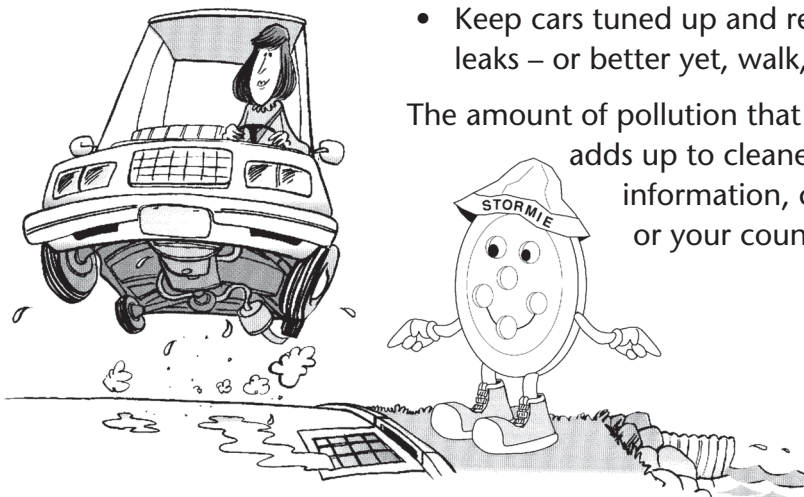
Federally mandated stormwater permits require many industries and cities to control stormwater runoff. Even communities without stormwater permits require erosion controls on construction sites and better stormwater management in new development.

Federal laws also require all farmers who participate in federal programs to develop farm conservation plans that help control cropland erosion, barnyard runoff and other sources of water pollution.

We Can All Help!

Each of us contributes to stormwater pollution and each of us can help stop it. Here are some ways you can help:

- Keep pesticides, oil, leaves and other pollutants off streets and out of storm drains.
- Divert roof water to lawns or gardens where it can safely soak in.
- Clean up pet waste – bury it or flush in down the toilet.
- Keep cars tuned up and repair leaks – or better yet, walk, bike or take the bus.



The amount of pollution that you stop may seem small, but together it all adds up to cleaner water for everyone to enjoy. For more information, contact the Department of Natural Resources or your county Extension or Land Conservation office.

This publication is available from county UW-Extension offices, Cooperative Extension Publications – 1-877-947-7827, and from DNR Service Centers.

A publication of the University of Wisconsin–Extension in cooperation with the Wisconsin Department of Natural Resources.

Author: Carolyn Johnson, UW–Extension.

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Editing and design by the Environmental Resources Center, University of Wisconsin–Extension.



GWQ016 Cleaning Up Stormwater Runoff

DNR WT-532-99

R-09-99-10M-20-S



Building a Rain Garden

What is a Rain Garden?

Rain gardens are specially designed gardens that collect and infiltrate stormwater from driveways, and heavily compacted lawns.

They can be as manicured or natural as the gardener chooses, and though typically planted with native vegetation, ornamentals certainly may be used for variety.

Building a rain garden is a great way for individuals to get involved in improving our lakes and rivers.



Newly Planted



Red Admiral butterfly on a Purple Coneflower



Honey bee on Culver's Root



During a Rain Event

Why Plant a Rain Garden?

Rain & melted snow run off our roofs, driveways & yards, into our streets, through the storm system, and eventually to our lakes & rivers. This water is untreated and carries all sorts of pollutants such as leaves, grass, oil, salt, fertilizer, pet waste, and pesticides. Rain gardens retain the water before it leaves your yard and keep the pollutants in the garden, where they can be absorbed into the soil.

Rain gardens have the potential to soak up significantly more water than a regular lawn, improving water quality, replenishing groundwater, and reducing the chances for localized flooding.

They also happen to be beautiful and provide habitat for beneficial critters: birds, bees, butterflies, & dragonflies.



One Year Later



Coreopsis



Left: Prairie Dropseed

Center: Spiderwort

Right: Prairie Blazingstar

All photos graciously submitted by J. Bertolacini

Learn more @
myfairlakes.com

Rain Gardens: step by step

Designing the Garden x x x + + x x + + x x + x + x + x + x + x + x

Choosing the location of your garden can seem a little daunting to some. You will want to stay 10 feet from your house's foundation to avoid seepage. The best location would likely be fairly close to your downspouts if you intend to direct roof water to your garden. Make your garden as big as you are willing and able to maintain. There are some rules of thumb, but you can always change it if you feel it's too small or too big.

Site Preparation x x x + + x x + + x x + x + x + x + x + x + x + x + x + x

The amount of preparation required depends on your soil. If your soil is easy to dig into and water drains fairly quickly, you likely only need to remove any grass and create a 6-8 inch depression to allow water to pond temporarily. If your soil is hard, you will want to remove a few extra inches of soil and add compost to help loosen it up and improve infiltration before planting. Amazingly, some plants can push their roots through the toughest soils, and open up small channels to allow water to soak in. Look into "clay busters" if you have exceptionally bad soils.

Planting x x x + + x x + + x x + x + x + x + x + x + x + x + x + x

Plant selection can also be confusing, but have fun with it. If design properly, a rain garden will not hold water for very long, and so "wetland plants" may not be the best option. Instead select native plants that can handle a fluctuation in water levels. Talk to your local greenhouse about what plants they recommend or see below for some suggestions.

Pick & Choose or Select Your Own

○ Full Sun (6+ hrs) ● Part Sun (3-6 hrs) ● Full Shade (0-3 hrs)

		Prairie Blazingstar ○	
		Lanceleaf Coreopsis ○	
		Purple Coneflower ○ ●	
		Spiderwort ○ ●	
		Canada Anemone ○ ●	
		Nodding Onion ○	
		Virginia Mountain Mint ○ ●	
		Butterflyweed ○ ●	
		Anise Hyssop ○ ●	
		Marsh Phlox ○ ●	
		Black-Eyed Susan ○ ●	
		Columbine ○ ● ●	
		Orange Coneflower ○ ●	
		Wild Geranium ○ ● ●	
		Sky Blue Aster ○ ●	
		Woodland Phlox ● ●	
		Calico Aster ○ ● ●	
		Monkey Flower ●	
		False Rue Anemone ●	
		Zig Zag Goldenrod ● ●	
GRASSES/SEDGES			
Common Oak Sedge, Sideoats Gramma Grass, Little Bluestem, Prairie Dropseed, Silky Wild Rye			
May	June	July	Aug. Sept. Oct.

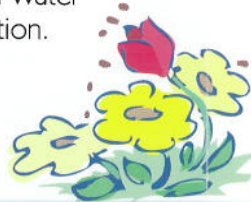
Bloom times may vary.

Keep Rainwater In Its Place?

Build little dams in the street curb. That's what kids like to do during summer rain storms. Pile up stones, pebbles, leaves, mud, grass, sticks, and anything that'll hold back or divert the water. But the water always wins, breaks through and rushes down the street into the storm sewer. The only way to stop the water is to stop the rain, and that's a little miracle neither child nor adult can accomplish.



But if we could keep the rain in its place, our lakes would be much cleaner. That's because it's rainwater and melting snow that wash away dirt, leaves, grass, oil, salt, fertilizer, pesticides and pet waste from our yards and streets into storm sewers. When this happens, we call it "nonpoint" or runoff water pollution.



Contrary to common belief, the water that goes into storm sewers is **not** filtered by wastewater treatment plants. Instead, it usually ends up draining **directly** into Dane County lakes and streams.

In the water, these materials from our homes, yards and pets decompose into a murky green soup. They promote excessive plant growth, emit a rancid odor, kill fish, and release health-threatening bacteria.

Individually, we contribute little pollution. Collectively, our 150,000 Dane County households damage the natural environment of our lakes and streams through simple neglect and lack of awareness.

Take a Lesson from Nature

Left to herself, Mother Nature controls the ill-effects of runoff by covering the ground with porous layers of plants, grasses, and leaves. These materials act like sponges, soaking up rainwater and melting snow. The water that does run off moves slowly, picking up fewer pollutants—a stark contrast to the runoff "highways" created by our paved city streets and sidewalks. In our urban landscape we need to follow nature's example.

Make Your Lawn a Sponge

There's one sure way to reduce runoff pollution: slow down the flow of water. Give your lawn a chance to soak it up. This not only reduces runoff but it also replenishes the groundwater.



Here are a few easy ideas you can use to give nature a hand:

- ◆ Create garden beds with a mixture of flowers, shrubs, and trees.
- ◆ Create natural landscapes, especially along streams and lake shorelines.
- ◆ Aim downspouts at grassy areas instead of pavements.
- ◆ Wash your car on a grassy area.
- ◆ If you water your lawn, don't spray the sidewalk or driveway.
- ◆ Instead of paving areas of your property, consider using bricks, stones, blocks, gravel or wood chips.
- ◆ Protect sloping ground from runoff and erosion by maintaining a healthy lawn or rock garden in the area.

Runoff pollution is a serious problem for our lakes. We can't stop the rain and we can't dam the water, but we can help keep it in its place. Do your share to keep Dane County lakes and streams clean for everyone to enjoy.



From Soil...

It's true, one of the major components of runoff water pollution in Dane County today is soil. Simple, plain soil.

Whenever it rains, exposed soil easily washes away into the storm sewers and then directly into our lakes and streams.

The soil muddies the water and damages fish habitat. It makes lakes and streams shallower, which changes their ecology and can require costly restoration to remove the sediment.



Save the Soil, Save the Lakes

Here's what you can do to prevent soil runoff:

- ◆ Seed, then mulch large areas of exposed soil as soon as possible.
- ◆ If you get a load of soil for your yard, cover it with a tarp until you're ready to use it.
- ◆ When you build a home, work with a builder who will take steps to reduce soil erosion.
- ◆ Don't dig up more soil than necessary.



... to Sediment.

For more information

on how you can be the solution to water pollution
contact:

Office of Lakes and Watersheds
One Fen Oak Court, Room 234
Madison, WI 53718-8812
608-224-3758
www.danewaters.com



www.co.dane.wi.us/commissions/lakes

Keep Rainwater in its place?



WaterWatch



Lawn & Garden Fertilizers

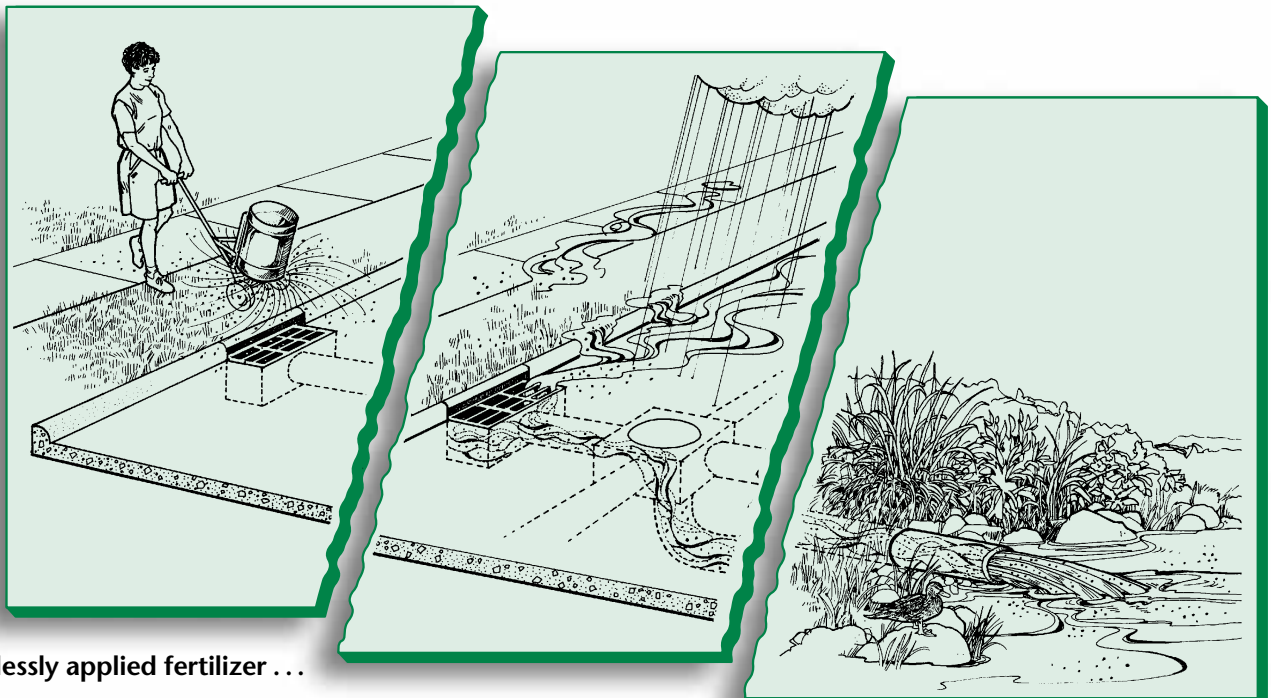
A SERIES OF WATER QUALITY FACT SHEETS FOR RESIDENTIAL AREAS

Healthy lawns, trees and shrubs add to the beauty and value of a home. They also keep our lakes and streams clean by allowing rainwater to filter into the soil rather than running into storm sewers. Maintaining healthy lawns and landscape plants, however, often requires the use of fertilizers and improper fertilizer use can cause water pollution.

Many fertilizer materials, including leaves and grass clippings, contain nitrogen and phosphorus. When these nutrients wash into lakes and streams they:

- promote unsightly algae blooms and aquatic weed growth,
- lower dissolved oxygen levels in the water, and
- may release ammonia – which is toxic to fish.

This publication describes fertilizer practices that will help maintain healthy lawns and gardens, while protecting water quality in your community.



Carelessly applied fertilizer ...

... washes into storm sewers ...

... and flows directly into our lakes and streams.

It all adds up

Fertilizer carelessly applied on one lawn can be a waste of the homeowner's money but may otherwise seem insignificant. On hundreds or thousands of lawns, however, careless applications can add up to a major problem for local streams and lakes. For tips on efficient fertilizing, see inside ...

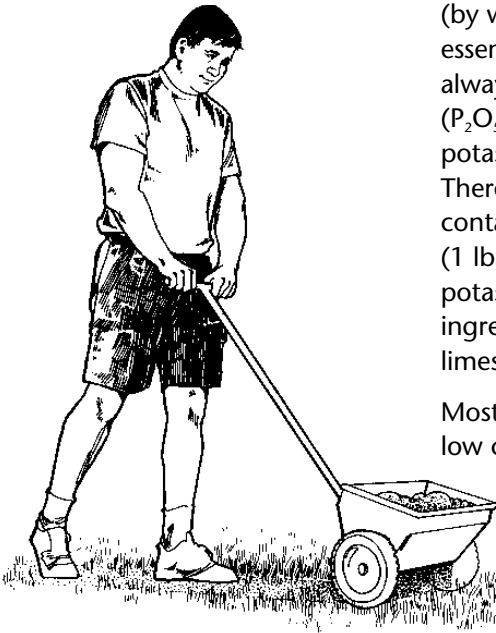
CHOOSING THE BEST FERTILIZER APPROACH

FERTILIZER SELECTION

The label on a fertilizer bag has three numbers indicating the percentage (by weight) of the three nutrients most essential to healthy lawns. Nitrogen (N) is always listed first, followed by phosphate (P_2O_5), which supplies phosphorus, and potash (K_2O), which supplies potassium. Therefore, a 25 lb. bag of 25-4-5 fertilizer contains 25% (6.25 lbs.) nitrogen, 4% (1 lb.) phosphate, and 5% (1.24 lbs.) potash. The remainder is made of ingredients such as sand or ground limestone.

Most organic fertilizers contain relatively low concentrations of plant nutrients compared to synthetic fertilizers, and release nutrients more slowly. Slow-release fertilizers provide a lower concentration of nutrients over a longer period of time. Fast-release fertilizers do the opposite.

On heavy (clay) or compacted soils, fast release fertilizers are better than slow-release fertilizers. The longer a fertilizer granule remains undissolved, the greater the chances of it being washed into waterways. On sandy soils, however, nitrogen can leach through the soil into the groundwater. On these soils, slow release nitrogen is preferred. Slow release nitrogen sources provide soluble nitrogen over a period of time so there is not a large concentration of nitrogen available for leaching.



It's best to test the soil before you start a fertilization program. For more information on soil testing, contact your county UW-Extension office.

SOIL TESTS

A fertilization program should begin with a soil test. Soil tests provide specific fertilizer recommendations for your lawn and garden and can help you avoid over-application of fertilizer.

LAWN FERTILIZERS

A lawn fertilization program should begin in **early October**, not early May. Spring applications can actually harm lawns by promoting more top (leaf) growth than root growth. Shallow root systems are unable to sustain lawns through a drought or a harsh winter. Fall fertilizer applications, however, promote deep, healthy root systems and hardy lawns.

Fall fertilizer applications should be made when the average daily temperature drops to 50° F. The average daily temperature is determined by adding the daily high temperature and the daily low temperature, and dividing by two. For example, 61° F (daily high) +37° F (daily low) divided by 2 = 49° F average daily temperature.

The table below shows the timing of fertilizer applications and recommended amounts (if a soil test report is not available). It also shows the importance of grass clippings. By leaving grass clippings on the lawn, nitrogen applications can be reduced by 30-40 percent. Keep in mind that over-fertilizing and poor timing – not grass clippings – are primary reasons for thatch problems in lawns.

Nitrogen application guidelines

Time of Application ¹	Pounds of nitrogen per 1,000 square feet of lawn	
	Grass Clippings Removed	Grass Clippings Not Removed ²
October 1	1.25	1.00
Late May	1.25	1.00
Late June	0.75	0.50
Late August (optional)	0.75	0.50

¹Fall nitrogen fertilizers should be water soluble and contain nitrate or ammonia forms of nitrogen such as urea, ammonium nitrate or ammonium sulfate.

²Grass clippings are organic fertilizers containing 3-4% nitrogen when dry.

Note: You can use a simple calculation to determine how much fertilizer to apply to reach a recommended level of nitrogen. For example, if you want to apply 1.00 lb. of nitrogen using 25-4-5 fertilizer, divide 1.00 by 25 percent (or .25). The answer is 4. In this case, to get the recommended 1.00 pound of nitrogen, apply 4 lbs. of the fertilizer mixture per 1,000 sq. ft. of lawn. (Of course, you also need to determine the size of the lawn.)

GARDENS, TREES & SHRUBS

Start with a soil test. The nutrient requirements for garden plants vary. In general, nitrogen promotes leafy top growth; phosphorus is used for root development; and potassium is necessary for winter hardiness, disease resistance, and general plant durability. Specific recommendations can be found in publications available at your county UW-Extension office.

Healthy trees and shrubs in well-drained, fertile soils do not require annual fertilizer applications. If they appear unhealthy, the problem may be caused by insects, disease, or weather. Fertilizers should be applied when trees and shrubs are growing poorly and the problem cannot be traced to other causes. If plants do not respond, the problem may be soil-related.

In general, trees and shrubs should be fertilized when they are dormant, in late fall or early spring. Fertilizing in early fall stimulates growth that might be killed in winter, providing an entrance for insects and disease organisms. Similarly, fertilizing in late spring stimulates growth that depletes stored food supplies and weakens the plant. (However, if trees and shrubs are stressed by environmental conditions, fertilizer should be applied in June.)

When planting gardens, trees or shrubs, cover the bare soil with a mulch to prevent erosion, and sweep (don't wash) soil off paved areas. Phosphorus is often attached to soil particles. When these particles are washed into lakes or streams the phosphorus stimulates excess weed and algae growth.



Healthy gardens, trees and shrubs add beauty and value to a home, allow stormwater to soak into the ground and help filter impurities from the water.

A Note of Caution on Fertilizer-Pesticide Combinations

Many homeowners and lawn care companies routinely combine fertilizer and pesticides in a series of applications throughout the spring, summer and fall. These multi-step programs are promoted as the sure and easy path to the perfect lawn. The pressure to have a perfect lawn, however, has clouded a number of issues and literally mixed ingredients that should be kept separate. Areas of caution include:

Routine insecticide applications.

Most insects found on a lawn are beneficial, and insecticides can harm these beneficial insects, as well as birds, pets and people. Research in Wisconsin indicates that only about one lawn in 200 will need an insecticide application in a given year. Even on lawns where harmful insects exist, natural controls or better lawn care practices will reduce the threat. For example, chinch bugs can be pests during a dry year, but proper watering (or even a good rain) can minimize their effects.

Routine herbicide applications.

Weeds are not the cause of an unhealthy lawn, they are the result. The best defense against weeds is a thick



healthy lawn that comes from proper watering, fertilizing and mowing. Routine herbicide applications are unnecessary and their effects can be misleading. For example, "Weed 'n' Feed" products are widely used to kill dandelions in spring, when the flowers are so noticeable. The curling weeds seem to indicate that the herbicide has been effective, but in fact the herbicide may kill only the top of the weed, not the root.

Unnecessary nutrient applications.

Most commercial fertilizers contain phosphorus, a major water pollutant. Yet many soils already contain enough phosphorus for a healthy lawn. This underscores the need for a soil test before applying fertilizers. Low-phosphorus or phosphorus-free fertilizers can provide nutrients while avoiding the threat to water quality.

In short, applying unneeded pesticides and nutrients in a generic, multi-step fertilizer program can be expensive for the homeowner and harmful to the environment.



A good fertilization program promotes healthy plants that are more resistant to drought, insects and diseases. Healthy plants can also out-compete weeds and filter pollutants carried by runoff water. Indiscriminate use of fertilizers, however, can damage plants and pollute lakes and streams. To maintain a healthy lawn and garden and protect our water resources, remember:

- **Test the soil.**

Before planting a garden or fertilizing your lawn, have the soil tested. A soil test takes the guesswork out of fertilization.

- **Fertilize lawns in the fall.**

Fall fertilization promotes healthy lawns with deep roots.

- **Healthy trees and shrubs do not require an annual fertilizer application.**

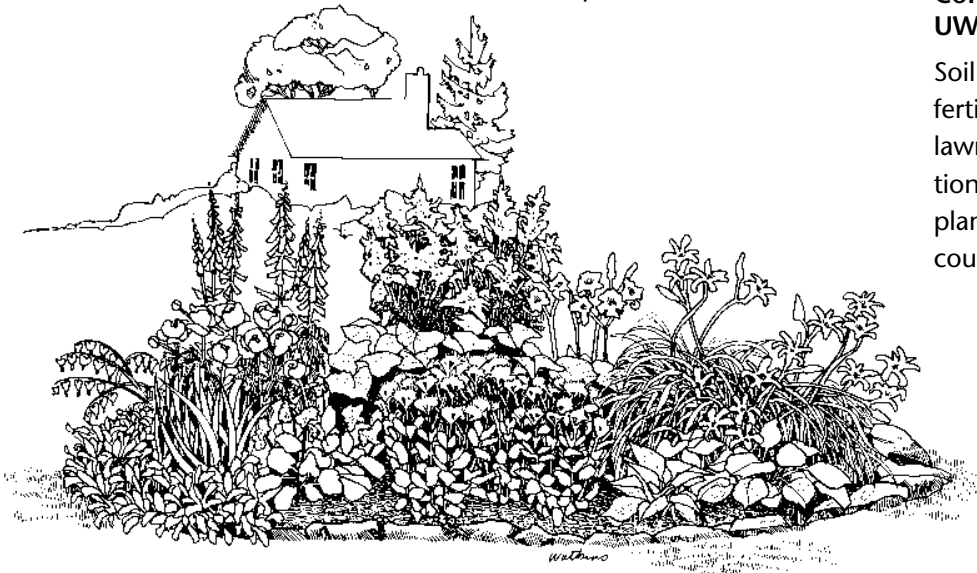
Overfertilized shrubs, in fact, will produce more growth and require more pruning.

- **Sweep all fertilizers, soil, and vegetation off paved surfaces.**

Fertilizers, soil particles, grass clippings and leaves contain nitrogen and phosphorus which can cause nuisance weed and algae growth if washed through storm sewers into nearby waterways. In addition, decomposing leaves and grass clippings can rob streams and lakes of oxygen.

- **Contact your county UW-Extension office.**

Soil testing information and fertilizer recommendations for lawns and gardens, and suggestions for selecting the right plants, are available at your county UW-Extension office.



This publication is available from county UW-Extension offices or from Extension Publications, 630 W. Mifflin St., Madison, WI 53703. (608) 262-3346.

A publication of the University of Wisconsin–Extension in cooperation with the Wisconsin Department of Natural Resources.

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Editing and design by the Environmental Resources Center, University of Wisconsin–Extension.



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GWQ002 Lawn & Garden Fertilizers

DNR WT-528-99

R-09-99-10M-30-S

UW Extension



2018 Tower Times Articles

Spring 2018: 1. Rain Garden information- including ripple effects rain garden webpage address
2. Springtime rain and snow melt runoff information-proper salt usage, clean up pet waste, directing rain water, keep streets free of leaves and grass clippings, test soil before fertilizing, prevent soil erosion, also included ripple effects webpage address and City stormwater webpage address

Summer 2018: 1. Healthy Lawns & Lakes- including information on appropriate fertilizer use, and UW soil test webpage address
2. Illicit discharge- definition and ordinance code

Fall 2018: 1. Protecting Lakes and Streams-how to keep streets leaf free, clean up pet waste, and reduce salt usage, included webpage address for leaf-free streets rain alert sign up at ripple-effects.com and shared City stormwater webpage address



Make a Difference...

Install a Rain Garden

Rain gardens (shallow depressions planted with native wildflowers) soak up rainwater or melted snow from your rooftop, driveway and lawn. They are positioned to collect water from downspouts or at a low-point in the yard where drainage naturally occurs. The gardens allow water to soak into the soil rather than running off to the nearest lake or stream.

A rain garden can soak up to 30% more water than a traditional lawn. Why is that important? Because the water from rain and snow that runs off our roofs and driveways to the streets and through the storm drain system to our lakes carries with it all sorts of pollutants like fertilizers, oil, pet waste and more. Whatever is in the street—garbage, pet waste, oil, etc.—gets washed to the nearest lake or stream.

Mature rain gardens are easy to maintain. Once plants get established, very little weeding is needed. Do not install a rain garden in any easement designed to convey underground electric, water, wastewater and stormwater.

Besides helping our lakes and streams, rain gardens are aesthetically pleasing and provide habitat for birds, butterflies and beneficial insects—including dragonflies that eat mosquitoes. You can make a big difference by devoting a small amount of space, time and money to the creation of a rain garden.

Visit www.ripple-effects.com/raingardens to learn more about rain gardens.

SPRINGTIME BRINGS MORE THAN FLOWERS WITH THOSE SHOWERS

While this winter feels as though it will never end, eventually, the snow and ice will melt and there will be spring showers. The rain and snow melt flows across streets, driveways, parking lots and rooftops and transports sand, salt, last fall's leaves, oil, trash and many other pollutants directly to storm drains, which eventually ends up in our lakes and streams.

Some mistakenly think that water running off streets goes into a sewage treatment plant. But the truth is that it goes right to our lakes and streams.



You Can Help

There are many things each of us can do to prevent storm water pollution.

- 💧 Use salt sparingly during the winter.
- 💧 Sweep up any excess salt or sand left over from the snow shoveling season.
- 💧 Clean up pet waste year round—bury it properly or put it in the garbage.
- 💧 Keep cars well maintained repairing leaks; but consider walking, public transportation or riding a bike whenever you can.
- 💧 Direct rainwater away from paved areas to lawns or gardens where it can soak in.
- 💧 Keep leaves and grass clippings out of the street. Compost yard waste, debris and leaves.
- 💧 Get a soil test before applying fertilizer to your lawn. Don't pay for something you don't need. If a test shows that your lawn does need fertilizer, apply it according to directions and carefully clean up any spills on paved surfaces.
- 💧 Wash your car on the lawn or at a car wash that sends its used water to the sewage treatment plant.
- 💧 Prevent soil erosion.
- 💧 Don't let anything but rain go down the storm drain or into the ditch.

Visit the following websites for more information on how you can help our lakes and streams:

www.ripple-effects.com/dvdrelease

www.ripple-effects.com/mycommunity

www.cityofstoughton.com/planning click on link to Storm Water Management

Healthy Yards . . . Healthy Lakes and Streams

What we do in our yards can directly affect our lakes and streams. Before using fertilizer on your lawn or gardens, test your soil. A \$15 soil test will show if your soil is lacking anything and if fertilizer needs to be applied. Instructions and forms from the UW Soil and Plant Analysis Lab are online at <https://uwlabs.soils.wisc.edu/soil-samples/lawn-garden/>. Results will tell you exactly what you need for healthy lawn and gardens.

If your test shows you do indeed need fertilizer, be sure to clean up any that lands on your sidewalk, driveway or other hard surfaces. If left on paved areas, it can easily make its way to the nearest lake or stream with the next rainfall. Keeping leaves, grass clippings and other yard waste, which contain nitrogen and phosphorus, out of the street also help prevent lakes and streams from becoming green and scummy. When these nutrients wash into lakes and streams, they can promote algae blooms and excessive weed growth (which can lower oxygen levels in the water) and may release ammonia (toxic to fish).

Healthy yards add to the beauty and value of your home. They can also help our lakes and streams by allowing rainwater to soak into the soil rather than running off to the nearest storm drain. So, do your part and keep your lakes and streams healthy by using fertilizers only if and where they are needed.

Prohibition of Illicit Discharges

Discharge of any material other than stormwater into the municipal separate storm sewer system (MS4) is prohibited in the City of Stoughton. Stormwater refers to surface runoff and drainage of rainfall and snow or ice melt. The storm sewer system includes roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, and constructed channels or storm drains.

City of Stoughton Municipal Code section 10-136(e)(1) states, "No person shall discharge or cause to be discharged into the MS4 or waters of the state located within the city any materials, including, but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than stormwater. The commencement, conduct or continuance of any illicit discharge to the MS4 is prohibited. The following non-stormwater discharges or flows are generally not considered illicit discharges if done in a non-polluting manner: water line flushing, landscape irrigation, diverted stream flows, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool water, street wash water and fire fighting."

Any person who fails to comply with the provisions of this ordinance shall forfeit no less than \$100.00 nor more than \$500.00 and also pay fees and disbursements incurred in the prosecution of such violations. Each and every day during which a violation continues shall constitute a separate offense.

If you have any questions regarding this ordinance, please contact the Building Inspector at 608-873-7626.

Take Action to Protect our Waters this Fall and Winter!

As the weather cools and the days of splashing around on the lake fade away it's easy to forget about the health of our waters. Take action to protect our waters by:

1. Keeping streets leaf-free this fall

In the fall, keeping leaf litter off of streets before it rains can reduce the amount of phosphorus in urban stormwater by 80% compared to no leaf removal!

Before the rain...

- **Safely remove leaves** from the street in front of your home.
- **Mulch or Compost leaves** on your property.
- **Sign up to receive Leaf-free Streets Rain Alerts** this fall (Oct. 1- Nov. 30). Alerts will be issued (via text or email) 1-2 days before a significant rain event reminding you that it's time to remove street leaves.

To learn more or to sign up for Leaf-free Streets Rain Alerts visit: www.ripple-effects.com.

2. Cleaning up pet waste

It is very important to continue to pick up after your pet all year long, especially during winter. Pet waste can become encased in snow and ice, and carried away with melt water when it warms up. The bacteria and nutrients found in the waste make their way to the nearest storm drain, and then flow into the nearest lake or stream.

3. Reducing salt usage

As snow season draws near, consider this: sodium chloride (NaCl) is the most common form of salt used for de-icing roads and walkways. It is used so much that it has become a water pollutant. It is very difficult and costly to remove once it is in the water, so prevention is very important.

This winter...

- Remove snow as soon as possible so that it is less likely to turn to ice.
- Treat before a storm to help prevent ice buildup so less de-icer is needed.
- Use sand for traction, it is safe and effective, but be sure to sweep up excess
- Consider using the following alternatives: Liquid magnesium chloride, calcium chloride, potassium chloride (all 3 work better than regular salt in colder temps), calcium magnesium acetate and potassium acetate.
- Read the label- know which ice melt product you are using, in what temperatures it will be effective, and how much to use.

To learn more about the City of Stoughton's stormwater management strategies, and what you can do to help, visit www.ci.stoughton.wi.us/stormwater

MADISON AREA MUNICIPAL STORMWATER PARTNERSHIP 2018 ANNUAL INFORMATION AND EDUCATION WORK PLAN

DISTRIBUTED TO PARTNERSHIP MEMBERS ON DECEMBER 14TH, 2017

The Madison Area Municipal Stormwater Partnership (MAMSWaP), under the auspices of a five-year memorandum of understanding through 2018, currently consists of 22 entities that have agreed to jointly implement stormwater outreach to reduce negative stormwater impacts. Members include the Cities of Fitchburg, Madison, Monona, Middleton, Stoughton, Sun Prairie and Verona; the Villages of Cottage Grove, Cross Plains, DeForest, Maple Bluff, McFarland, Shorewood Hills, Waunakee and Windsor; the Towns of Burke, Blooming Grove, Madison, Middleton, Westport; Dane County and the University of Wisconsin–Madison.

The MAMSWaP Information and Education (I&E) Committee assists the Dane County Stormwater Education Coordinator (SWEC) with development and implementation of projects and plans. Regular participation on the I&E Committee has included representatives from the Cities of Fitchburg, Madison, and Stoughton, Village of DeForest, Town of Westport, Dane County, Madison Metropolitan Sewerage District (MMSD), Wisconsin Department of Natural Resources (WDNR), AECOM, the University of Wisconsin Extension and UW Madison.

The MAMSWaP Annual I&E Work Plan seeks to meet or exceed the minimum requirements and elements outlined in the current WPDES Permit Number WI-S058416-3 (effective July 1, 2009 – June 30, 2014 and continuing until permit re-issuance); and, WPDES Permit Number WI-S050075-2 (May 1, 2014 – April 30, 2019) for the Village of Cottage Grove and City of Stoughton; and, WPDES Permit Number WI-S05018-1 (May 1, 2014 – April 30, 2019) for the Village of Cross Plains, by developing and implementing a coordinated, regional outreach effort using consistent messages among and between communities to reduce the quantity and improve the quality of urban stormwater runoff and identify and eliminate illicit discharges. Numbered items are the specific elements from the permit language. Language for elements C(1)(b)(6) and (7) has been updated to reflect permit reissuance language anticipated by Wisconsin Department of Natural Resources staff. Proposed activities addressing the following required permit elements for 2018 are listed in Table 1.1.

C(1)(b)(1). Promote detection and elimination of illicit discharges and water quality impacts associated with such discharges from municipal separate storm sewer systems.

C(1)(b)(2). Inform and educate the public about the proper management of materials that may cause stormwater pollution from sources including: automobiles, pet waste, household hazardous waste and household practices.

C(1)(b)(3). Promote beneficial onsite reuse of leaves and grass clippings and proper use of lawn and garden fertilizers and pesticides.

C(1)(b)(4). Promote the management of streambanks and shorelines by riparian landowners to minimize erosion and restore and enhance the ecological value of waterways.

C(1)(b)(5). Promote infiltration of residential stormwater runoff from rooftop downspouts, driveways and sidewalks.

C(1)(b)(6). Inform and where appropriate educate those responsible for the design, installation and maintenance of construction site erosion control practices and stormwater management facilities on how to design, install and maintain the practices.

C(1)(b)(7). Identify businesses and activities that may pose a stormwater contamination concern, and where appropriate, educate specific audiences on methods of stormwater pollution prevention.

C(1)(b)(8). Promote environmentally sensitive land development designs by developers and designers.

Municipal Responsibilities

It is not enough for municipalities to merely be an actively paying contributor to the Partnership. There are specific actions each municipality must do. For example, while MAMSWaP has created a useful website, each municipality needs to link to www.ripple-effects.com. Other examples include:

- using the articles and other tools developed for municipalities in municipal newsletters or utility bill inserts,
- using displays developed for municipalities,
- providing information on municipal web sites and social media sites
- issuing press releases to local newspapers, and
- implementing storm drain marking programs.

Municipalities must document in their reports to WDNR how they have used the materials developed by the I&E Committee.

Additional Activities and Ongoing Tasks

The actions listed below are completed and/or implemented annually by the SWEC and consume a considerable amount of the half-time hours available.

- Quarterly reporting to member municipalities.
- Biennial reporting to WDNR.
- Bill municipalities and track payments.
- Develop annual work plan.
- Develop/provide presentations focused on audience interests/concerns.
- Maintain and use existing listserv and distribution lists and develop new lists (as needed) to disseminate information.
- Continue providing organizations and community groups' assistance and collaborating with projects.
- Promote and advocate for stormwater focused trainings, webinars and lectures for contractors, municipal staff, designers and developers.
- Search and promote grant opportunities to fund stormwater practices or programs for municipalities, citizens, schools, water groups, businesses, etc.

- Promote stormwater related resources including: curriculum developed for MAMSWaP, A Reflection of Us All DVD and other videos on stormwater practices, the Dane Co. Erosion Control and Stormwater Management Manual, and the Enviroscope model.
- Continue to coordinate outreach with other local water groups.

Acknowledgments

The Madison Area Municipal Stormwater Partnership's 2018 Annual Information and Education Work Plan was developed by the MAMSWaP I&E Committee. Committee member expertise, input and municipal cooperation was crucial for plan development and will continue to play an integral role in addressing stormwater runoff in Dane County. Thank you to everyone who helped.

I&E Committee Members Contributing to the 2018 Annual I&E Work Plan

Bill Balke, City of Fitchburg

Jeremy Balousek, Dane County Land and Water Resources Department

Kelli Bialkowski, Village of DeForest

Christal Campbell, Dane County Land and Water Resources Department

Chris Egger, UW–Madison

Rick Eilertson, AECOM

Phil Gaebler, City of Madison

Mindy Habecker, Dane County – UW Extension

Sue Jones, Dane County Land and Water Resources Department

Kathy Lake, Madison Metropolitan Sewerage District

Kim McCutcheon, Wisconsin Department of Natural Resources

Rodney Scheel, City of Stoughton

Tom Wilson, Town of Westport

For more information, visit www.ripple-effects.com or contact Christal Campbell at 608-224-3746 or campbell.christal@countyofdane.com.

Table 1.1 – 2018 MAMSWaP Information and Education Activities

<u>Activity</u>	<u>Notes</u>	<u>Responsible Parties/Partners</u>	<u>Timing</u>	<u>Performance Goal</u>	<u>Permit Requirement Addressed</u>
1. Develop and distribute articles and messages with stormwater BMP's to municipalities and water groups.	Create seasonal communication toolkits with articles, FB posts, graphics, etc.	SWEC MAMSWaP Communities	Jan-Dec	Create and distribute at least 4 seasonal communication toolkits to partners.	C.1.b.1 C.1.b.2 C.1.b.3 C.1.b.5 C.1.b.7
2. Continue work on web-based interactive map of MAMSWaP area watersheds and sewershed including: municipal boundaries, control practices and stormwater drainage networks, BMPs.	Integrate info to promote reporting of illicit discharge, BMPs.	SWEC MAMSWaP Communities	Jan-Dec	Continue to add to base map using data from partners. Start to identify where practices/projects are implemented on map (rain gardens, storm drain murals, etc.) Build into existing Ripple Effects web site.	C.1.b.1 C.1.b.5 C.1.b.7 C. 1.b. 8
3. Promote and use educational tools targeting the K-12 th grade audience (storm drain marking, Enviroscape, Stormwater Curriculum, watershed game).	Distribute Stormwater Education Tools brochure to formal and non-formal educators and groups.	SWEC MAMSWaP Communities	Jan-Dec	Use tools in at least 5 presentations geared at the K-12 audience. Check out stormwater education tools to at least 5 educators/groups through the UW Extension Natural Resources Education Center.	C.1.b.1 C.1.b.2 C.1.b.4
4. Design and paint 20 storm drain inlets to raise awareness that runoff drains to local waters and is not treated.	Work with Dane Arts Mural Arts (DAMA), Dane County Office of Lakes and Watersheds, and local municipalities to select suitable locations.	SWEC DAMA MAMSWaP Communities	Jan- Aug	Work with 10 Dane County schools to create and paint 10 unique inlet designs. Work with local artists to create and paint 10 unique inlet designs.	C.1.b.1
5. Collaborate with WI Salt Wise partners to promote, develop and distribute resources to reduce chloride containing deicers and encourage using the right amount for safety.	Update WI Salt Wise web site. Update toolkit with articles, FB posts, graphics, posters, etc.	WI Salt Wise partners SWEC MAMSWaP Communities	Nov-Feb	Update and distribute WI Salt Wise communication toolkit.	C.1.b.2 C.1.b.7
6. Collaborate with WI Salt Wise partners to offer winter	2 trainings	WI Salt Wise Partners	Sept-Oct	Hold 2 winter maintenance trainings with at least 40 participants total.	C.1.b.2 C.1.b.7

maintenance training in Dane Co. area.		SWEC			
7. Implement leaf-free streets for clean waters campaign aimed at keeping streets leaf free before the rain.	Articles, FB posts, rain alerts, graphics, advertising, flyers, door hangers etc.	SWEC MAMSWaP Communities Water-related groups	Aug-Oct	Update and distribute leaf-free streets community engagement toolkit.	C.1.b.3
8. Implement Plant Dane Program.	Coordinate ordering, update web site, develop materials, promote, and manage orders and pick up event.	SWEC MAMSWaP Communities	Jan-Mar	Create and distribute Plant Dane toolkit. Solicit and collect donations for at least 3 community projects. Sell at least 10,000 native plants through Plant Dane Cost Share Program.	C.1.b.3 C1.b.4 C.1.b.5
9. Offer advanced rain garden workshop to assist residents/groups looking to install a rain garden.	Solicit help from partners/professionals to staff tables on design, plant selection, installation and maintenance.	SWEC MAMSWap Communities	Mar	Hold advanced rain garden workshop with at least 15 participants.	C.1.b.5
10. Integrate new Ripple Effects brand into future campaigns and programs.	All programs will be linked visually following Ripple Effects Design Guide criteria.	SWEC	Jan-Dec	Ripple Effects brand will be integrated into all campaigns and outreach programs.	N/A
11. Make updates to Ripple Effects web site to keep site fresh and current.	Use new Dane. Co. content management system template. Monitor analytics and try to boost hits and time on site.	SWEC	Jan-June	Update content and organize Ripple Effects web site to better engage partners and citizens in stormwater practices. Create more links to promote other county and partner program. Increase visits to site compared to 2017.	N/A
12. Develop and distribute survey to evaluate knowledge and behavior change related to stormwater issues.	Survey will be designed to compare against previous survey conducted in 2013-14.	SWEC MAMSWaP Communities University or College partner	June-Dec	An online and paper version of the survey will be distributed in late 2018/early 2019 to residents of MAMSWaP communities.	N/A

13. Develop 5 Year Intergovernmental Agreement to Fund Position for Stormwater Information, Education and Outreach Coordinator for MAMSWaP (2019-2024).	Model after past 5-year Intergovernmental Agreement	SWEC MAMSWaP Communities	Sept.- Dec.	Agreement will be approved and signed by all MAMSWaP municipalities contributing funds for I&E Services by Dec. 31 st .	N/A
14. Develop MAMSWaP 5-year Information and Education Plan (2019-2024)	Model after past 5-year I&E Plan	SWEC MAMSWaP Communities	Jul.-Nov.	Plan will be approved by the MAMSWaP I&E Committee by Dec. 31 st .	All

Madison Area Municipal Stormwater Partnership (MAMSWaP)- I&E Update- May 1st, 2018

Respectfully submitted by Christal Campbell, MAMSWaP Stormwater Education Coordinator-Dane County Water Resource Engineering Division, 608-224-3746, Campbell.christal@countyofdane.com.

CONSULTANTS AND MUNICIPAL REPRESENTATIVES: Please make this report available to your municipalities.

Communications

Ripple Effects Facebook page- www.facebook.com/RippleEffectsWI Contact Christal Campbell with any articles or events you may have coming up in your area so we can share and promote. We try and post content once a week, but are happy to post additional events/articles. As of April 24th we had 242 Facebook followers, up from 205 in January.

Ripple Effects email box/web site- Christal maintains the info@ripple-effects.com email box and is responding to emails as they come in. Updates to the www.ripple-effects.com web site are made on a regular basis. If you come across an issue on the web site, please let Christal know.

Plant Dane Update- Native plant orders were accepted through March 19th. The updated Dane County online order system worked well with few issues reported.

Participants/Orders- 283 (269 in 2017)

Number of Plants Ordered- 9,169 plants/kits ordered including donations (12,600 ordered in 2017)

Free Native Plants for School/Community Project Donations- 18 projects/1332 plants (168 plants donated 2017)

Where did participants hear about Plant Dane?

Workshop- 9	Friend/Neighbor- 75	Newsletter- 16	Newspaper- 24
Facebook-16	Flyer- 2	Relative- 12	Web site- 22
Ordered previously- 87	Other- 43	Radio- 2	

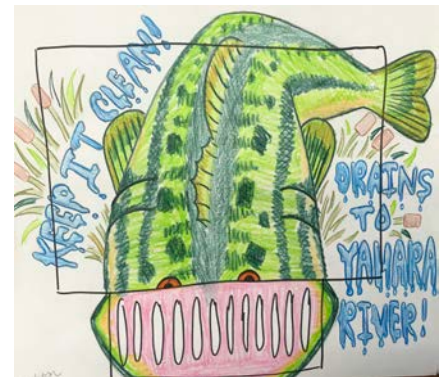
Plant pick up is scheduled for Saturday, May 19th from 8-11AM at the Dane Co. LWRD Office on Fen Oak Dr. If you'd like to help distribute plants, please contact Christal Campbell.

Trainings

Rain Garden Workshop Recap – 28 people attended the workshop on March 3rd. The longer 3-hr. workshop format worked well with sufficient time for one-on-one assistance. Participants were sent prep work before the workshop including specific instructions on how to calculate runoff area using DCI Maps prior to the workshop. Evaluations were very positive with most indicating that the information presented and format of the workshop was very useful and that they were likely to install a rain garden in the next two years. Two participants won an on-site visit and construction help from Phil Gaebler- City of Madison. Thanks Phil! All resources and presentations from the workshop are available on the Ripple Effects web site.

Storm Drain Mural Designs

All 10 school presentations/design workshops were completed in March and April. DAMA used drawings collected from each school to create four unique mural designs for each school to choose from. Schools and municipalities have until May 7th to select a final design. The goal is to have the majority of the school-based designs painted by the end of the school year. Local artists will be working with some students on each of the paintings.



Schools will be given a template article to try and spread the word and generate media attention. Christal is working on creating a story map that will include information on the project, a map of all mural locations, info on the designers (school and local artist), a photo of the final painting and a flow map that shows the flow path from the storm drain to the receiving waterbody.

Design selection and painting of the 10 local artist mural designs will take place in mid-late summer.

MAMSWaP 5-year Stormwater Knowledge and Behavior Change Survey- MAMSWaP will be distributing a survey to try and measure stormwater-related knowledge and actions of residents within the MAMSWaP area this fall. The 2018 survey will be similar to the 2013/14 survey which will allow for comparison between the two. Christal met with UW Extension, UW River Falls and UW Survey Center to discuss the project and rough costs and will be requesting full proposals in May. The goal is to get at least a 25-30% response rate and will likely cost around \$20,000. If anyone has worked with other groups/organizations that have experience doing survey work, please email Christal.

MAMSWaP 5-year I&E Workplan- I&E Committee recommends extending the existing 2014-2018 I&E Workplan one year through 2019. This will give the committee time to review and use the results of the upcoming MAMSWaP survey to guide the new 5 year plan. The new I&E Plan would start in 2020 and run through 2024. If anyone has any concerns with a 1-year extension, please let Christal know by May 15th.

Stormwater Animation- Susan Sandford and Christal Campbell are working with a local designer who specializes in educational animation videos on a short 30-sec. animation to help describe stormwater runoff and where it drains to. MAMSWaP has lots of resources on actions to improve quality and reduce stormwater runoff, but doesn't have many tools with basic info on stormwater and the issues related to increased runoff. Once completed, we hope to use the video as part of presentations, on social media and the Ripple Effects web site.

MAMSWAP Quarterly I&E Meeting Summary

The MAMSWaP I&E Committee met on April 19th, 2018. Updates on main topics are shared above. Please contact an I&E Committee member or Christal Campbell for further details including the complete meeting notes.

Upcoming Events/Grants

City of Madison Rain Barrel and Compost Sale- Saturday, May 12th – Alliant Energy Center

<https://www.cityofmadison.com/streets/compost/CompostBinSale.cfm>

Plant Dane plant pick up – Saturday, May 19th

Dane County Parks and Trails Unite Festival – Saturday, June 2nd -McDaniel Park and Lake Farm Park

Volunteer sign up-<https://signup.com/client/invitation2/secure/2241502/false#/invitation>

Reminders

-Please be sure you have links to www.ripple-effects.com from your websites.

-Follow www.facebook.com/RippleEffectsWI on Facebook! “Like” and “share” posts to help spread the word.

-The Enviroscope Watershed Model can be checked out from the University of Extension Dane Co. Natural Resources Ed. Center –contact Mindy Habecker if interested, habecker@countyofdane.com

Madison Area Municipal Stormwater Partnership (MAMSWaP)-I&E Update- Aug. 7th, 2018

Respectfully submitted by Christal Campbell, MAMSWaP Stormwater Education Coordinator-Dane County Water Resource Engineering Division, 608-224-3746, Campbell.christal@countyofdane.com.

CONSULTANTS AND MUNICIPAL REPRESENTATIVES: Please make this report available to your municipalities.

Communications

Ripple Effects Facebook page- www.facebook.com/RippleEffectsWI Contact Christal Campbell with any articles or events you may have coming up in your area so we can share and promote. We try and post content once a week, but are happy to post additional events/articles. As of July 24th we had 259 Facebook followers, up from 242 in May.

Ripple Effects email box/web site- Christal maintains the info@ripple-effects.com email box and is responding to emails as they come in. Updates to the www.ripple-effects.com web site are made on a regular basis. If you come across an issue on the web site, please let Christal know.

Articles/Messages

Spring /Summer BMP's Toolkit- shared with partners in the MAMSWaP Newsletter on June 21st and included a link to a yard care article encouraging practices that keep rain where it lands and Facebook BMP Graphics. All files are in the MAMSWaP Google Drive <https://drive.google.com/drive/folders/0B6IN0xfndLr9eDdzUzVvOEsvFU?usp=sharing>

Storm Drain Mural Designs

Most of the school and local artist murals have been painted. DAMA is working on finishing the remaining murals by early September. Each partner school and municipality received a template article to customize and use in local papers and newsletters. An online story map was also created to showcase all the murals and promote actions to "Keep It Clean". <https://countyofdane.maps.arcgis.com/apps/MapTour/index.html?appid=2ca8a2d056d0433dbab17619dd42f509>



MAMSWaP 5-year Stormwater Knowledge and Behavior Change Survey-

MAMSWaP will be working with UW Extension Environmental Resources Center in Madison on our 5 year survey to try and measure stormwater-related knowledge and actions of residents within the MAMSWaP area this fall. The 2018 survey will be similar to the 2013/14 survey which will allow for comparison between the two. If anyone would like to help with the survey or has specific questions they'd like included, please let Christal know.

Leaf-free Streets Campaign 2018- The Leaf-free Streets for Clean Waters campaign will continue this fall similar to last year. The goal is to encourage residents to actively remove street leaves before the rain and promote the rain alerts. We will continue to supply the following tools for partners:

- leaf-free streets graphics
- leaf-free streets flyers and door hangers
- leaf-free streets article
- Facebook posts

We hope to reach out to more neighborhood associations and groups to help spread the word. If your municipality would like a flyer or door hanger customized to meet your needs, contact Christal Campbell.

Winter Salt Certification Training -Several partners are working with the City of Madison and Connie Fortin to create a City of Madison/Dane Co. specific winter maintenance training for both public and private winter maintenance staff. This training will meet the requirements of the new City of Madison Salt Certification. The City of Madison will offer 5 trainings this fall (dates below). WI Salt Wise partners will be working hard this fall and winter to promote the City of Madison Certification Program and encourage residents and businesses to hire certified applicators. This will likely fuel the need for addition trainings this winter. MAMSWaP and Dane County hope to fund 1-2 trainings this winter and are working with the Wisconsin Transportation Information Center out of UW- Madison to hold a hands-on calibration training. Registration for the first training is open. Visit www.WISaltWise.com to register.

MAMSWaP Agreement Extension and Fees for 2019- Dane County will create an addendum to the existing 2014-18 MAMSWaP Intergovernmental Agreement that extends the agreement one year through 2019. This will give the committee time to review and use the results of the upcoming MAMSWaP survey to guide the new 5 year I&E Work Plan. The new MAMSWaP Intergovernmental Agreement and I&E Work Plan would start in 2020 and run through 2024. The fee schedule for 2019 extension will be same as 2018.

New Stormwater Outreach Tools

Stormwater Animation- Check out our new stormwater animation on the Ripple Effects web site <http://www.ripple-effects.com/videos> . This short animation provides a basic intro to the world stormwater runoff, where it drains to and simple actions to protect our waters. Please consider linking to the video from your organization’s web site or sharing on social media. It’s also a great tool to use during presentations.

Bean Bag Toss Game- We have a new stormwater focused bean bag toss game to use during events. The goal is to draw kids and adults to your table and teach them a little about stormwater at the same time. The board folds up and can be easily wheeled around.



Tabletop Rainfall Simulator- Coming soon! Great tool to demonstrate how land use impacts stormwater.

The game and rainfall simulator will be available to all MAMSWaP partners to use. Please contact Christal Campbell if you'd like to check it out for an event.

MAMSWAP Quarterly I&E Meeting Summary

The MAMSWaP I&E Committee met on July 17th, 2018. Updates on main topics are shared above. Please contact an I&E Committee member or Christal Campbell for further details including the complete meeting notes.

Upcoming Events/Grants

- Salt Wise Certification Trainings- <https://www.wisaltwise.com/>
- August 16th- Parking Lots, Sidewalks, Driveways- City of Madison Emil St.
- September 17th- Roads (limited availability) City of Madison Emil St.
- September 18th- Roads- Lussier Heritage Center
- September 19th- Parking Lots, Sidewalks, Driveways- Lussier Heritage Center
- October 19th- Parking Lots, Sidewalks, Driveways- Lussier Heritage Center

Madison Metro. Sewerage District Chloride Reduction Grants- <http://www.madsewer.org/Programs-Initiatives/Chloride-Reduction/Chloride-Grants>

Reminders

- Please be sure you have links to www.ripple-effects.com from your websites.
- Follow www.facebook.com/RippleEffectsWI on Facebook! “Like” and “share” posts to help spread the word.
- The Enviroscope Watershed Model can be checked out from the University of Extension Dane Co. Natural Resources Ed. Center –contact Mindy Habecker if interested, habecker@countyofdane.com

Madison Area Municipal Stormwater Partnership (MAMSWaP)-I&E Update- Nov. 6th, 2018

Respectfully submitted by Christal Campbell, MAMSWaP Stormwater Education Coordinator-Dane County Water Resource Engineering Division, 608-224-3746, Campbell.christal@countyofdane.com.

CONSULTANTS AND MUNICIPAL REPRESENTATIVES: Please make this report available to your municipalities.

Communications

Ripple Effects Facebook page- www.facebook.com/RippleEffectsWI Contact Christal Campbell with any articles or events you may have coming up in your area so we can share and promote. We try and post content once a week, but are happy to post additional events/articles. As of October 30th we had 275 Facebook followers, up from 259 in August.

Ripple Effects email box/web site- Christal maintains the info@ripple-effects.com email box and is responding to emails as they come in. Updates to the www.ripple-effects.com web site are made on a regular basis. If you come across an issue on the web site, please let Christal know.

Articles/Messages

Leaf-free Streets for Clean Waters Toolkit- shared with partners in the MAMSWaP Newsletter on Sept. 19th and included a link to a template article, the Leaf-free Streets web site, door hangers/flyers and a link to sign up for Leaf-free Streets Rain Alerts. The goal is to encourage residents to actively remove street leaves before the rain and promote the rain alerts. Links to the resources can be found on our Leaf-free Streets Resources Page <http://www.ripple-effects.com/Partner-Resources> . We still have a supply of door hangers or flyers. If you'd like some contact Christal.

Storm Drain Mural Project 2019

All 20 storm drain murals have been painted. Dane Co. and MAMSWaP issued a press release on November 6th about the Storm Drain Mural Project- <https://lwr.d.countyofdane.com/pressrelease/home#4396> . Due to the positive response and inquiries from groups wanting to know how they can get involved we will continue the project in 2019. Dane Co. and MAMSWaP will work with DAMA to paint another 10 murals in 2019. Groups, schools or municipalities will be able to apply for a mural through a grant program. All costs will be covered by MAMSWaP and Dane Co. LWRD. More information and grant applications will be available in late 2018 at <http://www.ripple-effects.com/storm-drain-murals> .

Leaf-free Streets for Clean Waters Update-

- The Leaf-free Streets Toolkit was shared with watershed groups and partners via the Dane Co. Watershed Network Newsletter and several groups published articles in their newsletters.
- A Leaf-free Streets focused Watershed Network Gathering was held on Sept. 24th at the LWRD office.
- Print ads went out in the Isthmus (10/25 and 11/1) and the State Journal (10/17 and 10/21).
- A Leaf-free Streets Nextdoor.com post was issued on Oct 4th and generated a lot of discussion. 45 people signed up for the Leaf-free Streets Rain Alerts in the 4 days following the Nextdoor.com post.
- More than 350 people have signed up to receive Rain Alerts to date.
- 7 Rain Alerts have been issued since Oct. 1st.

MAMSWaP 5-year Stormwater Knowledge and Behavior Change Survey- The MAMSWaP I&E Committee has been working with UW Extension Environmental Resources Center in Madison on our 5 year survey. The survey was finalized in late October and is expected to be mailed out to a random sample of residents across MAMSWaP communities in mid-Nov. The 2018 survey was updated in an effort to get feedback on current campaigns and future projects. Many of the questions are similar to the 2013/14 survey which will allow for comparison between the two. We should have results and a summary report from UWEX in late March. Link to 2018 MAMSWaP Survey <https://drive.google.com/file/d/1tIDBv14eoLRXaxah3s1vGLtY9qD7pLAc/view?usp=sharing> .

Winter Maintenance and Calibration Trainings- The City of Madison hosted 5 Winter Salt Certification Trainings this fall. Dane Co./MAMSWaP partnered with the UW Transportation Information Center to host a Winter Maintenance Equipment Calibration Training on Oct. 17th. The training was only open to organizations that had already attended a basic winter maintenance training. 42 winter maintenance professionals attended the training. MAMSWaP is hosting the last Winter Salt Certification Training on 2018 on Nov. 15th at the City of Madison Emil St. Training Room. Please share with staff or applicators who might be interested in getting certified. Visit <https://www.wisaltwise.com/Event/Home/Detail/424> for more information or to register.

Plant Dane 2019- No changes expected to the Plant Dane program for 2019. Online orders and payment will again be accepted through the Dane Co. order site along with donations to the Free Native Plants for Community Projects. Applications for the spring cycle of the Free Native Plants for Community Projects are now being accepted. The deadline to apply is February 1st. The Plant Dane Native Plant order site should be up in early February. We also plan to hold a Rain Garden workshop in March.

MAMSWaP Agreement Extension and Fees for 2019- All municipal contacts were emailed an addendum to the existing 2014-18 MAMSWaP Intergovernmental Agreement that extends the agreement one year through 2019 on Oct. 11th. If you haven't returned (emailed) a signed copy to Christal, please do so ASAP.

MAMSWAP Quarterly I&E Meeting Summary

The MAMSWaP I&E Committee met on Oct. 24th, 2018. Updates on main topics are shared above. Please contact an I&E Committee member or Christal Campbell for further details including the complete meeting notes.

Upcoming Events/Grants

Winter Salt Certification Training- <https://www.wisaltwise.com/>

Nov. 15th-Parking Lots, Sidewalks, Driveways- City of Madison Emil St.

Madison Metro. Sewerage District Chloride Reduction Grants- <http://www.madsewer.org/Programs-Initiatives/Chloride-Reduction/Chloride-Grants>

Free Native Plants for Community Projects Grant (spring cycle)- <https://lwr.d.countyofdane.com/Native-Plants-for-Schools-and-Community-Projects>

Resources to check out- contact Christal

-Tabletop Rainfall Simulator

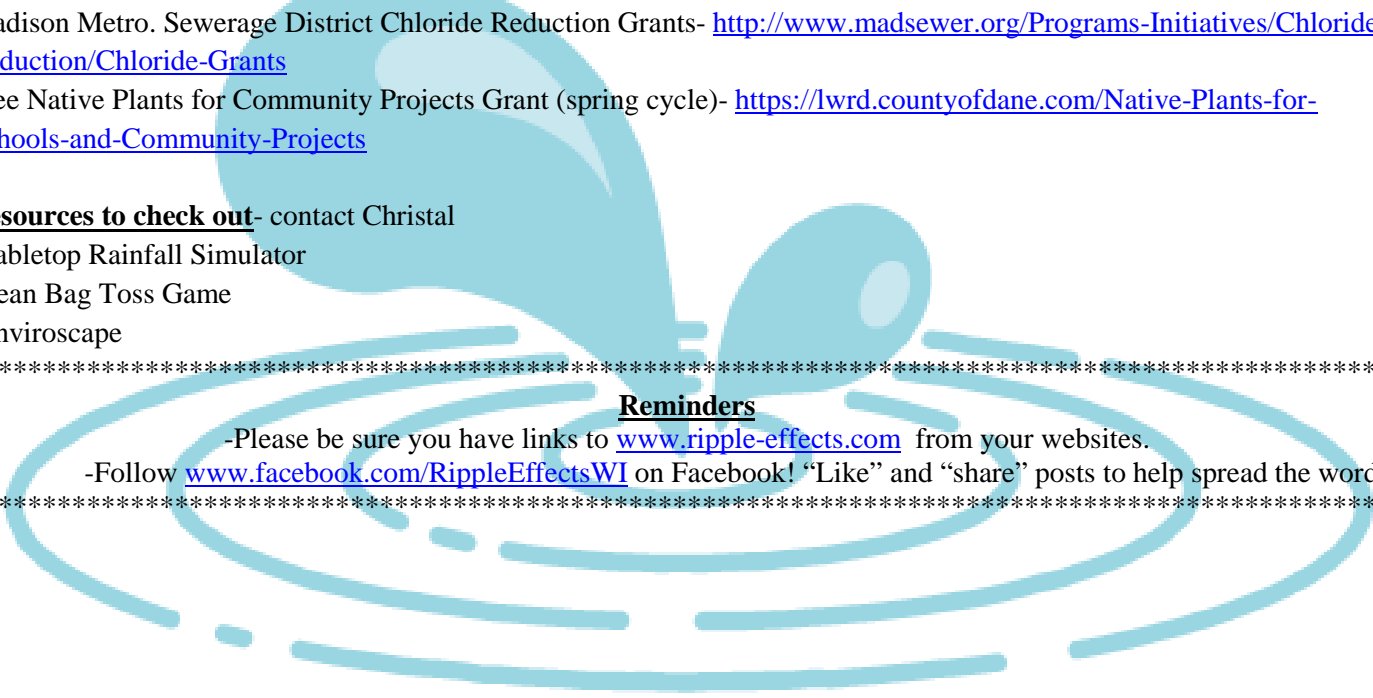
-Bean Bag Toss Game

-Enviroscape

Reminders

-Please be sure you have links to www.ripple-effects.com from your websites.

-Follow www.facebook.com/RippleEffectsWI on Facebook! "Like" and "share" posts to help spread the word.



Madison Area Municipal Stormwater Partnership (MAMSWaP) – I&E Update- Feb. 6th , 2018

Respectfully submitted by Christal Campbell, MAMSWaP Stormwater Education Coordinator-Dane County Water Resource Engineering Division, 608-224-3746, Campbell.christal@countyofdane.com.

CONSULTANTS AND MUNICIPAL REPRESENTATIVES: Please make this report available to your municipalities.

Communications

Ripple Effects Facebook page- www.facebook.com/RippleEffectsWI Contact Christal Campbell with any articles or events you may have coming up in your area so we can share and promote. We try and post content at least once a week, but are happy to post additional events/articles. As of Jan. 31st we had 205 Facebook followers, up from 198 in November.

Ripple Effects email box/web site- Christal maintains the info@ripple-effects.com email box and is responding to emails as they come in. Updates to the www.ripple-effects.com web site are made on a regular basis. If you come across an issue on the web site, please let Christal know.

Articles/Messages

Plant Dane Toolkit- shared with partners in the MAMSWaP Newsletter on February 1st and included: Plant Dane press release promoting Plant Dane Native Plant Cost-Share Program and Rain Garden workshop, link to Plant Dane web page, info on how to obtain flyers and promo cards and reminder to share Plant Dane Facebook posts. A partner resources page on the Ripple Effects web site was also created with links to the Plant Dane resources above along with some background on the campaign and our target audience for both municipal and local water related groups to help spread the word and encourage residents to place orders and donate plants to community and school projects.

Leaf-free Streets Alert Evaluation/plans for 2018- To date about 200 residents have signed up to receive rain alerts. In early December a link to a short survey was emailed to all subscribers to try and evaluate how effective the alerts were in prompting action. We received 35 responses (18%) to the survey. Highlights include:

- ~70% of respondents removed street leaves in front of their home for 50% or more of rain events they received alerts for
- 37% of respondents removed street leaves in front of their home for 100% of rain events
- 46% of respondents encouraged neighbors to remove street leaves before the rain

MAMSWaP will partner with the City of Madison to promote the rain alerts the summer/fall. Information on alerts will be mailed with utility bills and promoted on street vehicle wraps along with a message to encourage on-site mulching. If your municipality is interested in mailing info on the Leaf-free Streets Rain Alerts with utility bills contact Christal Campbell.

Plant Dane 2018- Now accepting orders for native plants through the Plant Dane Native Cost Share Program.

-40+ plant species available including rain garden, butterfly garden and prairie medicinal garden kits

-Cost: \$2.25/plant, order in multiples of 4

-Order Deadline: March 19th

-Plant Pick Up – May 19th

-NEW! Participants can donate funds to purchase plants for specific community/school garden projects (17 projects)

Trainings

Rain Garden Workshop -Sat. March 3rd at Dane Co. LWRD Offices from 8-11AM. The cost is \$10. Similar to last year the workshop will focus more on helping participants new to the world of rain garden design through the process of actually designing a rain garden plan for their property and less on the background and benefits of rain gardens. An on-site planning visit and construction will be raffled off to two participants at the training (does not include plants).

Storm Drain Mural Program 2018 –Still Looking for one more partner!

We received a great response to this project and are working with 14 of our MAMSWaP municipal partners to create storm drain murals in their communities! We still have room for one more. Don't see the name of your municipality on the list below? Let's talk.



Madison, Middleton, Cross Plains, Shorewood Hills, UW, Waunakee, Westport, Stoughton, Verona, Dane Co (Henry Vilas Zoo), DeForest, Monona, Sun Prairie, Cottage Grove.

If you were dragging your feet this is your last chance. Interested? Email Christal Campbell, christal.campbell@countyofdane.com with the following information by Feb 15th.

1. Location of the inlet. Must be surrounded by pavement on top and bottom, located in an area with heavy foot traffic and can be easily blocked off for 1-2 days to paint.
2. A photo of the storm drain and approximate size of the area that can be painted.

MAMSWaP 2018 I&E Workplan- The final 2018 I&E Workplan is available on the Ripple Effects web site <http://www.ripple-effects.com/documents/MAMSWAP%20I&E%20Workplan%20FINAL.pdf>

2018 MAMSWaP Invoices Sent- Invoices were mailed to all partners the week of January 23rd. If you didn't receive an invoice contact Christal Campbell.

MAMSWAP Quarterly I&E Meeting Summary

The MAMSWaP I&E Committee met on January 23rd, 2018. Updates on main topics are shared above. Please contact an I&E Committee member or Christal Campbell for further details including the complete meeting notes.

Upcoming Events/Grants

Dane County Environmental Council Grants- Due Feb. 28th, 2018.

https://www.countyofdane.com/commissions/environmentalcouncil/pdf/Grant_Guidelines_2018.pdf

Rain Garden Workshop – Saturday, March 3rd from 8-11AM at the Dane County Land and Water Resources Building. <http://www.ripple-effects.com/Event/Home/Detail/275>

Reminders

-Please be sure you have links to www.ripple-effects.com from your websites.

-Follow www.facebook.com/RippleEffectsWI on Facebook! “Like” and “share” posts to help spread the word.

-The Enviroscape Watershed Model is available and can be checked out from the Dane County LWRD-contact Christal Campbell if interested.



MEETING NOTES- DRAFT

MAMSWaP Information & Education Committee Meeting Agenda

Thursday, April 19th, 2018 1-3PM

Room 210, 5201 Fen Oak Drive

Madison, WI

Attendees: Kathy Lake, Rick Eilertson (phone), Chris Egger, Tom Wilson, Rodney Scheel, Jeremy Balousek, Kim McCutcheon, Kelli Bialkowski, Mindy Habecker and Christal Campbell

Review Notes from Last Meeting- No changes

Plant Dane- Native Plant Orders, Donations and Rain Garden Workshop Summary

Participants/Orders- 283/269 in 2017 (some ordered more than once)

Plants- 9,169 plants/kits ordered including donations (12,600 ordered in 2017)

Donations- 18 projects, 1332 plants (168 plants donated in 2017)

Workshop- 28 people, great feedback, 2 people will receive on site visit and site prep help from Phil Gaebler.

How participants found out- Facebook-16/Flyer- 2/Friend or Neighbor- 75/Newsletter- 16/Newspaper- 24

Ordered Previously- 87/Other- 43/Radio- 2/Relative- 12/Web site- 22/Workshop- 9

Looking for volunteers to help with plant pick up on May 19th.

Suggestion- Add Rain Garden Workshop Resources to Ripple Effects web site.

Storm Drain Mural Project Update- Presentations and design workshops to all schools were completed in March and early April. Each school/municipality will receive 2 designs to choose from next week. Paint days will be scheduled in mid-late May. Each school will be given a template article to use to promote the project in local media and through school communications. A storm drain mural story map will also be created to showcase the project and all the mural locations. Local artist designs will be completed this summer.

5- Year Stormwater Knowledge and Behavior Change Survey Options- 3 rough proposals submitted from UW- River Falls, UW Environmental Resources Center and UW Survey Center that range from about \$10,000 to \$35,000. The 2013 survey conducted by UW River Falls had a response rate of only 19%, which is very low. There is a desire to increase response rate to at least 25-30%. Proven methods used to increase response rates include: pre-stamped reply envelopes (not business reply), using the 5 contact method and possibly pre-incentives. I&E Team does not want to use incentives. Christal will reach out to other agencies to determine if there are other consultants/organizations who do survey work, preferably survey centers in WI. The goal is to get revised proposals and select a contractor in May.

5- Year MAMSWaP Information and Education Plan – The I&E info in the general permit that Stoughton and Cross Plains are under is almost identical to the group permit language. Christal would like the chance to use the survey data to help inform the next 5-year I&E Plan and will contact DNR to request that we extend the existing plan 1-year (through 2019) until results of the survey are available in early 2019.

WI Salt Wise Web site/ Winter Maintenance Training- WI Salt Wise partners are waiting to find out what City of Madison is planning, but it appears they may hold off on the Train the Trainer and hire Connie to lead an effort to create a Dane Co. specific training. Mindy offered to help develop this training. There will be a need for more trainings this year as demand increases and the City starts to implement organization-based

certifications. Need for more technical, hands-on or site based trainings. LWRD may use funds toward that or to equip our facilities staff with equipment to apply less.

I&E Team supports spending MAMSWaP money on hands-on “show and tell” training with equipment, maybe a Winter Maintenance Rodeo in late fall before season starts. Suggestions to partner with the Southern WI Association of Public Works Supervisors (SWAPs). Another idea is to provide additional trainings in Jan. and Feb. after season begins to align with the WI Salt Wise outreach timeline. WI Salt Wise will be encouraging customers and businesses to hire certified applicators in late fall/early winter.

MMSD will hold a Smart Salt Use Training on May 30th at their training facility.

Stormwater Animation- Basic frame sketches shared and feedback collected. I&E Team decided on the following language for the stormwater slide “In Dane County, stormwater runoff OFTEN travels through storm sewers or ditches to local waterways without being cleaned.” A draft of the animation will be shared in May with a final version expected in June.

Rock River Coalition (RRC) Newsletter- RRC would like to include article on MAMSWaP related projects that may be of interest to a broader audience in the Rock River Basin through RRC newsletter. In exchange, they are requesting funds to cover the cost of printing one newsletter/year-\$600 or a donation. RRC mails 3 newsletters/year to 1200 households throughout the basin. Recipients voluntarily sign up for the newsletter. I&E Team decided to offer articles, but not funding since the Rock River basin doesn’t include all MAMSWaP communities.

Christal will set up a meeting with Claire Timm or Wes Enterline (UW- Whitewater) who are currently leading the Rock River Stormwater Group education and outreach efforts to find out what projects they are involved with and determine if there are any project(s) we can partner on.

Wrap Up

-MAMSWaP Large Group Meeting- May 1st



MEETING NOTES- DRAFT

MAMSWaP Information & Education Committee Meeting Agenda

Tuesday, July 17th, 2018 10AM-12PM

Room 210, 5201 Fen Oak Drive

Madison, WI

Attendees: Gail Epping Overholt, Rodney Scheel, Tom Wilson, Jeremy Balousek, Emily Jones, Catherine Harris, Dakota Dorn, Phil Gaebler, Chris Egger and Christal Campbell

Notes from April 19th I&E Meeting- no changes

Storm Drain Mural Project Update-

-8 murals have been painted.

-DAMA is working on finishing the remaining 12 murals by early September.

-Each partner school and municipality received a template article to customize and use in local papers and newsletters. Media coverage has been great. We will issue a press release once all are complete.

-An online story map was also created to showcase all the murals and promote actions to "Keep It Clean"-

<https://countyofdane.maps.arcgis.com/apps/MapTour/index.html?appid=2ca8a2d056d0433dbab17619dd42f509>.

City of Madison Salt Wise Certification/Winter Maintenance Training 2018

-Working with Connie to customize training for City of Madison, includes breakout for managers and field staff with some equipment. Five trainings planned for fall.

-WI Salt Wise meeting 7/19- likely focus on PR tools for cert. applicators and encouraging residents and businesses to hire certified applicators.

-Will spend MAMSWaP funds and Dane County funds on additional trainings in Jan/Feb and Calibration Training through UW Trans. Info Center. Possibly hold calibration training at Westport facility??

-Phil gave update on City of Madison Certification program, new organizational certification this year. Idea to promote to condo developments agreements to hire certified applicators.

Leaf Campaign 2018-

-Campaign will be very similar to last year with template article, graphics, Facebook posts, flyers, door hangers for partners and neighborhood groups.

- Goal to get residents to sign up for alerts.

-Possibly offer customized leaf flyers/door hangers that public works staff can use for residents who push leaves into street.

-Try to get more info in neighborhood newsletters, nextdoor.com

-Looking for a way to make resident actions visible to neighbors. Tarps with leaf message??

Stormwater Survey Update- UWEX ERC contract moving through finance channels for approval, hoping to start Aug 1st. End date for report March 2019. Christal will share survey questions with group for comment.

Stormwater Animation Video – Check out our new stormwater animation on the Ripple Effects web site

<http://www.ripple-effects.com/videos> . This short animation provides a basic intro to the world stormwater runoff, where it drains to and simple actions to protect our waters.

Tabletop Rainfall Simulator- Partners approved purchase of a tabletop rainfall simulator for partners to use. Set of 4 sample units with case is \$668.00. Christal will also ask about urban samples (roof, asphalt, permeable pavement). Share at quarterly large group meeting.

Ripple Effects Bean Bag Toss Game- New bean bag toss game for partners to use/check out at events to draw people in.

Arboretum Water Display- Gail Epping wants to partner on a water display for the Arboretum. Christal will follow up.

Wrap Up

-MAMSWaP Large Group Meeting- August 7th



MEETING NOTES- DRAFT

MAMSWaP Information & Education Committee Meeting Agenda

Wednesday, Oct. 24th, 2018 10AM-12PM
Room 210, 5201 Fen Oak Drive
Madison, WI

Attendees- Chris Egger, Tom Wilson, Rodney Scheel, Gail Epping-Overholt, Samuel Pratsch, Claudia Guy, Phil Gaebler, Mindy Habecker, Catherine Harris, Rick Eilertson (phone) and Christal Campbell

Review/Changes to Notes from July 17th I&E Meeting- no additional changes requested

MAMSWaP Survey Presentation- Most of the meeting was spent reviewing the MAMSWaP Survey draft question by question with Samuel and the group. Many of the suggested changes were incorporated into the [final survey](#) that was sent out in December.

Leaf Campaign 2018 Update

- The Leaf-free Streets Toolkit was shared with MAMSWaP, watershed groups and partners via the Dane Co. Watershed Network Newsletter and several groups published articles in their newsletters.
- A Leaf-free Streets focused Watershed Network Gathering was held on Sept. 24th at the LWRD office.
- Print ads will go out in the Isthmus (10/25 and 11/1) and the State Journal (10/17 and 10/21).
- A Leaf-free Streets Nextdoor.com post was issued on Oct 4th and generated a lot of discussion. 45 people signed up for the Leaf-free Streets Rain Alerts in the 4 days following the Nextdoor.com post.
- More than 330 people have signed up to receive Rain Alerts to date. 75 new text sign ups and 53 new e-mail sign ups in 2018.
- 4 Rain Alerts have been issued since Oct. 1st.

City of Madison Salt Wise Certification/Winter Maintenance Trainings 2018- 5 winter maintenance certification classes have been held so far this fall, all paid for by the City of Madison. MAMSWaP will be hosting and paying for one more on Nov. 15th and may hold another in Jan/Feb if there is enough interest.

Dane Co./MAMSWaP partnered with the UW Transportation Information Center to host a Winter Maintenance Equipment Calibration Training on Oct. 17th. The training was only open to organizations that had already attended a basic winter maintenance training. 42 winter maintenance professionals attended the training. MAMSWaP is hosting the last Winter Salt Certification Training on 2018 on Nov. 15th at the City of Madison Emil St. Training Room.

WI Think Water School – One Water Team

Christal is working on a team with Nancy Sheehan (UW Arboretum), Marrian Farrior (UW Arboretum) and Wes Enterline (UW Whitewater-Rock River Stormwater Group) to learn about a system's approach to thinking about and implementing water programs through WI Think Water School. The group has gotten together once and will be attending a workshop at Treehaven in November to learn more. The goal is to try and plan a project using the system's thinking approach around increased infiltration. The group will continue attending Think Water School trainings through March 2019 and hopes to implement the resulting plan in 2019/2020.

Storm Drain Mural Grant 2019- Due to the positive response and inquiries from groups wanting to know how they can get involved we will continue the project in 2019. Dane Co. and MAMSWaP will work with DAMA to paint another 10 murals in 2019. The total cost of the 10 murals is \$6000 of which MAMSWaP will cover \$3000. Groups, schools or municipalities will be able to apply for a mural through a grant program. All costs will be covered by MAMSWaP and Dane Co. LWRD. More information and grant applications will be available in late 2018 at <http://www.ripple-effects.com/storm-drain-murals>

Plant Dane 2019- The group approved continuing Plant Dane Native Plant Program in 2019. A lot of work was done last year to accept orders and payment online through the county system so it should go very smoothly this year and not require much work. We will again be requesting and accepting donations to the Free Native Plants for Community Projects through the order system. Applications for the spring cycle of the Free Native Plants for Community Projects are now being accepted. The deadline to apply is February 1st. The Plant Dane Native Plant order site should be up in early February. We also plan to hold a Rain Garden workshop in the spring.

-MAMSWaP Large Group Meeting- Nov. 6th



Progress through
partnership

2017
Annual Report



Kaci Baillies of Dane County Land and Water Resources Department collects a water sample.

Project background

The Yahara Watershed Improvement Network, known as Yahara WINS, is a groundbreaking initiative to achieve clean water goals for the Yahara Watershed. In this effort, community partners led by Madison Metropolitan Sewerage District are collaborating on a strategy called watershed adaptive management in which all sources of phosphorus in a watershed work together to reduce phosphorus. The effort began in 2012 as a pilot project and in 2017 transitioned to a full scale effort.

The 20 year adaptive management project aims to achieve permit requirements and regional Clean Water Act goals identified through the Rock River Total Maximum Daily Load by 2036. To accomplish these goals, the group facilitates partnerships, conducts outreach, pools resources to fund phosphorus reducing practices in the watershed, analyzes stream samples and works with the Wisconsin Department of Natural Resources to address regulatory needs for the project.

As the project moves forward, progress for each year is expected to vary due to a changing combination of new practices and existing practices that continue to hold back phosphorus.

Changing precipitation patterns and runoff intensity also may affect water quality data compiled through monitoring and volunteer sampling activities. Over time, however, the Yahara WINS project is designed to produce real results.

More information about the activities and partners featured in this report is available on the Yahara WINS webpage, <http://www.madsewer.org/Programs-Initiatives/Yahara-WINs>.

About the district

Madison Metropolitan Sewerage District began work on adaptive management in 2012, when it collaborated with partners to initiate a successful four-year pilot project. The district is pursuing adaptive management to comply with phosphorus requirements in its Clean Water Act discharge permit. Compared with upgrades to the treatment plant, adaptive management offers the potential for a more comprehensive and less expensive route to clean water. The district is one of the first wastewater treatment plants to use adaptive management and is committed to the success of this approach as it works to cost-effectively meet clean water standards.

President's message

During its first full year of operation, the Yahara WINS partnership has demonstrated to all of us the incredible results we can achieve by working together, sharing our knowledge and pursuing opportunities for progress toward common goals.

The Yahara WINS partnership connects counties, cities, villages, towns, wastewater treatment plants, farmers and environmental groups. The diverse perspectives we bring strengthen our ability to solve complex challenges and identify innovative solutions.

While we may not be able to predict the full array of phosphorus reducing tools and practices that will be producing results at the conclusion of the 20 year project, we can estimate that our collaborative approach will save local residents \$13.5 million per year while achieving better environmental results than any single entity could accomplish. Reducing phosphorus at the source is far more cost effective than spending on expensive infrastructure and energy to recover phosphorus from our waters.

To maintain the engagement of our partners and the momentum necessary to reach our goals over the 20 year lifespan of the project, part of our work involves highlighting the achievements of project participants. Given our strategy of facilitating on-the-ground practices that deliver long-term phosphorus reductions, we believe each year's achievements will compound for even greater benefits over time. As my predecessor Dave Taylor puts it, long-term practices are like "the gift that keeps on giving."

Ultimately, our collaborative effort is designed to keep some 96,000 pounds of phosphorus out of the region's waterways each year. We look forward to learning from each other and encouraging additional participation as we move ahead. We hope you find the following summary of our progress helpful. More information about the activities and partners featured in this report is available on the Yahara WINS webpage, www.madsewer.org/yaharawins.

Martye Griffin
Yahara WINS President
Director of Ecosystem Services, Madison Metropolitan
Sewerage District



Martye Griffin

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Monitoring efforts	13-14
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Yahara WINS finances	17-18

2017 Progress toward phosphorus reduction goals

Figure 1. Partners contribute to shared success

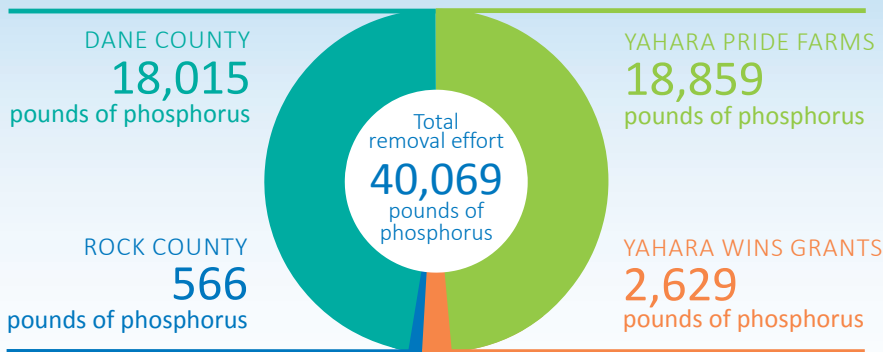
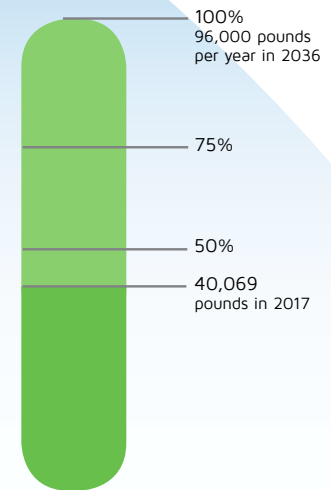


Figure 2. 2017 results



To achieve project goals, the reduction in pounds must be repeated each year with the goal of increasing reductions annually to 96,000 by 2036.

Year in review

During 2017, work by the Yahara Watershed Improvement Network and its partners kept more than 40,000 pounds of phosphorus from area surface waters, more than 40 percent of the total reduction of 96,000 pounds per year needed over the next 20 years to meet project goals.

The reduction, shown in Figures 1 and 2, came from a combination of efforts by farmers, Dane County, Rock County and area communities to implement practices aimed at capturing nutrients and reducing runoff.

Phosphorus reduction totals included 18,859 pounds held back by members of Yahara Pride Farms, 18,015 pounds reported by Dane County; 566 pounds reported by Rock County and 2,629 pounds as a result of grants funded by Yahara WINS (Figure 1). Practices implemented by farmers that contributed to the savings ranged from planting cover crops and harvestable buffers to stabilizing stream banks and using low-disturbance manure injection. Local municipalities and homeowners made further reductions through leaf management, erosion control and storm water management.

While the results from the partnership's first full year of operation in 2017 represent a significant reduction in phosphorus from the documented practices, annual variability in precipitation, the timing of storms and the severity of runoff from spring thaws also affect phosphorus loading in the Yahara Watershed. Meanwhile, the region's surface waters continue to be affected by legacy phosphorus in sediment and surrounding wetlands.

For these reasons, progress made through phosphorus reducing practices may not be evident in sampling reports during the early years of the project. Over the 20 year length of the project, however, implementation of new and continued practices is expected to achieve water quality goals.

Beyond the documented phosphorus reductions during 2017, Yahara WINS gained partners, encouraged innovation and increased communications capacity. These developments will help the project build momentum in the years to come.

Other highlights from 2017 include:

- New partnerships and agreements with Columbia County, Rock County, Town of Burke and Clean Lakes Alliance.
- Introduction of a new innovation grant program through Yahara WINS to encourage new practices to reduce phosphorus.
- Implementation of conservation practices by Yahara WINS partners, including Dane County and Yahara Pride Farms.
- Additional communications capacity, including the development of an informational video about the project.



Conservation buffers on either side of this stream control soil erosion from both wind and water. By trapping sediment, buffers reduce the amount of phosphorus entering the water.

Participation grows in 2017

The partnership at the core of the Yahara WINS project welcomed a new member in 2017 while retaining all original signatories. By signing the project's intergovernmental agreement, the Town of Burke joined 23 other governmental bodies that are contributing funds to the project. The agreement enables municipalities with requirements to reduce phosphorus or sediment to meet their requirements through Yahara WINS reductions.

In addition to the intergovernmental agreement participants, Yahara WINS continues to draw support from partners in the watershed that share a commitment to phosphorus reduction. Other partners contributing to the project include local county conservation departments, which facilitate the implementation of phosphorus-reducing conservation practices, and nonprofit organizations that donate money or time to various aspects of the project. Several new partnerships or agreements with partners were developed in 2017, as described below.

Rock County joins Yahara WINS

The Yahara Watershed includes 26,100 acres in Rock County. Joining Yahara WINS has allowed Rock County conservation staff members to direct efforts toward phosphorus reductions in their portion of the watershed. Yahara WINS and Rock County entered into a service agreement in mid-2017, and county staff hit the ground running.

In just six months, county conservation specialist Chris Murphy and county staff members achieved remarkable success. The first county project involved installation of 13.5 acres of harvestable buffers, which resulted in a combined reduction in phosphorus of 566 pounds per year at a cost of \$12.96 per pound of phosphorus reduced.

Projects planned for 2018 include:

- 321 feet of streambank restoration on Badfish Creek;
- Three additional harvestable buffers totaling nearly 15 acres; and
- Conversion of 11 acres of annual cropland to a perennial forage mix of grasses and legumes that will reduce runoff to Badfish Creek.

Rock County continues to push the program forward and already has landowners committed to future participation in 2018.

Clean Lakes Alliance contributes to progress

Funding contributed by the Clean Lakes Alliance in 2017 will help target efforts to keep phosphorus out of Lake Mendota and waters downstream. Clean Lakes Alliance, a Yahara WINS partner, is focused on implementing the phosphorus reduction goals outlined in its 2012 Yahara CLEAN (Capital Lakes Environmental Assessment and Needs) Strategic Action Plan for Phosphorus Reduction, which overlaps with the goals of Yahara WINS.

To support these common goals, Clean Lakes Alliance contributed \$100,000 toward phosphorus-reducing practices in the northern part of the Yahara Watershed. In 2017, Yahara WINS directed this additional funding to four specific projects:

- A grant to Yahara Pride Farms to purchase a low disturbance manure injection tanker. Dane County provided matching funds.
- A five-year contract extension for harvestable buffers.
- Incentives for landowner participation in a cover crop program that will use aerial seeding for three years.
- A grant to Yahara Pride Farms for a solid manure composting project.

In late 2017, Yahara WINS and Clean Lakes Alliance agreed to extend the memorandum of understanding and accompanying financial support into 2018.



Water bubbles to the surface from deep underground at the Frederick Springs, part of the Pheasant Branch Conservancy. The flow is an important source of quality water to Pheasant Branch Marsh on the north shore of Lake Mendota.

Columbia County service agreement

Some 17,700 acres or 5.2 percent of the Yahara Watershed land base lies in Columbia County. While the area represents a relatively small portion of the watershed, meeting phosphorus reduction goals will require efforts throughout the entire watershed, including Columbia County.

In late 2017, Yahara WINS and Columbia County worked on potential service agreement language. Similar to the agreements with Dane County and Rock County, the service agreement outlines the activities and expectations for Columbia County in exchange for Yahara WINS funding. The agreement, which will run from 2018 to 2020, provides a total of \$105,000 to support implementation of phosphorus reducing practices in the Columbia County portion of the watershed.

Grants encourage innovation, adaptive practices

Yahara WINS has offered grants for urban and rural phosphorus reduction projects since 2013. For the first time in 2017, the partnership offered innovation grants to encourage new or unproven practices with applicability throughout the watershed.

One project was awarded funding in 2017 – the Friends of Lake Kegonsa’s leaf management education and collection project. Leaf management is an important but sometimes overlooked component of managing urban phosphorus contributions and this project established leaf management in an area close to Lake Kegonsa where no program had existed.

During 2017, Yahara WINS also provided a total of \$32,000 through two conventional grants to reduce 250 pounds per year of phosphorus, or more than 5,000 pounds over the projects’ lifespans.



Dane County's "Suck the Muck" program aims to remove phosphorus-laden sludge from the bottom of area streams to prevent the legacy deposits of the nutrient from reaching Lake Mendota. Plans call for the \$12 million project to assess 33 miles of streams. For more about the project, visit: <https://lwr.d.countyofdane.com/legacy-sediment-project>.

Legacy phosphorus reduction key to future

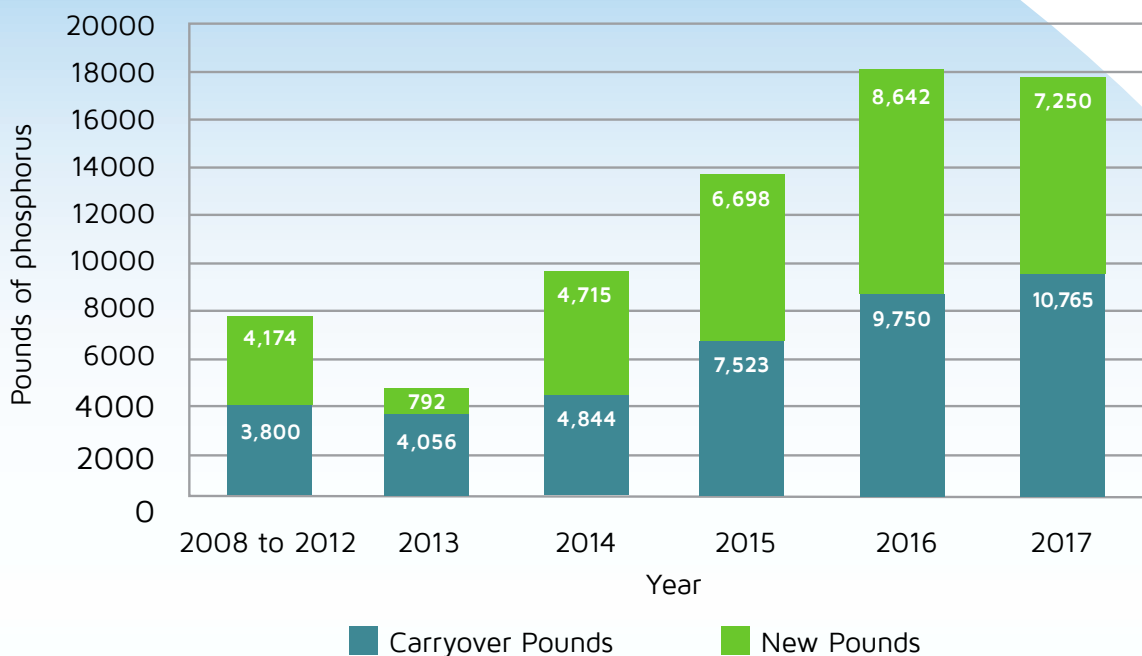
While Yahara WINS is funding projects that prevent additional contributions of phosphorus to local waterways, Dane County is taking action to mitigate phosphorus contributions of the past. The county is advancing a four year, \$12 million initiative to remove phosphorus-containing sediment from streams in the Yahara Watershed. The initiative is expected to remove 870,000 pounds of phosphorus.

Legacy sediment containing high levels of phosphorus has long been recognized for its role in diminishing water quality in the Yahara River watershed. Yahara WINS funded a study by UW-Madison's water resources management practicum and, along with an evaluation of the impact of legacy sediment by county and Wisconsin Department of Natural Resources staff, the work confirmed that legacy sediment continues to impair local waterways as phosphorus leaches out of these historical deposits.

Water quality goals for the Yahara Watershed related to phosphorus will not be met without addressing legacy sediment that contains phosphorus. Dane County estimates that without removal of this accumulated sediment, it would take 99 years to achieve water quality goals.

The sediment removal initiative, called "Suck the Muck," is designed to accelerate progress toward clean water in the watershed. The first project is targeting Dorn Creek, in the upper part of the watershed. Preliminary site design and engineering work related to the Dorn Creek project was conducted in 2017, and sediment removal efforts began in spring of 2018. Additional information on this project can be obtained from John Reimer at Dane County.

Figure 3. Dane County Yahara Watershed phosphorus reductions



Cover crops, shown here taking root among cornstalks, hold soil in place after the grain is harvested.

Cover crops contribute to success

When corn is harvested for silage, very little plant residue is left on the soil, making the fields vulnerable to erosion and phosphorus loss. These fields also commonly receive manure applications.

Cover crops, which reduce erosion and phosphorus loss by stabilizing soil, offer a practical solution. Yet getting them planted while temperatures are warm enough for them to germinate and take root can be difficult because farmers are busy with harvest during the fall.

A major project during 2017 involved using grant funds awarded to Dane County by the Regional Conservation Partnership Program to evaluate aerial seeding of cover crops. Aerial seeding of cover crops allows for earlier and more efficient planting, frees up farmers' time and helps the crops become established before winter.

Yahara WINS provided a \$500 bonus to farmers who agreed to use of aerial seeding for cover crops over a three-year period. While 16 farmers with 1,860 acres participated in the Regional Conservation Partnership Program cover crop program in 2017, nine of them also participated in the aerial seeding effort. These nine farmers accounted for 1,169 acres of cover crops planted, with an estimated phosphorus reduction of 1,169 pounds in 2017.

Dane County

Yahara WINS provides funding for Dane County's Land and Water Resources Department to assist landowners with the implementation of conservation practices that reduce phosphorus runoff. This is the sixth year that the Land and Water Resources Department has collaborated with Yahara WINS on phosphorus reduction efforts.

Key Dane County accomplishments in 2017 include:

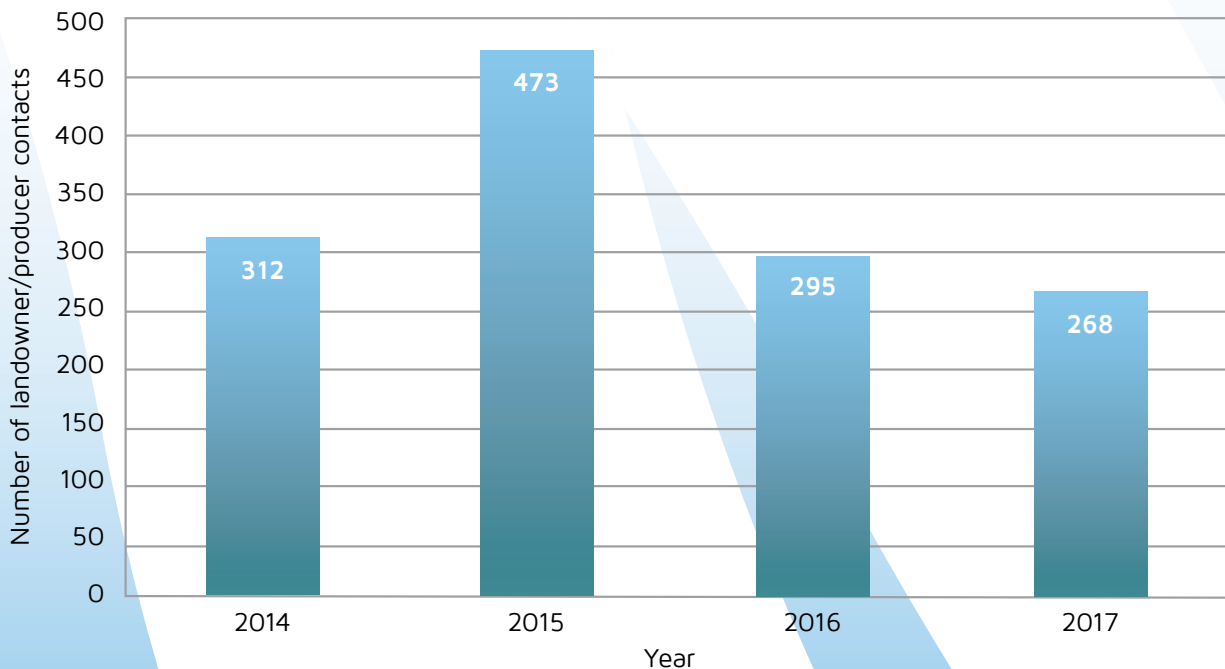
- A total reduction of 18,015 pounds of phosphorus from conservation practices implemented in past years that are still in place (carryover) and practices implemented in 2017 (new) (Figure 3).
- Assisting 268 landowners and others in the Yahara watershed with implementation of phosphorus-reducing practices and environmental compliance.
- Implementing and tracking more than 450 conservation practices and systems that reduce phosphorus delivery to nearby surface waters.

In 2017, a number of practices were focused in the northwestern portion of the watershed, while others were in the Door Creek area.

- Tracking more than 45,800 acres of fields with nutrient management plans in the Yahara watershed. The plans are field-specific strategies that outline the location, timing, and quantity of manure or fertilizer application to minimize runoff.
- Establishing the Dane County Grazer's Network to educate area producers and landowners about the benefits of managed grazing.
- Entering into 50 cost-share agreements for conservation practices and systems within the Yahara watershed.
- Allocating more than \$800,000 in cost-share assistance within the Yahara watershed (Figure 5).

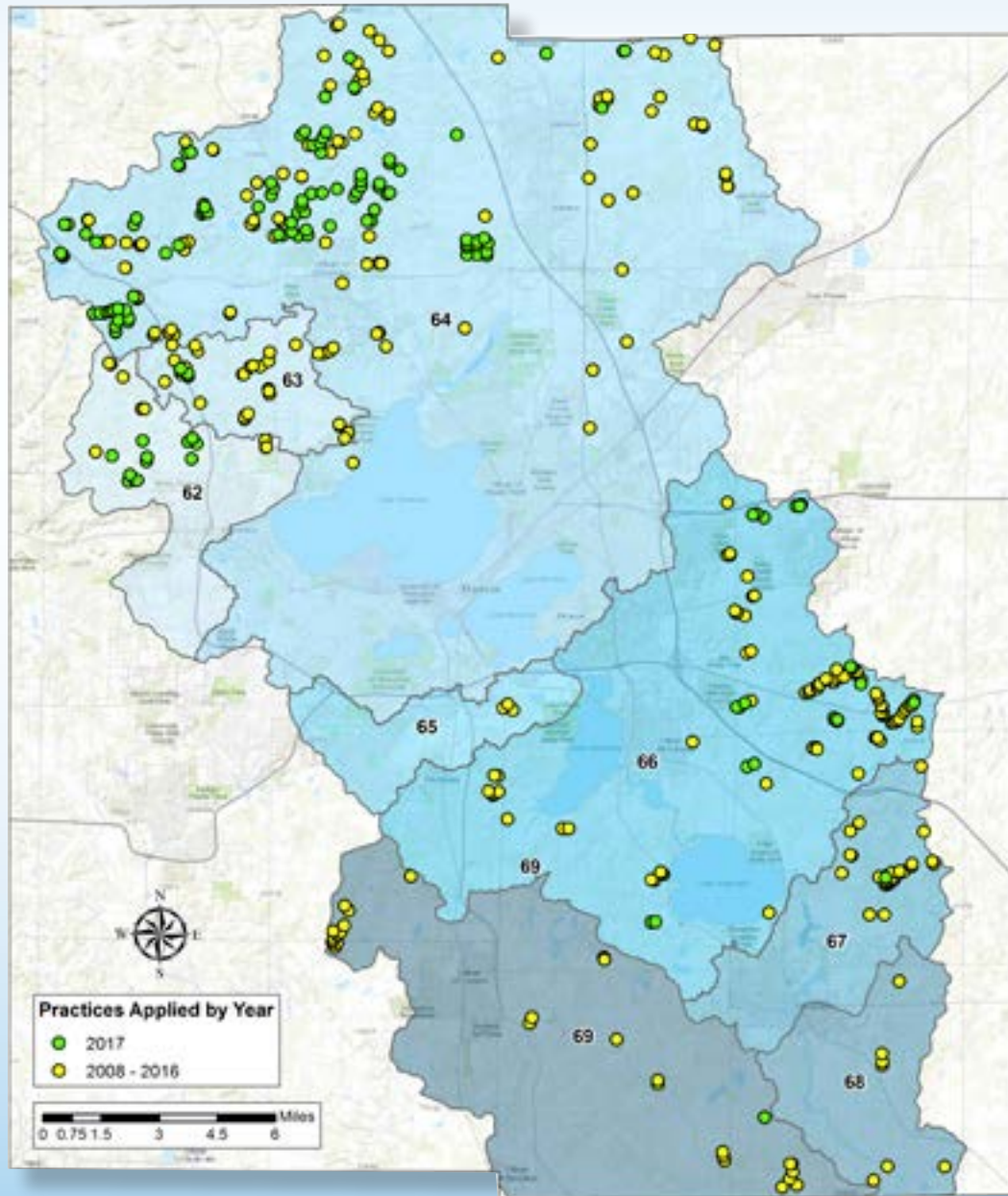
The full Dane County progress report for 2017, which is one of the county's requirements under the Yahara WINS service agreement, is available on the Yahara WINS website at www.madsewer.org, search "Yahara WINS."

Figure 4. Number of landowners/producers within the Yahara Watershed contacted by Dane County Land and Water Resource staff each year since 2014



Dane County practices applied by year

Dane County funded or facilitated practices in rural and urban settings designed to prevent phosphorus from reaching area surface waters. The map depicts practices put into place from 2008 to 2016 as well as projects implemented during 2017.





Proper compost spreading including use of buffer strips at the bottom of slopes helps keep nutrients in place.

Yahara Pride Farms success continues

Yahara WINS continued its successful partnership with Yahara Pride Farms, a local farmer-led group promoting agricultural conservation practices, for a fifth straight year. The 2017 agreement provided \$110,000 to Yahara Pride Farms for cost-share funding on practices implemented by farmers including cover crop planting, strip tillage and headland manure stacking.

A maximum of \$25,000 was available for supporting activities including data collection, farm evaluations, phosphorus reduction modeling activities, education and outreach activities and farmer engagement. As shown in Figure 6, Yahara Pride Farms used these funds to reduce predicted phosphorus runoff by more than 18,000 pounds in 2017 through a variety of conservation practices.

Figure 5. Amount of Dane County cost share funding allocated by year since 2014

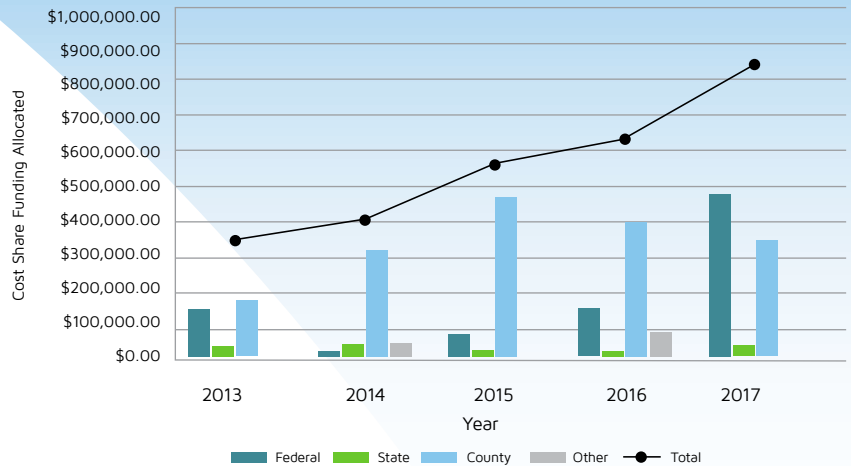
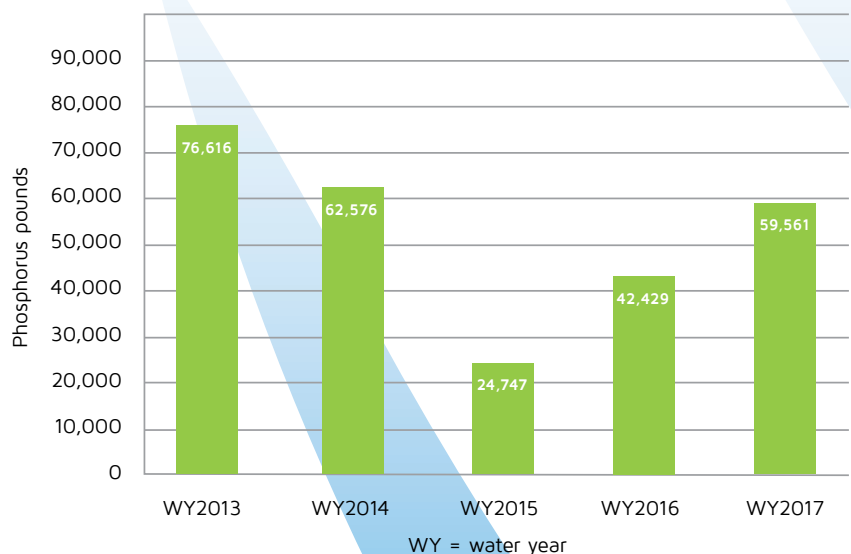


Figure 6. Summary of 2017 Yahara Pride Farms phosphorus reductions

Practice	Average phosphorus reduction (pounds per acre)	Total predicted phosphorus reduction (pounds in 2017)
Cover crops	1.8	7,300
Low-disturbance deep tillage plus cover crop	2.2	1,981
Low-disturbance manure injection	0.9	6,039
Strip tillage	0.8	1,458
Headland stacking of manure	2.1	665
Combined practices	0.9 (additional)	1,416
Total		18,859

Figure 7. Annual tributary phosphorus loads to Lake Mendota



Multiple conservation practices at work

One informative takeaway from Yahara Pride Farms' work is the effectiveness of combining multiple conservation practices on one farm. In 2017, Yahara Pride offered a bonus payment for farms that implemented a combination of cover crops and either strip tillage or low-disturbance manure injection. In all, a total of 66 fields totaling 1,704 tillable acres implemented a combination of practices. After correcting for the individual practices,

the combination of practices averaged an additional phosphorus reduction of 0.9 pounds per acre compared to individual practices. (Figure 6)

Over the past five years, Yahara Pride Farms has accomplished significant reductions in predicted phosphorus runoff, summarized in Figures 8, 9 and 10 by practice.

Figure 8. Cover crops

Year	2013	2014	2015	2016	2017
Farms	20	37	35	37	33
Fields	80	53	160	290	212
Acres	2,436	4,732	4,908	5,851	4,483
Acres (lbs./acre)	0.7	0.8	1.8	1.5	1.8
Total prediction (in pounds)	1,730	3,691	6,572	7,130	7,300

Figure 9. Low-disturbance manure injection

Low disturbance manure injection program	2013	2014	2015	2016	2017
Number of farms	11	14	4	7	15
Number of fields	20	20	32	76	223
Tillable acres in program	361	841	566	1,203	3,885
Average phosphorus reduction (lbs./acre)	1.0	0.6	1.9	0.9	1.4
Total phosphorus reduction (in pounds)	357	530	1,081	1,106	6,039

Figure 10. Strip tillage

Strip tillage program	2013	2014	2015	2016	2017
Number of farms	3	3	3	3	4
Number of fields	11	15	20	21	35
Tillable acres in program	156	253	1,489	917	1,829
Average phosphorus reduction (lbs./acre)	1.4	0.9	0.8	0.9	0.8
Total phosphorus reduction (in pounds)	225	220	1,221	703	1,458



Practices that conserve soil and prevent phosphorus from reaching surface waters promise improved water quality for the region. Here, a restored prairie in Pheasant Branch Conservancy separates farmland from wetlands and a marsh on the north shore of Lake Mendota.

Partnerships enable exploration

To encourage innovative conservation practices, Yahara WINS also awarded Yahara Pride Farms grants to explore promising manure management options: low-disturbance manure injection and solid manure composting.

Low disturbance manure injection

The practice of low disturbance manure injection involves subsurface application of manure, meaning that manure is injected into soil rather than applied to the top layer. This practice provides soil with nutrients while reducing the amount of manure (and associated phosphorus) that will be carried away by surface runoff. It isn't applicable on all farm fields, such as steep slopes, so it is unknown how well it will work for all farms.

As local farmers have experimented with injection and found ways to make it work for their farms, demand for the practice is growing. However, uncertainty about applicability and the cost of the equipment remain barriers to implementation. To address these barriers, Yahara WINS, with the assistance of the Clean Lakes Alliance, and Dane County, provided matching \$56,260 grants in 2017 to Yahara Pride Farms for the purchase of a low disturbance manure injection tanker, which will be available for use by farmers in the Yahara Watershed. This grant allows multiple farmers to gain experience in using the equipment without having to make a large upfront capital individual investment. The goal is to lead to more

widespread adoption of this liquid manure application practice, which is expected to result in less runoff of phosphorus from manure when compared to more traditional liquid manure management practices.

Solid manure composting

In December 2017, Yahara WINS, with assistance from the Clean Lakes Alliance, agreed to provide financial support for a two-year Yahara Pride Farms project that evaluates composting of "solid" manure or bedding pack. Dane County is also providing financial support. Solid manure typically accounts for 20 to 25 percent of the total manure generated by a dairy farm.

Composting solid manure reduces the volume of manure that needs to be applied, allowing farmers to target manure application to times when there is less runoff risk. In addition, preliminary data shows that the composting process causes dissolved phosphorus to "stick" to particulate matter, binding phosphorus in the composted product and reducing phosphorus in runoff.

The project has the potential to change the way solid manure is managed. Among other things, information generated as part of this project will help farmers better assess composting as a manure management alternative by providing information on the operational, economic and environmental aspects of manure composting.



Keeping gutters free of leaves during storms produces a significant reduction in the volume of nutrients reaching lakes, rivers and streams.

Water quality monitoring key

A robust water quality monitoring program is an important aspect of the Yahara WINS watershed adaptive management project. Progress toward phosphorus reduction goals is based on actual phosphorus reduction practices put in place and the resulting phosphorus reductions calculated using approved models.

Water quality monitoring, a required element of adaptive management projects, demonstrates the impact of on-land phosphorus reduction practices on in-stream water quality over time. Yahara WINS supports substantial water quality monitoring throughout the basin, including permanent installations and a citizen monitoring program.

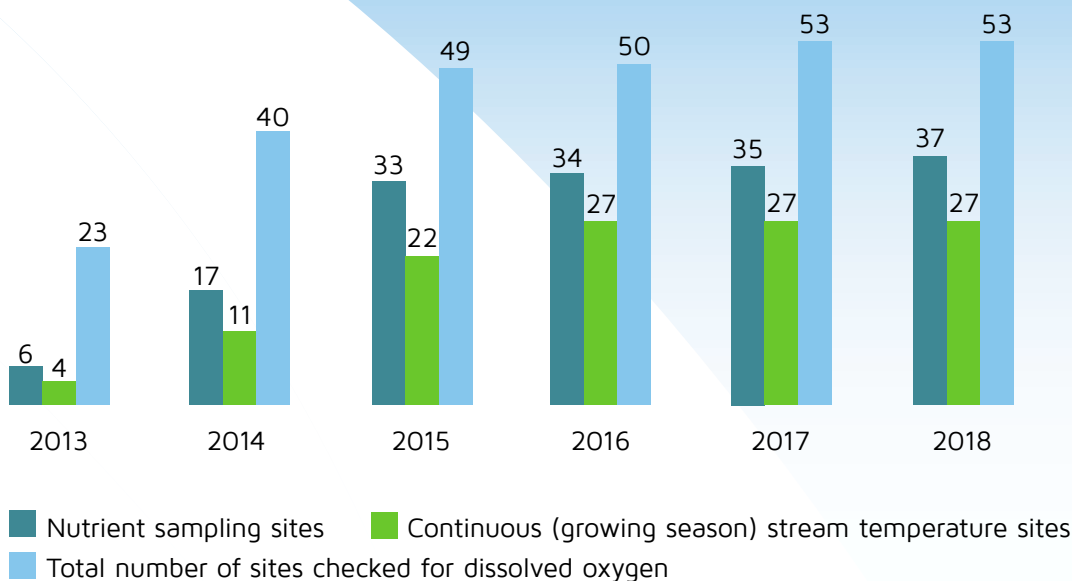
In 2017 alone, Yahara WINS analyzed more than 733 water quality samples for phosphorus. The monitoring data, along with data compiled during previous years of the project, will serve as baseline and trend data to gauge the project's success going forward.

Many Yahara WINS partners provide monitoring services to assess in-stream water quality and the health of fish and aquatic life in local waterways. The U.S. Geological Survey and the Rock River Coalition work with Yahara WINS to collect samples used to assess in-stream water quality and Wisconsin DNR is providing in-kind services to assess the biological health of streams in the Yahara River basin.

Figure 11. Median total phosphorus concentrations for U.S. Geological Survey sites reported in milligrams per liter during the growing season.

Year	2013	2014	2015	2016	2017
Dorn Creek at Hwy Q	0.10	0.13	0.11	0.15	0.17
Dorn Creek at Hwy M	0.22	0.26	0.25	0.28	0.24
Sixmile Creek at Hwy 19	0.22	0.34	0.13	0.31	0.19
Sixmile Creek at Hwy M	0.14	0.20	0.18	0.25	0.17
Yahara River at Fulton		0.14	0.19	0.11	0.11

Figure 12. Rock River Coalition volunteer stream monitoring stations



2017 stream data

From the beginning of the pilot project in 2012, the U.S. Geological Survey has been providing water quality sampling for the Yahara WINS project under a joint funding agreement. Currently, there are five USGS gauging stations in the Yahara River watershed used for adaptive management. USGS collects water quality samples from these stations to help evaluate water quality trends.

Figure 11 summarizes the median phosphorus concentration for each monitoring site during the growing season (May through October), which is the basis for Wisconsin’s phosphorus criteria. For Dorn and Sixmile, the criterion is 0.075 mg/l while for the Yahara River at Fulton, the criterion is 0.10 mg/L.

The addition of the Yahara WINS stations improved the overall monitoring of water bodies in the Yahara River Watershed and completed the picture of the phosphorus inputs to Lake Mendota. The measured phosphorus loads entering Lake Mendota from the four major tributaries is available and shown in Figure 7 on page 10, for the last five years.

The total phosphorus loading in a given year depends on a variety of factors, including the amount, intensity and timing of precipitation. If heavy precipitation occurs during a time of year when runoff is more likely, phosphorus loading may increase; during a drier year, or a year in which precipitation occurs during a time when runoff is less likely, phosphorus loading may decrease. Over the course of the 20 year Yahara WINS project, a downward trend is anticipated.

Rock River Coalition efforts expand

For the fifth consecutive year in 2017, Yahara WINS provided funding to the Rock River Coalition to support a citizen volunteer water quality monitoring program in the Yahara River Watershed. Samples collected by the volunteers help tell a more detailed story about the current conditions in the watershed and indicate changes over time. For the 2017 monitoring year:

- Volunteers monitored 53 stream stations on a monthly basis for dissolved oxygen concentrations, stream temperature, water clarity and stream flow (when possible). Volunteers also use a biotic index to assess stream health.
- Volunteers established 27 stream stations to monitor continuous water temperatures using automated data loggers.
- Volunteers collected and delivered samples from 35 stations that serve as active nutrient sampling sites. The district’s lab analyzes the samples for total phosphorus, total suspended solids, total Kjeldahl nitrogen, ammonia, nitrate, nitrite and ortho-phosphorus.

More information about the Rock River Coalition’s work can be found at www.rockrivercoalition.org.



DNR's Kim Kuber, Jim Amrhein and George Johll use stream shocking as one means to assess the health of the aquatic environment.

DNR works to assess fish, aquatic life

As a signatory of the intergovernmental agreement, Wisconsin DNR is required to make an annual contribution to the Yahara WINS project in lieu of a financial contribution. DNR has agreed to provide biological monitoring services that exceed those the agency normally would undertake in the watershed.

Yahara WINS has invested heavily in monitoring chemical indicators of stream health, such as phosphorus and dissolved oxygen levels. The biological monitoring complements this chemical monitoring and will increase Yahara WINS' understanding of and focus on water quality improvement.

DNR's work focuses on stream biology including fish, macroinvertebrates and habitat. Each year, the department provides Yahara WINS a report identifying key findings at the monitored sites.

Intergovernmental agreement supports expectations

To achieve water quality standards, the Total Maximum Daily Load phosphorus calculation developed for the Rock River by the Wisconsin Department of Natural Resources provides a phosphorus reduction budget for cities, towns, villages and other entities including Madison Metropolitan

Sewerage District that lie in the Yahara Watershed. An intergovernmental agreement among these entities establishes the legal and administrative framework for participation. The agreement specifies the proportion of funding that each participant is responsible for, project governing bodies, the administrative structure of the project and "off ramps" for participants every five years. Participants contribute funds to the project in proportion to the amount of phosphorus they each must reduce to meet targets.

IGA participants include:

- **Towns** – Blooming Grove, Cottage Grove, Dunn, Middleton, Westport, Burke.
- **Villages** – Cottage Grove, DeForest, Maple Bluff, McFarland, Shorewood Hills, Waunakee, Windsor.
- **Cities** – Fitchburg, Madison, Middleton, Monona, Stoughton, Sun Prairie.
- **Others** – Madison Metropolitan Sewerage District, Village of Oregon Waste Water Treatment Plant, Stoughton Utilities, University of Wisconsin–Madison, Wisconsin DNR.

Communications capacity expands

Yahara WINS worked to become more visible and understandable to community members in 2017. One goal for Yahara WINS is to assist partners in communicating the group’s activities to their boards, commissions and residents to cultivate support for the project.

A major step to enhance communications involved creation of an informational video in 2017. Yahara WINS contracted with Pigorsch Media to produce the video, which provides information about Yahara WINS and its benefits to community members and the watershed. The video is ideal for schools, civic organizations, stakeholders, community meetings, conservation groups, public access cable channels and more. The video is available on the Yahara WINS website.

Other Yahara WINS communications in 2017 included a newsletter and a press release. In 2018, Yahara WINS will be working with Madison Metropolitan Sewerage District communications professionals to develop a strategic communications plan to guide future communication.

Transitions

During 2017, two of the original guiding forces of the Yahara WINS project retired. First, on June 2, Dave Taylor

retired from the Madison Metropolitan Sewerage District, officially ending his tenure as president of Yahara WINS.

After retiring, Taylor signed on as a consulting director to guide the initiative through its transition from pilot to full-scale project. Then, on July 21, Kevin Connors, Dane County’s Land and Water Resources director also retired.

Taylor and Connors provided years of vision and guidance. Through their dedication and the solid foundation for the project, the momentum continues.

Laura Hicklin was promoted to lead the Land and Water Resources Department and joined the Yahara WINS executive committee as an advisory member. Kathy Lake, the district’s pollution prevention manager, assumed the role of president of the executive committee until the end of 2017 when Martin Griffin was hired as the district’s director of ecosystem services and assumed the role of executive committee president.

Other agreements

In addition to the intergovernmental agreement, the Yahara WINS project maintains service agreements with Dane, Rock and Columbia counties as well as other agreements with a variety of participating entities (Figure 13).

Figure 13.

Type of agreement	Description
MOU with Town of Dunn	Agreement for annual contributions to Yahara WINS by Town of Dunn, which has already met TMDL requirements.
MOU with Town of Burke	Agreement for annual contributions to Yahara WINS by Town of Burke.
MOU with Town of Westport	Agreement for annual contributions to Yahara WINS by Town of Westport for compliance with total suspended solids requirements and project support.
Legal services agreement	Contract with Stafford Rosenbaum for retention of general legal counsel.
Joint funding agreement with U.S. Geological Survey	Five year agreement between U.S. Geological Survey and Madison Metropolitan Sewerage District using Yahara WINS funding for water quality monitoring by the federal agency.
MGE Foundation pledge	Contribution from Madison Gas and Electric Foundation to provide funding to Yahara WINS over three years.
Columbia County service agreement	Two year service agreement with Columbia County for cost-share funds to cover phosphorus reducing practices and county staff time to support implementation.
Dane County service agreement	Five year service agreement with Dane County Land and Water Resources Department to fund county staff and provide bonus payments based on phosphorus reductions resulting from implementation of practices.
Rock County service agreement	Three year service agreement with Rock county for cost-share funds to cover phosphorus reducing practices and county staff time to support implementation.
Yahara Pride Farms grant agreement	Agreement for annual contribution to Yahara Pride Farms to support implementation of phosphorus reducing practices on farms.
Rock River Coalition contract	Contract with Rock River Coalition to support volunteer monitoring program, water quality sampling and data management services.
DNR service agreement	Agreement with DNR as an intergovernmental agreement member to provide in-kind water monitoring and habitat assessment services in lieu of DNR’s allocated cost contribution.
Madison Metropolitan Sewerage District agreement	Agreement with the district for water quality testing on samples collected by Rock River Coalition and USGS as part of the adaptive management project.
Clean Lakes Alliance MOU	Agreement specifying an annual contribution from Clean Lakes Alliance to Yahara WINS to support farms adopting phosphorus reducing practices in the upper part of the Yahara river watershed.

Yahara WINS finances on track

Yahara WINS' annual budget for 2017 totaled nearly \$1.5 million, reflecting the contributions of the intergovernmental agreement partners. Yahara WINS used the funds to support phosphorus-reducing practices, water quality monitoring, contract with a consulting director and expand communications activities.

Yahara WINS will collect an amount based on loadings identified in the Rock River TMDL from partners each year over the 20 year project period. Over time, the cost per pound of phosphorus reduced is expected to increase. To balance future expenditures with projected income, the Yahara WINS executive committee established a designated operating reserve policy. In 2017, Yahara WINS moved \$480,000 of designated operating reserve funds into a segregated account.

Revenue from the partners totaled approximately \$41,000 less than the amount budgeted for 2017. Two partners – the City of Middleton and Village of DeForest – submitted updated storm water modeling information in 2017 that resulted in a reduction of the costs allocated to these communities.

As a result of the recalculation, Middleton and DeForest also will receive credit for overpayments made in 2017. These credits were offset by the receipt of a \$100,000 grant from the Clean Lakes Alliance through a memorandum of understanding and the addition of the Town of Burke as a new intergovernmental agreement member.

2017 Budget (numbers rounded to nearest \$100)

Unencumbered carryover from 2016	\$87,000
Revenue	
IGA participants	\$1,467,000
Contributions from non-IGA participants	\$17,300
Savings account interest	\$1,200
Total Revenue	\$1,485,500
Expenditures	
Legal services agreement	\$20,000
Dane County phosphorus reduction services agreement	\$450,000
Columbia County phosphorus reduction services agreement	\$40,000
Rock County phosphorus reduction services agreement	\$40,000
Yahara Pride Farms phosphorus reduction services agreement	\$110,000
USGS joint funding agreement	\$75,000
Water quality monitoring analytical services (MMSD)	\$35,000
General P reduction practice funding	\$120,000
Phosphorus reduction grant program	\$100,000
WINS staffing	\$43,500
Rock River Coalition water quality monitoring	\$27,000
Financial audit	\$7,000
Communications	\$15,000
Miscellaneous	\$10,000
Total Expenditures	\$1,092,500
Contribution to designated operating reserve fund	\$480,000

2018 budget supports continued progress

For 2018, the Yahara WINS budget totals just over \$1.5 million, reflecting a slight increase in revenue from new signatories to the intergovernmental agreement.

Expenditures for phosphorus reduction through service agreements with Dane County, Columbia County are all set to increase, as are agreements with Yahara Pride Farms. Expenditures for legal services and miscellaneous supporting services are set to decrease.

For 2018, a transfer of \$315,000 to a designated operating reserve was budgeted. By gradually building the reserve fund, the intergovernmental agreement participants seek to ensure that an adequate amount of money will be available in the latter years of the project when per pound phosphorus reductions are expected to grow more costly.

Executive committee guides Yahara WINS

For 2017, members of the Yahara WINS executive committee included:

Voting members

Kathy Lake, president, Madison Metropolitan Sewerage District

Gary Huth, vice president, City of Middleton

Jeff Rau, treasurer, Village of Oregon

Greg Fries, secretary, City of Madison

Tom Wilson, at-large, Town of Westport

Nonvoting members (named in IGA as advisory)

Jeff Endres, Yahara Pride Farms

Laura Hicklin, Dane County

James Tye, Clean Lakes Alliance

Nonvoting members

Paul Kent, attorney

Dave Taylor, consulting director

2018 Budget (numbers rounded to nearest \$100)

Unencumbered carryover from 2017	\$14,500.00
Revenue	
IGA participants	\$1,438,400
Income from grants, other MOUs, etc.	\$50,000
MGE Foundation	\$5,000
Savings account interest	\$1,200
Total Revenue plus unencumbered carryover	\$1,509,100
Expenditures	
Phosphorus reduction	
Dane County phosphorus reduction services agreement	\$540,000
Columbia County phosphorus reduction services agreement	\$50,000
Rock County phosphorus reduction services agreement	\$180,000
Yahara Pride Farms phosphorus services agreement	\$130,000
Yahara Pride Manure Composting Grant	\$21,400
General P reduction practice funding	\$20,000
Phosphorus reduction grant program	\$34,200
Subtotal	\$975,600
Water Quality Monitoring or modeling	
Water quality monitoring analytical services (MMSD)	\$40,000
USGS joint funding agreement	\$75,000
Rock River Coalition water quality monitoring	\$25,000
Subtotal	\$140,000
Supporting Services	
WINS staffing	\$46,000
Financial audit	\$7,500
Communications	\$12,000
Miscellaneous	\$5,000
Legal services agreement	\$8,000
Subtotal	\$78,500
Transfer of funds to designated operating reserve	\$315,000
Total Expenditures	\$1,509,100
Revenue minus expenditures (potential unencumbered carryover to 2019)	\$0

Yahara WINS
1610 Moorland Road
Madison, WI 53713

Yahara WINS Group Meeting Summary
March 15, 2017

Martye Griffin called the meeting to order at 1:30.

There were no comments or changes requested to the December 13, 2017 meeting summary.

Executive Committee Update:

Martye noted that the Executive Committee is exploring an audit for Yahara WINS and three agreements have recently been approved: Clean Lakes Alliances contract extension; Columbia County service agreement and Yahara Pride composting project. Two contracts will be expiring and the Executive Committee will be discussing their future: Legal Services Agreement and Consulting Director Contract.

The Executive Committee Treasurer, Jeff Rau, provided a budget overview and noted that four entities have yet to submit their Yahara WINS payment or first installment for 2018.

Partner updates:

- Dea Larsen Converse introduced herself and gave an update on Clean Lakes Alliance priorities. Lauren Streigl, City of Madison, provided an overview of the coagulant treatment system for Starkweather Creek
- John Reimer, Dane County, provided an overview and status of the “Suck the Muck” project.
- Nancy Sheehan provided an update and future look at the Rock River Coalition Citizen Monitoring project.
- Bob Uphoff, Yahara Pride Farms, gave a review of information covered at Yahara Pride’s Annual meeting.

Martye Griffin noted that 2018 Yahara WINS Grants will be available soon. The Executive Committee will be discussing the amount of funding available for 2018.

Jennifer Sereno discussed communications planning and needs for partners. A draft communications plan is available on the Yahara WINS website. She noted that a survey will be sent to all municipal partners and that survey will be used to develop the final plan.

The Yahara WINS Annual Report is being pulled together. Partners that have information to share are asked to provide that to Martye Griffin in the next few weeks.

Meeting adjourned at 4 pm. Due to timing, the Executive Committee meeting will be rescheduled.

Attendees:

Martin Griffin
Jeff Rau
Greg Fries
Dave Taylor
Jennifer Sereno
Paul Dearlove
John Reimer
Karen Oberhauser

Katie Mumm
Dea Larsen Converse
Nancy Sheehan
Paul Kent
Tim Ryan
Kris Hampton
Jolene Stinson
Bob Uphoff

Pat Murphy
Lauren Streigl
Rodney Scheel
Jon Lindert
Kathy Lake
Siphiwe Nkosi
Kim Meyer

Yahara WINS Minutes

Meeting Date: September 11, 2018

Attendance: committee members (voting and advisory) highlighted

In person: **Martin Griffin, Jeff Rau, Gary Huth, Amy Callis**, Dea Larsen Converse, **Greg Fries**, Kathy Lake, Jenny Sereno, Paul Kent, **James Tye**

Call to order – Martye called the meeting to order at approximately 3:05

1. Review and Acceptance of July 25th, 2018 minutes.

Motion to accept: Fries, 2nd Huth

Vote: Unanimous in favor

2. Dane County request for funding approval Harvestable Buffer Extension.

Discussion was had regarding extending buffer contracts to 15 years, this is \$450/acre/year payment to the farmer and is done in a onetime payment to extend contracts from 5 year to 15 years. The cost results in a cost per pound of TP reduced of approximately \$33.16/lb/year. It is noted that this is not part of the 2018 approved budget and funds will be moved from reserves to pay for this change in the amount of \$80,550.

Motion to award the funds and to transfer from reserves: Fries, 2nd Huth

Vote: Unanimous in favor

3. City of Stoughton – Revised Member Payment Approval

Discussion that the revised calculations submitted by Stoughton were reviewed and approved by both the WDNR and by MMSD staff.

Motion to accept the revised calculations as presented: Rau, 2nd Fries

Vote: Unanimous in favor

4. 2019 Draft Budget Discussion

Discussion was had on a draft budget presented by Jeff and Martye. The budget highlighted in YELLOW those items that were “discretionary” i.e. those that did not have a specific contract tied to them. Further discussion was had that we were deviating slightly from the proposed amount to be dedicated to reserves as laid out in the original “planned 5 year budget”. There was discussion that we should review the original spreadsheet that was used to create the long term budget to see how the assumptions used in the creation of the budget match with how the actual work has been proceeding.

Consensus was reached that a goal with the draft budget to be presented to the group as a whole, would be to have \$200,000.00 directed to reserves.

5. Strategic Communications Plan Discussion

Discussion was had regarding how much input the group wanted to provide on the resolving comments received on the communications plan.

Motion by Fries that Jenny and Martye should take a first cut at incorporating the comments into the communications plan and present the revised plan to the executive committee for review and approval

Motion Fries, 2nd Huth

Vote: Unanimous in favor

6. Motion to adjourn Rau, 2nd Huth

Yahara WINS group meeting Minutes

Meeting Date: October 11, 2018

Attendance: Yahara WINS partners

Call to order – Martye called the meeting to order at approximately 1:30PM

Yahara WINS Group Meeting Agenda

1. Review and Acceptance of September 11, 2018 minutes.

Minutes accepted

2. Yahara WINS 2019 Annual Budget and revised 5 year budget

Budget discussion- Griffin gave a presentation on the 2019 annual budget and the revised 5-year budget. Questions and comments were discussed after during discussion. Discussion ended and voting process began.

Roll Call:

City of Fitchburg – present

City of Madison – present

City of Middleton – present

City of Monona – present

City of Stoughton – present

City of Sun Prairie – present

MMSD – present

Stoughton Utilities – present

Town of Blooming grove – present

Town of Cottage Grove – present

Town of Dunn – absent

Town of Westport – present

Village of Cottage Grove – present

Town of Dunn – absent

Town of Westport – present

Village of Cottage Grove – present

Village of DeForest – present

Village of Oregon WWTP – present

Village of McFarland – present

Village of Maple bluff – absent

Village of Shorewood Hills – present (non-designated representative)

Village of Windsor – present

Village of Waunakee – absent

UW Madison – absent

WDNR – present

Town of Burke – absent

Town of Middleton – absent

Motion to accept 2019 annual budget

Motion 2nded

Unanimous approval by oral roll call vote. Village of Shorewood Hills did not vote, WDNR recused themselves from voting

Motion to accept revised 5 year budget

Motion seconded

Unanimous approval by oral roll call vote. Village of Shorewood Hills did not vote, WDNR recused themselves from voting, City of Middleton Abstained

Griffin gave update on past executive committee actions, and annual report and 2017 audit

Meeting adjourned

2018 Stormwater Public Involvement & Participation

Section 2 – Public Involvement and Participation

- a. Elected Officials - Annually at a Common Council meeting we discuss the City's Annual Report and aspects of the permit. During Plan Commission, Public Works Committee and Council meetings we discuss storm water management items as part of new subdivisions and development projects. The Council reviews and approves our storm water budget annually and this allows for additional time to discuss permit expectations. In July 2018 we made a presentation to the Common Council on the new Stormwater Quality Management Plan that was completed in May 2018. We had a more specific discussion on the SQMP with our Public Works Committee during July as well. All Council, Commission and Committee meetings are open to the public. Each Common Council meeting includes a Public Comment period where the public can weigh in on topic of concern including stormwater items.

Municipal Officials - Our City Leadership Team meets monthly where we discuss new development items and construction projects. Storm water aspects of these projects are highlighted to raise the awareness of storm water initiatives and projects. We reported the completion of our updated Stormwater Quality Management Plan document with our Leadership Team and discussed items of the plan.

Appropriate Staff - Our Planning and inspection staff work with property owners, contractors and builders through all phases of a project. This allows an opportunity for education on storm water expectations. Public Works staff traverse the City and often educate property owners about the need to properly place leaves on the terrace. As they conduct maintenance activities for storm water facilities they are looking for areas of concern and need to work to improve storm water quality. Our Public Works Department Leadership were integral to the creation of our updated Stormwater Quality Management Plan document. They participated and contributed to the document as well as implementation aspects.

- b. Public Involvement Activities

In March 2018, we discussed the Annual Report with our Public Works Committee and Common Council. These public meetings offer an opportunity for questions and interaction about the Permit.

The City of Stoughton completed the update of our Stormwater Quality Management Plan in 2018. During this process, we discussed the project with various City staff, committee and the Common Council. A presentation was made to the Common Council in July 2018.

City Ordinances are posted online. We direct developers, contractors, builders and property owners to the stormwater regulations to assist them with the projects.

Through MAMSWaP, a number of public involvement activities took place in 2018.

- Storm Drain Art Program – 20 sites in our MAMSWaP member areas had storm drain art projects. These projects collaborated with Cities, Villages and School District to have designs created and painted to alert the public of the need to protect our storm drains from contamination. In Stoughton, we had two locations painted. One in on the High

School campus and the other is in downtown on Main Street. The School district has students help prepare the design and paint the mural on their campus. The downtown mural is in a high traffic area at our Senior Center. Both projects generated conversation with our respective Boards, Committees and Council for support and approval. The project was well received.

- Plant Dane Program – We sold 9,169 plants to 283 participants and 1,332 plants were donated for civic projects. These sales indicate a desire by residents to make improvements to the environment. The civic donated plants allowed for volunteer projects at various community locations.
- Our MAMSWaP coordinator issues rain text alerts to whomever signs up (approximately 350 were signed up in 2018) with the intention that these people will clear the street gutters prior to the upcoming rain event. It is recommended they rake, sweep and blow materials from the gutter to reduce the amount of these materials reaching our receiving waters.
- A rain garden workshop was conducted with 29 participants.
- A winter salt training session was conducted with 42 participants to help educate the public, contractors and municipal staff about proper use of winter salt application.



STRAND
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Stormwater Quality Management Plan

City of Stoughton



July 10, 2018



Overview

- Introduction
- Current/Updated Stormwater Program
- Rock River Total Maximum Daily Load (TMDL)
- Stormwater Quality Modeling
- Alternatives Analysis
 - BMPs in City
 - Water Quality Trading
 - Watershed Adaptive Management
- Stormwater Utility Rate Review and Update
- Recommendations

Introduction


- EPA and WDNR National/Wisconsin Pollutant Discharge Elimination System (NPDES/WPDES) Permitted Municipally Separate Storm Sewer Systems (MS4)
- WPDES Permit No. WI-S050075-2 (Effective-5/1/14; Expiration-4/30/19)
- City Stormwater Plans: Original (2006); Update (2010)
- MS4 and Rock River Basin TMDL Requirement:

<u>Reach</u>	<u>MS4</u>	<u>Rock River TMDL</u>	
	<u>TSS Reduction (%)</u>	<u>TSS Reduction (%)</u>	<u>TP Reduction (%)</u>
66	20%	62%	54%
67	20%	40%	27%
68	20%	51%	65%
69	20%	53%	80%

- Yahara River & Rock River are 303(d) listed impaired waters.
- Updated plan prepared to address changing requirements and existing conditions TSS & TP removals in the City
- A variety of compliance options were evaluated
- Stormwater Utility rates reviewed

WPDES Permit-Required Stormwater Program

Page 1 of 26
WPDES Permit No. WI-S050075-2



STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

**GENERAL PERMIT TO DISCHARGE UNDER THE WISCONSIN
POLLUTANT DISCHARGE ELIMINATION SYSTEM
WPDES PERMIT NO. WI-S050075-2**


In compliance with the provisions of ch. 283 Wis. Stats., and chs. NR 151 and 216, Wis. Adm. Code, owners and operators of municipal separate storm sewer systems are permitted to discharge storm water from all portions of the

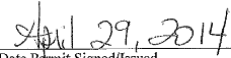
MUNICIPAL SEPARATE STORM SEWER SYSTEM

owned or operated by the municipality to waters of the state in accordance with the conditions set forth in this permit.

With written authorization by the Department, this permit will be used to cover a municipal separate storm sewer system initially covered under a previous version of a municipal separate storm sewer system permit. The **Start Date** of coverage under this permit is the date of the Department letter sent to the municipality authorizing coverage under this permit. The Department is required to charge an annual permit fee to owners and operators authorized to discharge under this permit in accordance with s. 283.33(9), Wis. Stats., and s. NR 216.08, Wis. Adm. Code.

State of Wisconsin Department of Natural Resources
For the Secretary

By 
Pamela A. Biersach, Director
Bureau of Watershed Management
Division of Water


Date Permit Signed/Issued

PERMIT EFFECTIVE DATE: May 1, 2014 **EXPIRATION DATE:** April 30, 2019

Permit Condition
Public Education/Outreach
Public Involvement/Participation
Illicit Discharge Detection & Elimination
Construction Site Pollutant Control (Erosion Control)
Post-Construction Stormwater Management
Pollution Prevention-Municipal Operations
Stormwater Quality Management
Storm Sewer System Map
Annual Report
MAMSWaP Meetings

Updating Programs Via Task Order 16-02

WI DNR Urban Nonpoint Source & Stormwater Grant

Project Cost	State Share (46%)	Local Share (54%)
\$99,800	\$45,908	\$53,892

Current/Updated Stormwater Program

- **Public Education/Outreach Involvement/Participation**
 - Madison Area Municipal Storm Water Partnership (MAMSWaP)
- **Illicit Discharge Detection and Elimination**
 - Annual inspection at 29 outfalls (2 outfalls every 5 years)
- **Construction Site Pollutant Control**
 - Ordinances/Admin
 - Revisions necessary due to NR 151 updates
- **Postconstruction Stormwater Management**
 - Ordinances/Admin
 - Revisions necessary due to NR 151 updates
 - Initiate program to require/gather maintenance agreements for private BMPs
 - Initiate private BMPs maintenance program
- **Pollution Prevention – Municipal Operations**
 - Maintenance of municipally-owned stormwater BMPs (dredging) program
 - Track quantities of street sweeping, catch basin cleaning, deicer, leaf collection
 - Stormwater Pollution Prevention Plan (SWPPP) at Public Works/Parks Department Building
- **Stormwater Quality Management**
 - WinSLAMM Modeling and Alternatives Analysis
- **Storm Sewer System Map**
 - Update annually
- **MS4 Report –March 31, Annually or Biennially (Based on Permit Requirement)**

Rock River TMDL

Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Rock River Basin

Columbia, Dane, Dodge, Fond du Lac, Green, Green Lake, Jefferson, Rock, Walworth, Washington, and Waukesha Counties, Wisconsin

July 2011

Prepared for:

U.S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

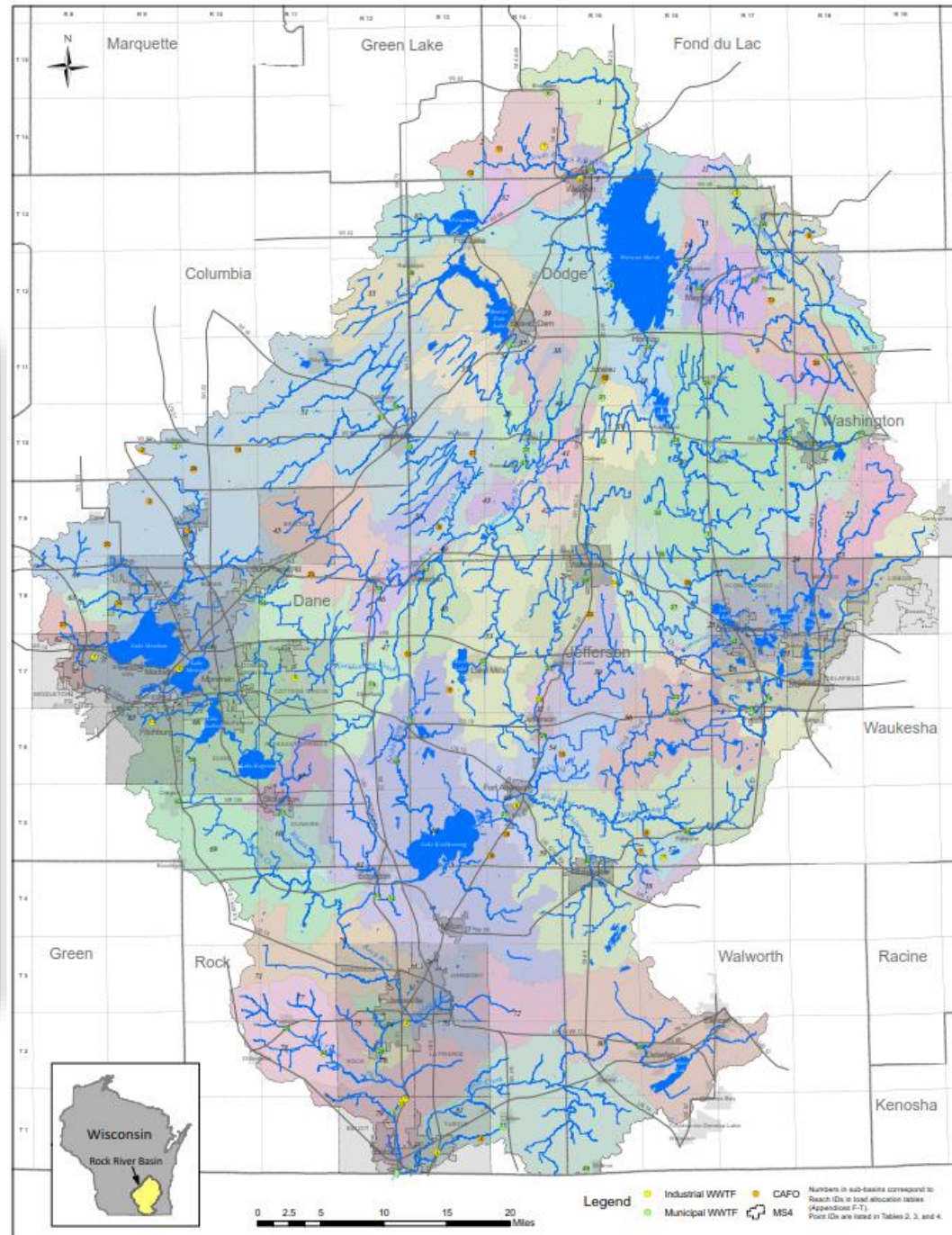
Wisconsin Department of Natural Resources
101 S. Webster Street, PO Box 7921
Madison, Wisconsin 53707-7921



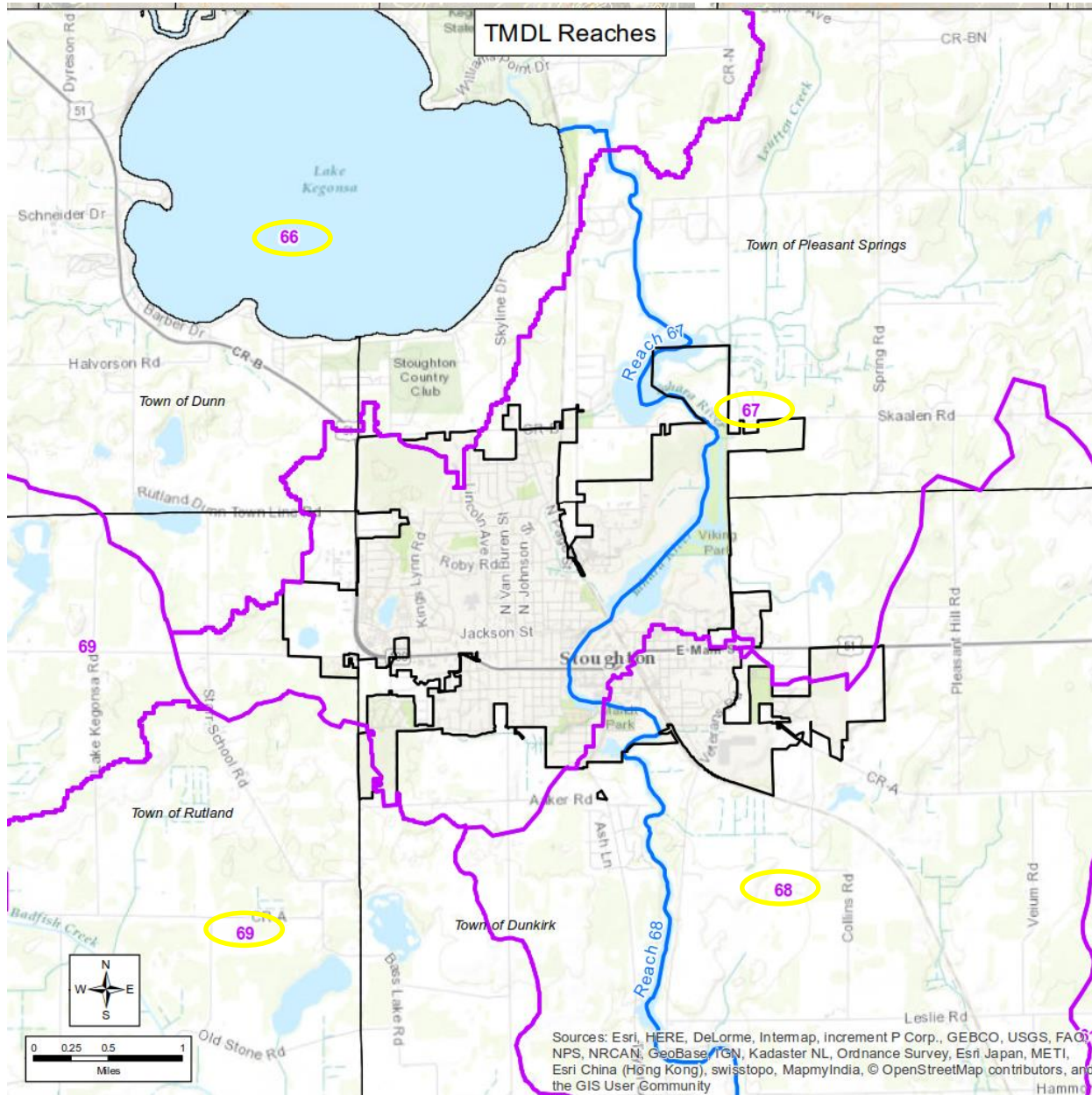
Prepared by:

THE CADMUS GROUP, INC.

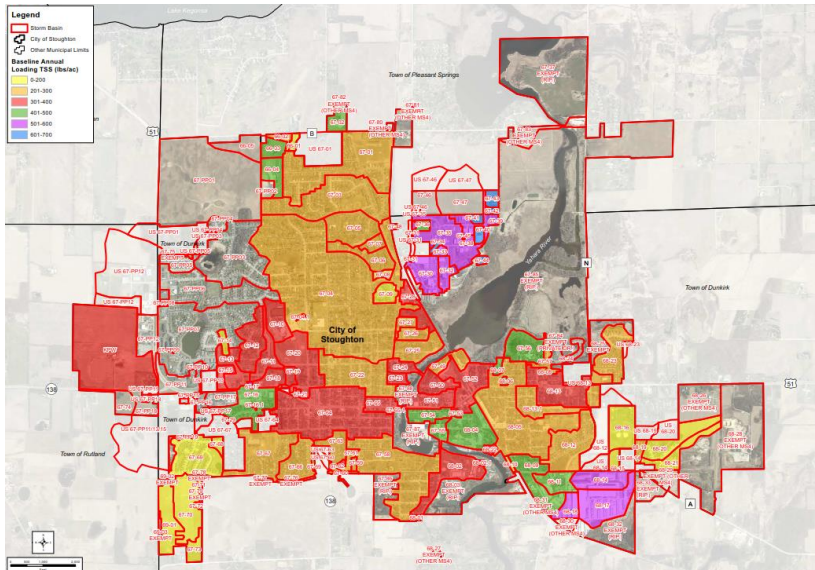
Approved by EPA on Sept. 28, 2011



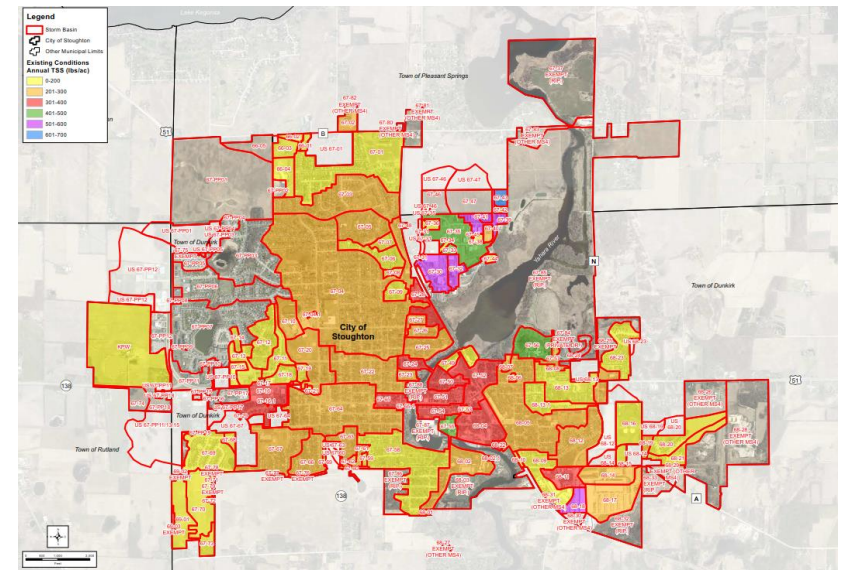
Rock River TMDL



Stormwater Quality Modeling



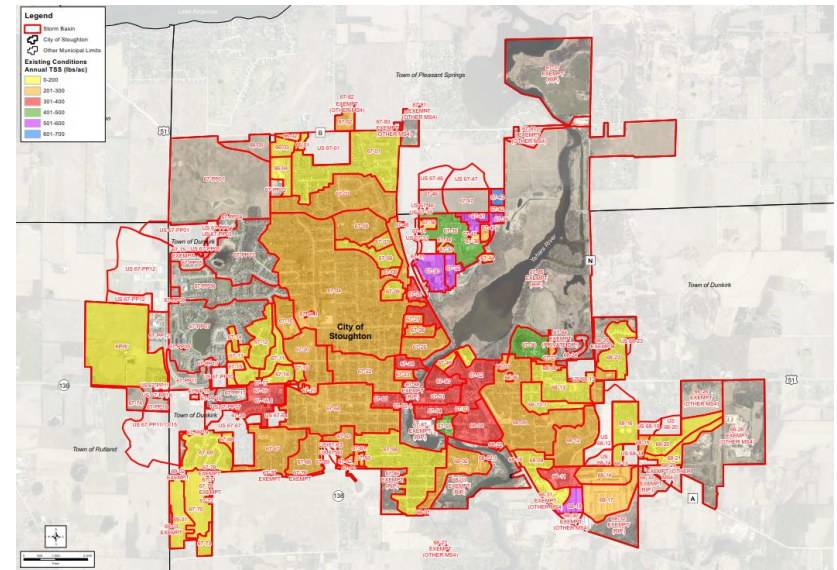
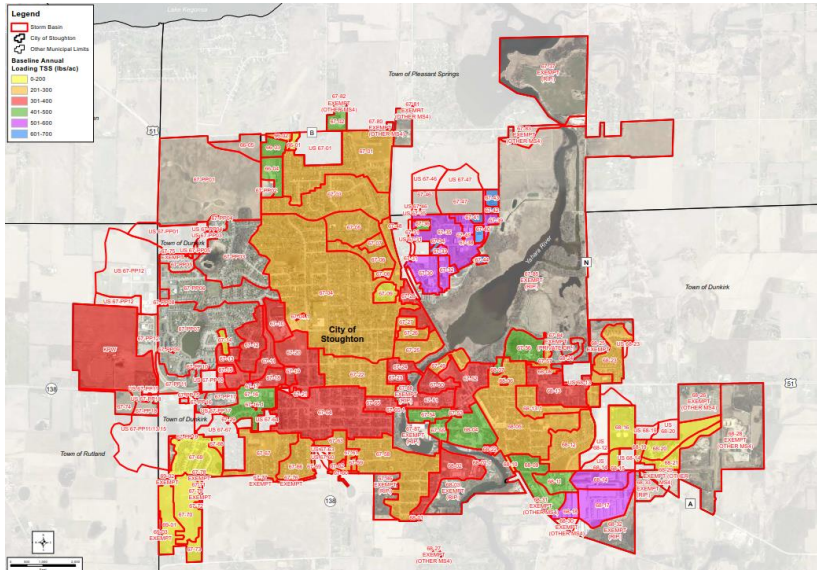
Baseline Conditions/No Controls



Existing Conditions/With Controls

Pollutant	MS4 Permit Required Reductions	Rock River TMDL Required Reductions	MS4 Modeled Existing Conditions Reduction (%)	TMDL Pollutant Reduction Gap (%)
City of Stoughton (WinSLAMM Version 10.2.1)				
TSS	20%	Reach 66: 62% Reach 67: 40% Reach 68: 51% Reach 69: 53%	Reach 66: 50.2% Reach 67: 33.0% Reach 68: 24.2% Reach 69: 82.1%	Reach 66: 11.8% Reach 67: 7.0% Reach 68: 26.6% Reach 69: -29.1%
TP	NA	Reach 66: 54% Reach 67: 27% Reach 68: 65% Reach 69: 80%	Reach 66: 49.6% Reach 67: 27.7% Reach 68: 21.2% Reach 69: 57.6%	Reach 66: 4.4% Reach 67: -0.7% Reach 68: 43.8% Reach 69: 22.4%

Stormwater Quality Modeling



Baseline Conditions/No Controls

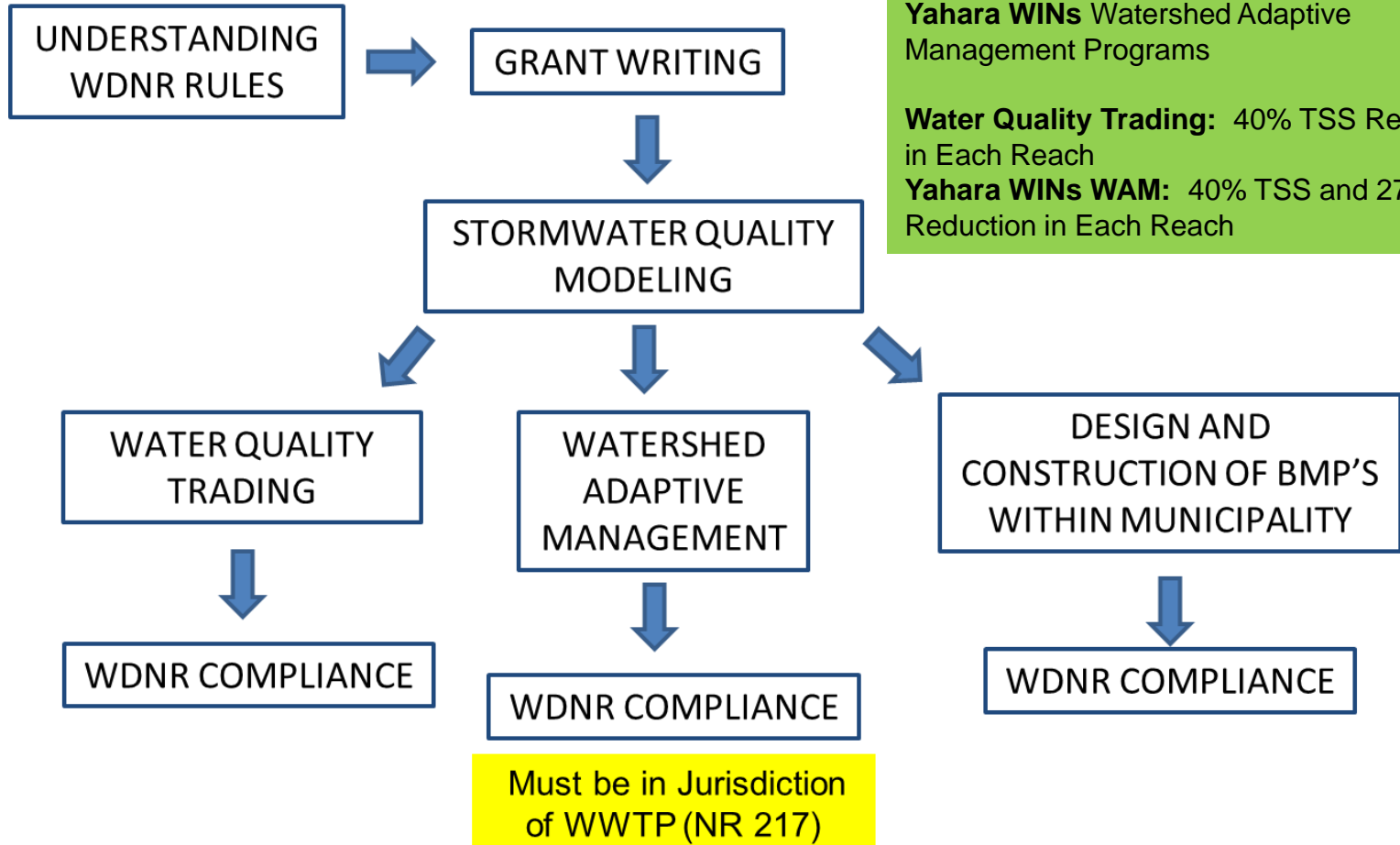
Existing Conditions/With Controls

Pollutant	Yahara WINS Buy-In Required Reductions (%)	Rock River TMDL Required Reductions (%)	MS4 Modeled Conditions Community-Wide Reduction (%)	Yahara WINS Buy-In Pollutant Reduction Gap (%)	Yahara WINS Buy-In Pollutant Reduction Gap (lbs)	TMDL Pollutant Reduction Gap (%)	TMDL Pollutant Reduction Gap (lbs)
TSS	40%	Reach 66: 62%	50.2%	-10.2%	-1,104	11.8%	1,265
		Reach 67: 40%	33.0%	7.0%	38,974	7.0%	38,974
		Reach 68: 51%	24.2%	15.8%	24,224	26.8%	41,134
		Reach 69: 53%	82.1%	-42.1%	-1,942	-29.1%	-1,342
TP	27%	Reach 66: 54%	49.6%	-22.6%	-7.1	4.4%	1.4
		Reach 67: 27%	27.7%	-0.7%	-11.0	-0.7%	-11.0
		Reach 68: 65%	21.2%	5.8%	24.3	43.8%	184.8
		Reach 69: 80%	57.6%	-30.6%	-5.4	22.4%	4.0

Note: Negative (-) numbers in the table above indicate that the requirement has been met or there is excess pollutant reduction compared to that required.

Table 5.01-1 Required and Existing Conditions Pollutant Reductions Per Rock River TMDL Reach

Alternatives Analysis

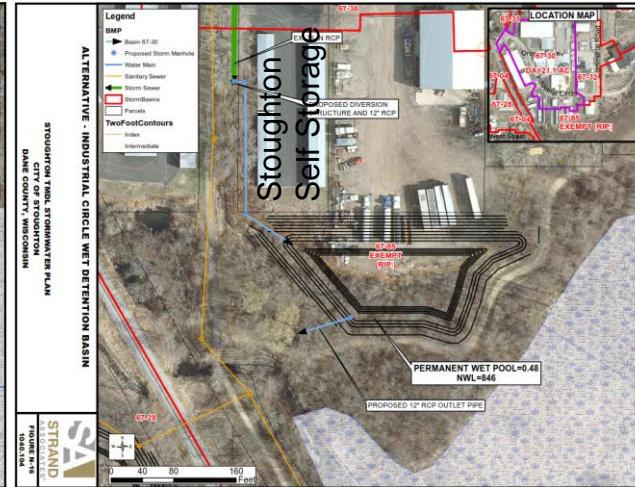
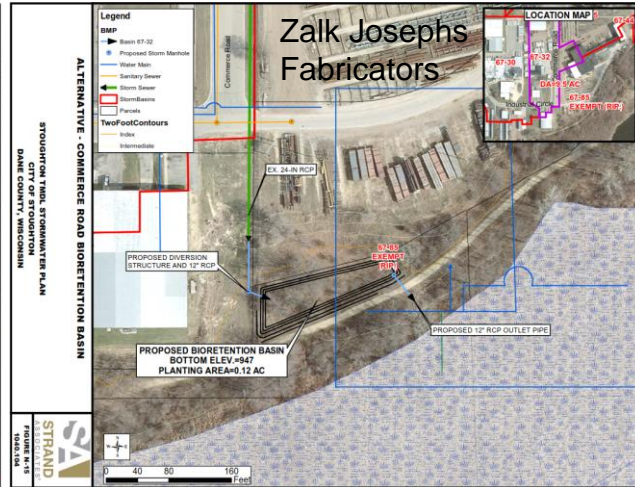
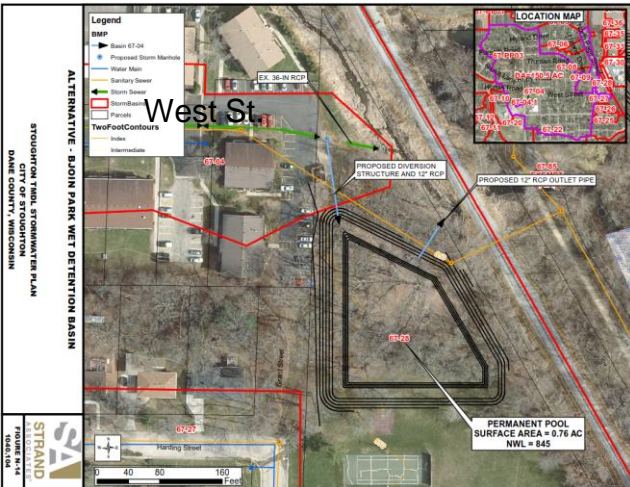


MS4 Must 1st Achieve The Following To Participate in Water Quality Trading and **Yahara WINS** Watershed Adaptive Management Programs

Water Quality Trading: 40% TSS Reduction in Each Reach
Yahara WINS WAM: 40% TSS and 27% TP Reduction in Each Reach

BMPs in the City (Alternative #5-example)

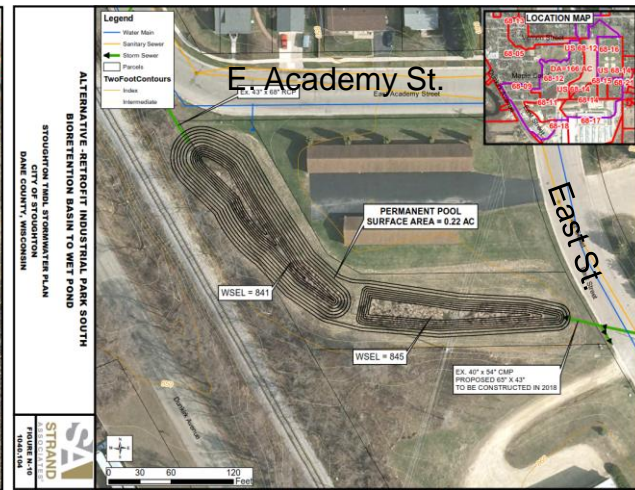
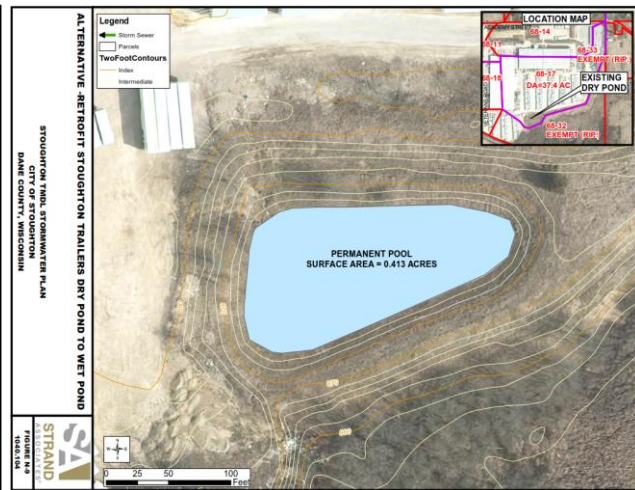
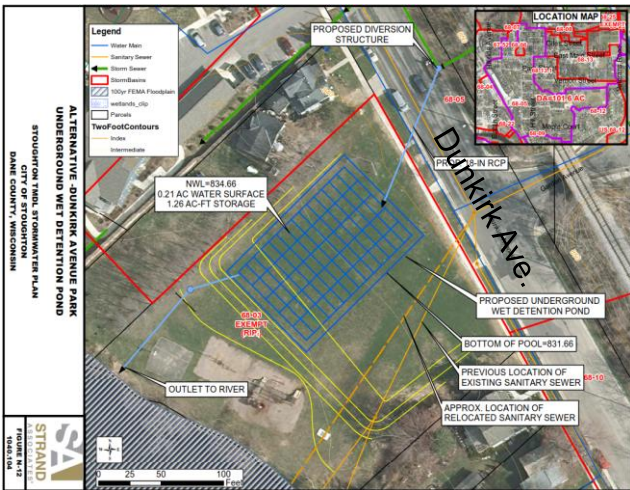
Redevelopment at 40% TSS Reduction for 20 Yr



Bjoin Park Wet Pond (Reach 67)
 • \$564,700

Commerce Road Bio-Basin (Reach 67)
 • \$237,100

Industrial Circle Wet Pond (Reach 67)
 • \$577,900

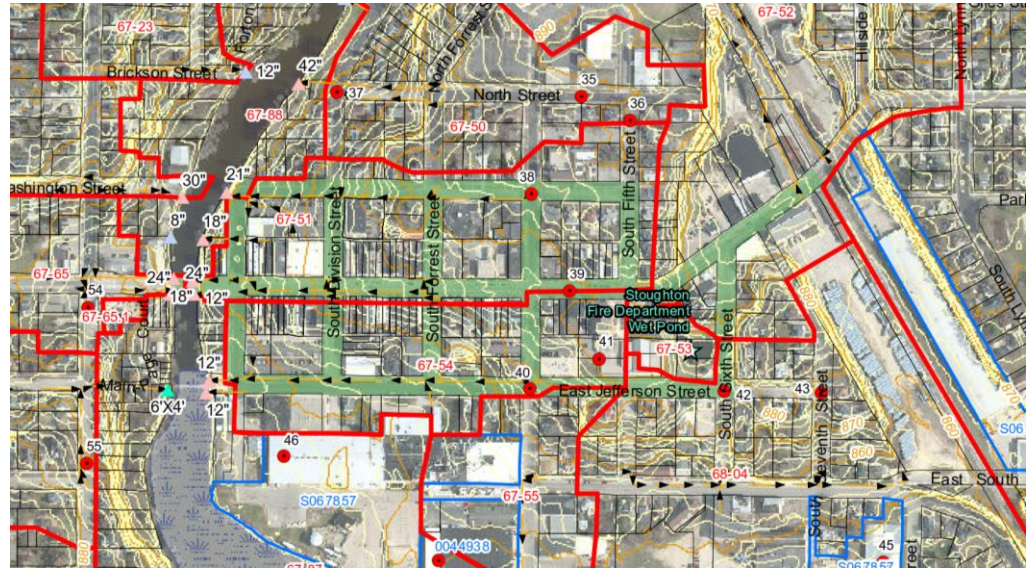


Dunkirk Park Underground Wet Pond (Reach 68)
 • \$498,300

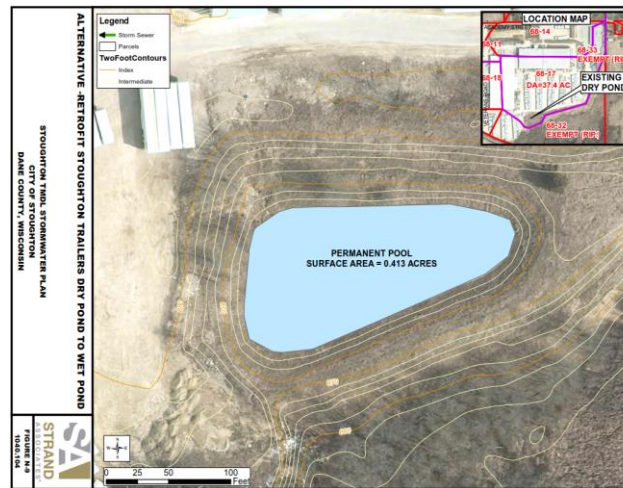
Stoughton Trailers Dry to Wet Pond (Reach 68)
 • \$288,500

Industrial Park South Bio-Swale to Wet Pond (Reach 68)
 • \$367,500

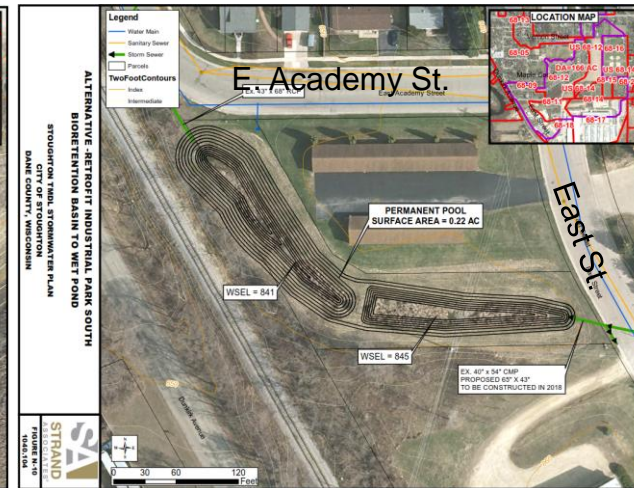
BMPs in the City (Alternative #2-example)



Weekly Street Sweeping in Downtown and Bi-Monthly Sweeping in Remainder of City
 • \$951,800 (20-Year NPW)



Stoughton Trailers Dry to Wet Pond
 (Reach 68)
 • \$288,500



Industrial Park South Bio-Swale to
 Wet Pond (Reach 68)
 • \$367,500

Water Quality Trading

With Admin & Uncertainties Approx. \$110/lb TP

- Other MS4s, Stoughton WWTP, & Private Point Dischargers

Facility	HUC-12	Available TSS/TP for WQT (lbs)	Reachshed
MS4s			
Town of Dunn	070900020903	Reach 66: 22,940 / 104	Reach 66 and 67
Town of Pleasant Springs	070900020903	Reach 66: 9,860 / 55 Reach 67: 14,420 / 150	Reach 66 and 67
Town of Rutland (Non-MS4)	070900020903	To Be Determined	Reach 66, 67 and 69
Town of Dunkirk	070900020903	To Be Determined	Reach 67, 68, and 69
WWTPs			
City of Stoughton WWTP	070900020903	Reach 68: 24,377 / 0	Reach 68
Private Point Dischargers			
To Be Determined	070900020903		Reach 66, 67, 68, and 69

Table 5.06-1 Potential Trading Partners

Yahara WINS Watershed Adaptive Management

- **Program Administrator:** Madison Metropolitan Sewerage District (MMSD)
- **Broker For Ag BMPs with Farmers:** Dane County
- **Water Quality Monitoring:** USGS
- **Goal:** Point and nonpoint sources work collaboratively in protecting and restoring local water resources.
- Members must achieve 40% TSS and 27% TP reductions before buy-in
- City is a member
- To close TSS and TP TMDL Reduction Gaps, City Buy-in to Yahara WINS at approx. \$48.03/lb TP

	TP Needed (lbs)	TSS Needed in Form of TP (lbs)	Additional TP to Purchase to Meet TSS Reduction Requirement
Reach 66	1.3	3.7	2.3
Reach 67	0	0	0
Reach 68	160.5	46.5	0
Reach 69	4	0	0
Total	165.8		2.3

Previous Buy-In	Buy-in After Modeling Update
\$11,000	\$8,076
Difference	\$2,924

Note: Additional TP is purchased only if the Base TP Purchase from Yahara WINS amount is less than the Potential TSS in Form of TP Purchase from Yahara WINS amount. This is based on the premise that the Base TP Purchase from Yahara WINS comes along with equivalent TSS.

Alternatives Analysis

Alternative #	Total 20-Yr NPW	\$/lb TP Removed (20-Yr NPW)
1 - 8 BMPs + WQT + Redevelopment	\$5.2 million	\$1,829
2 - 2 BMPs + WQT + Street Sweeping (2x/month)	\$2.0 million	\$1,342
3 - 9 BMPs + WQT + Redevelopment	\$4.8 million	\$1,863
4 - 5 BMPs + WQT	\$3.8million	\$2,012
5 - 6 BMPs + Redevelopment	\$3.1 million	\$1,253

Alt.	Structural BMPs	Non-Structural BMP: 40% TSS Requirement for Redevelopment	Non-Structural BMP: 80% TSS Requirement for Redevelopment	Non-Structural BMP: Increased Street Sweeping Frequency	WQT with Town of Pleasant Springs in Reach 67 (TSS Only)	WQT with City WWTP in Reach 68 (TSS Only)
1	5 in Reach 67 4 in Reach 68	Yes	No	No	Yes-3,045 lb	No
2	0 in Reach 67 2 in Reach 68	No	No	Yes	No	No
3	4 in Reach 67 5 in Reach 68	Yes	No	No	Yes-9,271 lb	No
4	4 in Reach 67 1 in Reach 68	No	No	No	Yes-11,508 lb	Yes-14,741 lb
5	3 in Reach 67 3 in Reach 68	Yes	No	No	No	No

Note: See Table 5.04-1 for detailed alternatives analysis information.

Table 5.02-1 Alternatives Analysis Summary of Components

Stormwater Utility Rate Review and Update

- City of Stoughton Rate History

Year	SWU Rates		% Rate Increase	No. of Base ERUs	Annual Revenue
	\$/ERU/Month	\$/ERU/Yr			
2013	\$4.44	\$53.24	-	8,533	\$436,540
2014	\$4.31	\$51.77	-2.8%	8,775	\$454,310
2015	\$4.30	\$51.55	-0.4%	9,664	\$498,212
2016	\$4.75	\$56.96	10.5%	8,906	\$507,267
2017	\$5.07	\$60.86	6.8%	8,994	\$547,375
2018	\$5.11	\$61.32	0.8%	9,152	\$561,246

Note: No. of Base ERUs includes reduction of ERUs due to credits

Table 6.02-2 City SWU Rate History

- Existing City Stormwater Budget (\$598,246 in 2018)
- Proposed Stormwater Budget
 - Existing Stormwater Budget **plus**
 - Stormwater Program Updates **and**
 - Alternative 1 (8 BMPs, then WQT)
 - Alternative 2 (2 BMPs & street sweeping modifications, then WQT)
 - Alternative 3 (9 BMPs, then WQT)
 - Alternative 4 (5 BMPs, then WQT)
 - Alternative 5 (6 BMPs)

Stormwater Utility Budget

- **Assumptions**

- Capital Projects: Finance at 4.5% for 20 Years
- Capital Projects Funded by WDNR Grant (50% up to \$150,000) and Dane County Urban Water Quality Grants (50% up to \$100,000)
- City Existing Budget Inflated 3% Per Year
- City revenue from stormwater and erosion control fees and yard waste site fees is increased by 3 percent per year.
- Total # ERUs increases 0.5% Per Year
- Projects and water quality trading staggered to achieve TMDL compliance by 2038.

- **Rock River Basin TMDL Compliance Timeline**

- No Specific Timeline, Though 20 to 30 Years Has Been Mentioned
- Rather, WDNR expects continual progress within each 5-year permit term

Stormwater Utility Budget (Alternative 5 Example)

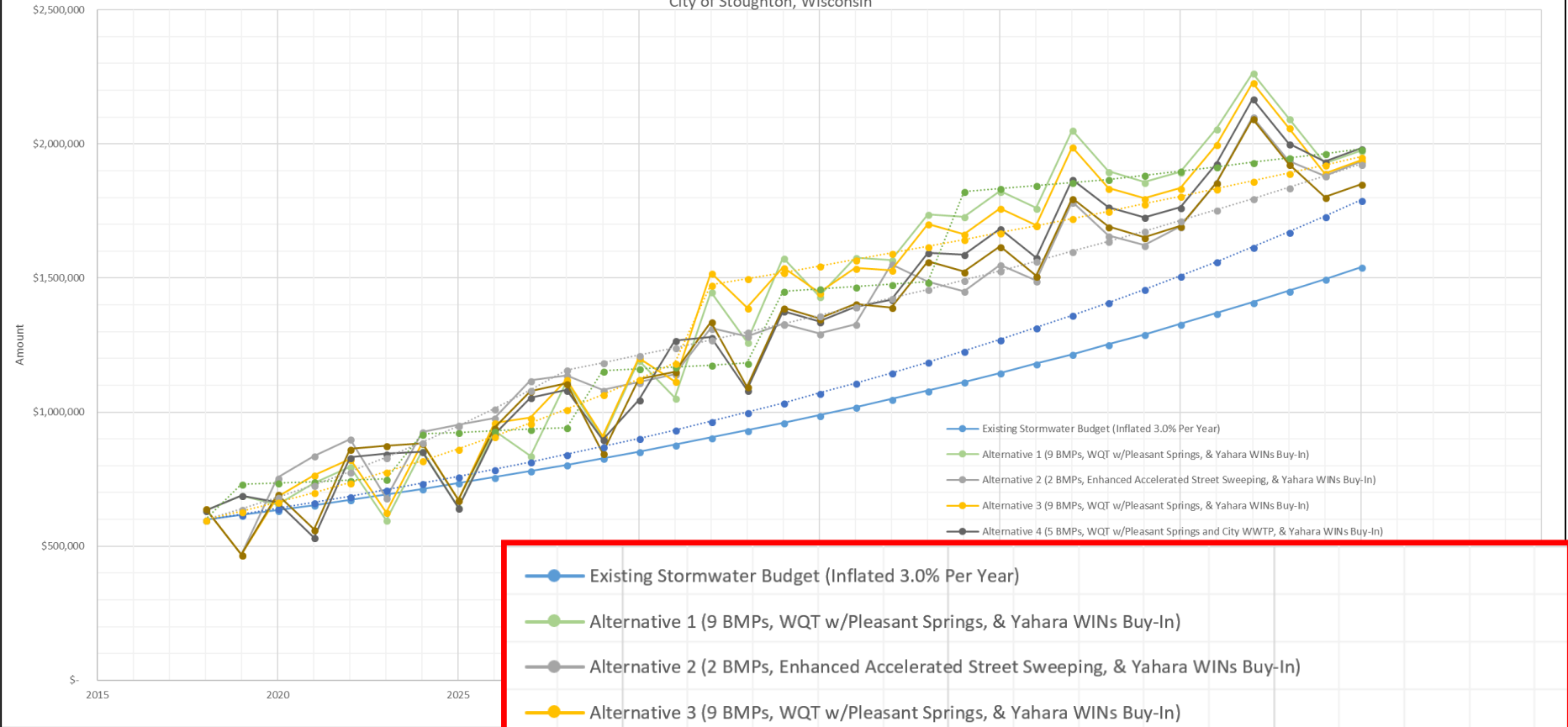
Table 6.04-5 Alternative 5–Potential Future Stormwater Management Costs

Expenses			2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Assumed Expenses Funded by Stormwater Utility in 2018 (then 3% Inflation)			\$ 598,246	\$ 616,193	\$ 634,679	\$ 653,720	\$ 673,331	\$ 693,531	\$ 714,337	\$ 735,767	\$ 757,840	\$ 780,575	\$ 803,993
Additional Expenses													
Develop standard inspection form for erosion control and stormwater inspections, utilize, and track utilization.			\$ 1,000	\$ 500	\$ 515	\$ 530	\$ 546	\$ 563	\$ 580	\$ 597	\$ 615	\$ 633	\$ 652
Develop Private BMP Maintenance Program			\$ 20,000										
Implement Private BMP Maintenance Program				\$ 40,000	\$ 41,200	\$ 42,436	\$ 43,709	\$ 45,020	\$ 46,371	\$ 47,762	\$ 49,195	\$ 50,671	\$ 52,191
Assessment of 10 City-Owned Wet Ponds for Dredging Need								\$ 25,000					\$ 33,456
Design of City Owned Wet Pond Dredging	2018 Cost	\$165,000										\$ 105,000	
City-Owned Wet Pond Periodic Dredging (Project #1-2028)			\$ 221,746										\$ 17,047
City-Owned Wet Pond Periodic Dredging (Project #2-2033)			\$ 257,065										
City-Owned Wet Pond Periodic Dredging (Project #3-2038)			\$ 298,008										
City-Owned Wet Pond Periodic Dredging (Project #4-2043)			\$ 345,473										
City-Owned Wet Pond Periodic Dredging (Project #5-2048)			\$ 400,498										
Review spill prevention and response procedures at Public Works Garage for improvements in 2018 and implement in 2019			\$ 500	\$ 100	\$ 103	\$ 106	\$ 109	\$ 113	\$ 116	\$ 119	\$ 123	\$ 127	\$ 130
Review Public Works Department staff training for stormwater pollution prevention at the Public Works Garage for improvements in 2018 and implement in 2019			\$ 500	\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093	\$ 1,126	\$ 1,159	\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305
Interim Municipal Phosphorus Reduction Credit for Leaf Management Programs Analysis				\$ 23,000									
WDNR UNPS Grant Application for WinSLAMM Modeling Update	2018 Cost:	\$ 4,800				\$ 5,717						\$ 8,109	
WDNR UNPS Grant Awarded for WinSLAMM Modeling Update							\$ (35,000)						\$ (49,648)
WinSLAMM Modeling Update							\$ 70,000						\$ 99,296
WDNR UNPS and Dane County UWQ Grant Applications for Stormwater BMPs	2018 Cost:	\$ 7,900	\$ 7,900		\$ 8,876				\$ 11,206				\$ 14,148
WDNR UNPS Grant Applications for Vacuum Street Sweeper	2018 Cost:	\$ 4,500	\$ 4,500										
WDNR UNPS Grant Awarded for Stormater BMP				\$ (150,000)		\$ (150,000)				\$ (145,792)			
Dane County Urban Water Quality Grant Awarded for Stormwater BMP				\$ (100,000)		\$ (100,000)				\$ (100,000)			
WDNR UNPS Grant Awarded for Vacuum Street Sweeper	2018 Cost				\$ (54,464)								
Vacuum Street Sweeper Purchase			\$ 298,245		\$ 24,324	\$ 24,324	\$ 24,324	\$ 24,324	\$ 24,324	\$ 24,324	\$ 24,324	\$ 24,324	\$ 24,324
Design/Construct Industrial Park Bioswale to Wet Pond Conversion			\$ 367,527	\$ 29,102	\$ 29,102	\$ 29,102	\$ 29,102	\$ 29,102	\$ 29,102	\$ 29,102	\$ 29,102	\$ 29,102	\$ 29,102
Design/Construct Bjoin Park Wet Detention Basin			\$ 564,745			\$ 47,441	\$ 47,441	\$ 47,441	\$ 47,441	\$ 47,441	\$ 47,441	\$ 47,441	\$ 47,441
Design/Construct Commerce Road Bioretention Basin			\$ 237,085						\$ 22,416	\$ 22,416	\$ 22,416	\$ 22,416	\$ 22,416
Design/Construct Industrial Circle Wet Detention Basin			\$ 577,875										
Design/Construct Dunkirk Ave. Park Underground Wet Pond (41.8%)			\$ 498,320										
Design/Construct Stoughton Trailers Dry to Wet Pond Conversion			\$ 288,465										
Annual Payment To Yahara WINs (Remaining TP and TSS in form of TP Purchase)			\$ 8,076	\$ 8,076	\$ 8,076	\$ 8,076	\$ 8,076	\$ 9,363	\$ 9,363	\$ 9,363	\$ 9,363	\$ 9,363	\$ 10,854
Total Expenses			\$ 640,700	\$ 468,000	\$ 693,400	\$ 562,500	\$ 862,700	\$ 875,600	\$ 884,000	\$ 672,300	\$ 941,600	\$ 1,079,000	\$ 1,106,700

Alternative #	Stormwater Budget Range (2019 to 2038)
1 – 8 BMPs + WQT + Redevelopment	\$688,900 to \$1.7 million
2 – 2 BMPs + WQT + Street Sweeping (2x/month)	\$468,000 to \$1.5 million
3 – 9 BMPs + WQT + Redevelopment	\$468,000 to \$1.7 million
4 – 5 BMPs + WQT	\$688,900 to \$1.6 million
5 – 6 BMPs + Redevelopment	\$468,000 to \$1.6 million

Stormwater Utility Potential Rate Scenarios

Existing and Future Stormwater Costs
(assumes a 0.5% increase in ERUs per year)
City of Stoughton, Wisconsin



- Existing Stormwater Budget (Inflated 3.0% Per Year)
- Alternative 1 (9 BMPs, WQT w/Pleasant Springs, & Yahara WINS Buy-In)
- Alternative 2 (2 BMPs, Enhanced Accelerated Street Sweeping, & Yahara WINS Buy-In)
- Alternative 3 (9 BMPs, WQT w/Pleasant Springs, & Yahara WINS Buy-In)
- Alternative 4 (5 BMPs, WQT w/Pleasant Springs and City WWTP, & Yahara WINS Buy-In)
- Alternative 5 (6 BMPs & Yahara WINS Buy-In)
- Stormwater Utility Revenue (3.0% Rate Increase Per Year) for Comparison
- Stormwater Utility Revenue (Five 23% Rate Increases Every 5 Years, Then 0.25% Per Year) to Fund Alt. 1
- Stormwater Utility Revenue (6.5% Rate Increase Per Year for 10 Years, Then 1.8% Per Year) to Fund Alt. 2 & 5
- Stormwater Utility Revenue (5% Increase Per Year for 13 Years, 25% Increase, Then 1.0% Per Year) to Fund Alts. 3 & 4

Stormwater Utility Potential Rate Scenarios

Table 6.05-1 Potential Future SWU Rates

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
# Base ERUs	9152	9198	9244	9290	9336	9383	9430	9477	9525	9572	9620
Future ERU Rate Per Year (3.0% Increase Per Year)	\$ 61.32	\$ 63.16	\$ 65.06	\$ 67.01	\$ 69.02	\$ 71.09	\$ 73.23	\$ 75.42	\$ 77.68	\$ 80.02	\$ 82.42
Future Revenue (3.25% Increase Per Year)	\$ 598,246	\$ 619,084	\$ 640,648	\$ 662,965	\$ 686,060	\$ 709,961	\$ 734,695	\$ 760,292	\$ 786,782	\$ 814,196	\$ 842,566
Future ERU Rate Per Year (Five 23% Increases Every 5 Years, Then 0.25% Per Year)	\$ 61.32	\$ 75.43	\$ 75.43	\$ 75.43	\$ 75.43	\$ 75.43	\$ 92.78	\$ 92.78	\$ 92.78	\$ 92.78	\$ 92.78
Future Revenue (Five 25% Increases Every 5 Years, Then 0.25% Per Year)	\$ 598,246	\$ 731,894	\$ 736,506	\$ 741,170	\$ 745,887	\$ 750,657	\$ 919,083	\$ 924,783	\$ 930,544	\$ 936,369	\$ 942,258
Future ERU Rate Per Year (6.5% Increase Per Year for 10 Years, Then 1.8% Per Year)	\$ 61.32	\$ 65.31	\$ 69.56	\$ 74.08	\$ 78.89	\$ 84.02	\$ 89.48	\$ 95.30	\$ 101.49	\$ 108.09	\$ 115.12
Future Revenue (6.5% Increase Per Year for 10 Years, Then 1.8% Per Year)	\$ 598,246	\$ 638,826	\$ 682,214	\$ 728,608	\$ 778,217	\$ 831,266	\$ 887,995	\$ 948,662	\$ 1,013,541	\$ 1,082,929	\$ 1,157,139
Future ERU Rate Per Year (5% Increase Per Year for 13 Years, 25% Increase, Then 1.0% Per Year)	\$ 61.32	\$ 64.39	\$ 67.61	\$ 70.99	\$ 74.54	\$ 78.27	\$ 82.18	\$ 86.29	\$ 90.60	\$ 95.14	\$ 99.89
Future Revenue (5% Increase Per Year for 13 Years, 25% Increase, Then 1.0% Per Year)	\$ 598,246	\$ 630,365	\$ 664,230	\$ 699,938	\$ 737,588	\$ 777,289	\$ 819,151	\$ 863,293	\$ 909,841	\$ 958,927	\$ 1,010,688

Alternative #	Annual \$/ERU Range (2019 to 2038)	Revenue Generated
1 – 8 BMPs + WQT	\$75.43 to \$140.36	\$731,900 to \$1.5 million
2 – 2 BMPs + WQT + Street Sweeping (2x/month)	\$65.31 to \$137.60	\$638,800 to \$1.5 million
3 – 9 BMPs + WQT	\$64.39 to \$153.44	\$630,400 to \$1.6 million
4 – 5 BMPs + WQT	\$64.39 to \$153.44	\$630,400 to \$1.6 million
5 - 6 BMPs + Redevelopment	\$65.31 to \$137.60	\$638,800 to \$1.5 million

2018 Annual \$/ERU = \$61.32

2018 Annual Revenue = \$561,246

Recommendations

- Initiate updates to Stormwater Programs discussed in Section 3.
- Consider pursuit of an Alternative in Section 5 (Table 5.04-1) to achieve the Yahara WINS baseline (40% TSS and 27% TP reduction) and TMDL Compliance. Alternatives 2 and 5 appear to be most cost-effective.
 - Pursue WDNR UNPS grant funds for any constructed BMPs.
 - 2018-Grant submitted for high-efficiency street sweeper
 - 2018-Grants submitted for Industrial Park Bio-Swale to Wet Pond Conversion
- In 2019, consider completion of the analysis necessary to receive a total phosphorus reduction credit for the City's Leaf Management Programs following WDNR's March 8, 2018, guidance.
- WQT with the Town of Pleasant Springs and the City's WWTP appear to be a possibility
- Continue monitoring Paradise Pond to establish a calculated TSS and TP discharge load
 - Update existing conditions modeling, periodically.
- Consider stormwater utility rate modifications, if necessary





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2018 Stormwater Illicit Discharge Detection & Elimination

Section 3 – Illicit Discharge Detection and Elimination

In 2018 our Public Works and Inspection crews watch for any odd or peculiar discharges. These groups participated in an awareness training in 2017 that was conducted by City of Madison (Department of Public Health) Rick Wenta.

No reports were filed with the City related to potential illicit discharges in 2018.

Unfortunately, our small inspection staff was impacted when one of our employees was out with a major surgery for 5 months. This prevented us from completing the annual outfall inspections in 2018. We plan to be able to proceed with these inspections in 2019.

2018 Stormwater Construction Site Pollutant Control

Section 4 – Construction Site Pollutant Control

Our in-house Building Inspector is the primary construction site inspector for one and two-family residential construction sites. The Building Inspector carries multiple inspection credentials, therefore visits each construction site multiple times during the construction projects. During these visits he is mindful of erosion control and discusses corrective actions in the field with contractors as necessary.

The City contracts with Dane County to provide plan review and inspection services for stormwater management on sites other than one and two-family residential sites.

2018 Stormwater Post-Construction Storm Water Management

Section 5 – Post- Construction Stormwater Management

The City contracts with Dane County to provide plan review and inspection services for stormwater management on sites other than one and two-family residential sites.

2018 Stormwater Pollution Prevention

Section 6 – Pollution Prevention

Our Public Works Team provides most of the observation, repair and maintenance of city owned and managed stormwater infrastructure. During these activities and while are performing other community tasks they are monitoring for signs of illicit discharges, sediment runoff, broken infrastructure, oil sheens in wet basins, visible pollution, bank erosion, noticeable odors and litter or garbage in BMPs.

The crews perform leaf pickup, catch basin and bmp maintenance, and street sweeping functions during the warmer months. During the winter, the crews perform snow plowing and snow removal activities.

During 2018 a new Public Works Facility was under construction with occupancy in January 2019. Therefore a new SWPPP will need to be created for the new facility in 2019.

TABLE 3.02-6b CITY OF STOUGHTON OUTFALL SCREENING SCHEDULE

Outfall ID	Location	Contributing Subbasin	Drainage Area	Predominant Land Use	Priority ²	Reason for Priority	Watershed	Major/Minor ¹	Size (in)	Recommended	Years Screened	Comments from Fall	Comments from Fall	Future Screening Schedule						
														2016	2017	2018	2019	2020	2021	2022
1	South of bridge at Roby Road	67-03, 67-05, 67-06, 67-07, 67-08	< 50	Residential	Y	Institutional	Yahara River	Minor	18"	Every year				x	x	x	x	x	x	x
2	909 N Madison Street	67-04	> 50	Residential	Y	Institutional	Yahara River	Major	60"	Every year				x	x	x	x	x	x	x
3	North Page Street (NE of Bridge)	67-04	< 50	Industrial	Y	Gas station	Yahara River	Minor		Every year				x	x	x	x	x	x	x
4	305 Industrial Circle	67-30	< 50	Industrial	Y	> 2 acres of Industrial	Yahara River	Major	36"	Every year				x	x	x	x	x	x	x
5	Commerce Road and Industrial Circle	67-32	< 50	Industrial	Y	Industrial	Yahara River	Major	24"	Every year				x	x	x	x	x	x	x
6	Behind West Street Apartments - West Street	67-04	> 50	Residential/Commercial	Y	Institutional	Yahara River	Major	36"?	Every year				x	x	x	x	x	x	x
7	Zalk Joseph - Business Park Circle	67-35	< 50	Industrial/Commercial	Y	> 2 acres of Industrial	Yahara River	Major	36"	Every year				x	x	x	x	x	x	x
7	Business Park Circle	67-39, 67-40, 67-41	< 50	Industrial	Y	Industrial	Yahara River	Major	18"	Every year				x	x	x	x	x	x	x
9	North Division Street	67-49, 67-52	< 50	Residential, Institutional	Y	Institutional	Yahara River	Major	36"	Every year	2012			x	x	x	x	x	x	x
10	North Division Street	67-50	< 50	Residential, Institutional	Y	Institutional	Yahara River	Minor	42"	Every year	2012	No flow	No flow	x	x	x	x	x	x	x
11	W Washington Street and Water Street	67-51	< 50	Commercial, Institutional	Y	Commercial, Institutional	Yahara River	Minor	12"	Every year	2011	No flow	No flow	x	x	x	x	x	x	x
12	East end of West Washington Street	67-22	> 50	Residential, Institutional	Y	Institutional	Yahara River	Minor	30"	Every year				x	x	x	x	x	x	x
13	220 S. Water Street	67-51	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	12"	Every year	2011	No flow	No flow	x	x	x	x	x	x	x
14	Under Main Street Bridge (NW)	67-65	< 50	Commercial	Y	Commercial (Gas Station)	Yahara River	Minor	24"	Every year	2011			x	x	x	x	x	x	x
15	Under Main Street Bridge (NE)	67-51	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	18"	Every year	2011			x	x	x	x	x	x	x
16	Under Main Street Bridge (SE)	67-51	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	12"	Every year	2011			x	x	x	x	x	x	x
17	Under Main Street Bridge (SW)	67-65	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	24"	Every year	2011	No flow	No flow	x	x	x	x	x	x	x
18	405 Main Page Ct.	67-64	> 50	Residential, Commercial	Y	Institutional	Yahara River	Major	72"x48" box	Every year				x	x	x	x	x	x	x
19	South Water Street and West Jefferson Street (North Pipe)	67-54	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	12"	Every year	2011			x	x	x	x	x	x	x
20	South Water Street and West Jefferson Street (South Pipe)	67-54	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	12"	Every year	2011			x	x	x	x	x	x	x
21	Stoughton Street Department	67-55	< 50	Industrial	Y	> 2 acres of Industrial	Yahara River	Minor	12"?	Every year	2011			x	x	x	x	x	x	x
22	South East of Elven Sted Dry Basin	68-05, 68-06, 68-13.1	> 50	Residential, Industrial, Inst	Y	Institutional, Industrial	Yahara River	Major	48"	Every year				x	x	x	x	x	x	x
23	Dunkirk Avenue	68-09, 68-11, 68-14, 68-12	> 50	Residential, Industrial	Y	Industrial	Yahara River	Minor		Every year				x	x	x	x	x	x	x
24	Veterans Road at Municipal Boundary (Both sides of road)	68-18	< 50	Industrial	Y	Industrial	Yahara River	Major	CG	Every year				x	x	x	x	x	x	x
25	West Milwaukee Street	67-60	< 50	Residential, Institutional	Y	Institutional	Yahara River	Minor	36"	Every year				x	x	x	x	x	x	x
26	1069 Taylor Lane	68-27	< 50	Institutional	Y	Institutional	Yahara River	Minor	Swale	Every year				x	x	x	x	x	x	x
27	South end of King Street	67-67	< 50	Residential, Institutional	Y	Institutional	Yahara River	Minor	54"	Every year				x	x	x	x	x	x	x
28	Paradise Pond (South); Jackson Street	67-PP10, 67-PP11, 67-PP16, 67-PP17	> 50	Commercial, Industrial	Y	Institutional, Commercial	Yahara River	Major	42"	Every year				x	x	x	x	x	x	x
29	Across from 2008 Roby Road	67-PP06	< 50	Residential	Y	Institutional	Yahara River	Minor	48"	Every year				x	x	x	x	x	x	x
30	East of 318 Greig Trail	67-01	< 50	Residential	N		Yahara River	Major	42"	Every five years				x						x
31	Dam at South Fourth Street	67-58	> 50	Residential, Cemetery	N		Yahara River	Major	48"?	Every five years	2011, 2012, 2013			x						x

Notes:
1 - Major outfalls are defined as outfalls that are 36 inches in diameter (or equivalent cross-sectional area) or larger and are associated with a drainage area of 50 acres or larger. Outfalls with an inside diameter of 12 inches or more are also classified as major outfalls if they receive stormwater runoff from land zoned for industrial activity with 2 or more acres of industrial activity.
2 - Priority outfalls can be major or minor outfalls that have a higher potential for illicit discharge. Contributing drainage area characteristics or land uses that should be considered when selecting priority outfalls include:
History of known or suspected illicit discharges reported within the last five years.
Sections of storm sewer and/or sanitary sewer infrastructure that have exceeded or are approaching their design/useful life.
Contributing drainage areas with 80 or more percent impervious.
Business or industrial parks with frequent changes in property ownership or operations.
Schools or other institutional facilities.
Commercial or industrial operations that generate wastewater or wash water including food processing, metal plating or machining shops, auto and scrap recyclers, commercial car washes and chemical manufacturers or users.

TABLE 3.02-6a CITY OF STOUGHTON OUTFALLS

Outfall ID	Location	Contributing Subbasin	Drainage Area	Predominant Land Use	Priority ¹	Reason for Priority	Watershed	Major/Minor ¹	Size (in)	Recommended	Years Screened	Comments from Fall	Comments from Fall	Future Screening Schedule							
														2016	2017	2018	2019	2020	2021	2022	
1	South of bridge at Roby Road	67-03, 67-05, 67-06, 67-07, 67-08	< 50	Residential	Y	Institutional	Yahara River	Minor	18"	Every year				X	X	X	X	X	X	X	X
2	909 N Madison Street	67-04	> 50	Residential	Y	Institutional	Yahara River	Major	60"	Every year				X	X	X	X	X	X	X	X
3	North Page Street (NE of Bridge)	67-04	< 50	Industrial	Y	Gas station	Yahara River	Minor		Every year				X	X	X	X	X	X	X	X
4	305 Industrial Circle	67-30	< 50	Industrial	Y	> 2 acres of Industrial	Yahara River	Major	36"	Every year				X	X	X	X	X	X	X	X
5	Commerce Road and Industrial Circle	67-32	< 50	Industrial	Y	Industrial	Yahara River	Major	24"	Every year				X	X	X	X	X	X	X	X
6	Behind West Street Apartments - West Street	67-04	> 50	Residential/Commercial	Y	Institutional	Yahara River	Major	36"	Every year				X	X	X	X	X	X	X	X
7	Zalk Joseph - Business Park Circle	67-35	< 50	Industrial/Commercial	Y	> 2 acres of Industrial	Yahara River	Major	36"	Every year				X	X	X	X	X	X	X	X
7	Business Park Circle	67-39, 67-40, 67-41	< 50	Industrial	Y	Industrial	Yahara River	Major	18"	Every year				X	X	X	X	X	X	X	X
9	North Division Street	67-49, 67-52	< 50	Residential, Institutional	Y	Institutional	Yahara River	Major	36"	Every year	2012			X	X	X	X	X	X	X	X
10	North Division Street	67-50	< 50	Residential, Institutional	Y	Institutional	Yahara River	Minor	42"	Every year	2012	No flow	No flow	X	X	X	X	X	X	X	X
11	W Washington Street and Water Street	67-51	< 50	Commercial, Institutional	Y	Commercial, Institutional	Yahara River	Minor	12"	Every year	2011	No flow	No flow	X	X	X	X	X	X	X	X
12	East end of West Washington Street	67-22	> 50	Residential, Institutional	Y	Institutional	Yahara River	Minor	30"	Every year				X	X	X	X	X	X	X	X
13	220 S. Water Street	67-51	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	12"	Every year	2011	No flow	No flow	X	X	X	X	X	X	X	X
14	Under Main Street Bridge (NW)	67-65	< 50	Commercial	Y	Commercial (Gas Station)	Yahara River	Minor	24"	Every year	2011			X	X	X	X	X	X	X	X
15	Under Main Street Bridge (NE)	67-51	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	18"	Every year	2011			X	X	X	X	X	X	X	X
16	Under Main Street Bridge (SE)	67-51	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	12"	Every year	2011			X	X	X	X	X	X	X	X
17	Under Main Street Bridge (SW)	67-65	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	24"	Every year	2011	No flow	No flow	X	X	X	X	X	X	X	X
18	405 Main Page Ct.	67-64	> 50	Residential, Commercial	Y	Institutional	Yahara River	Major	72"x48" box	Every year				X	X	X	X	X	X	X	X
19	South Water Street and West Jefferson Street (North Pipe)	67-54	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	12"	Every year	2011			X	X	X	X	X	X	X	X
20	South Water Street and West Jefferson Street (South Pipe)	67-54	< 50	Commercial	Y	> 80% Impervious	Yahara River	Minor	12"	Every year	2011			X	X	X	X	X	X	X	X
21	Stoughton Street Department	67-55	< 50	Industrial	Y	> 2 acres of Industrial	Yahara River	Minor	12"	Every year	2011			X	X	X	X	X	X	X	X
22	South East of Elven Sted Dry Basin	68-05, 68-06, 68-13.1	> 50	Residential, Industrial, Inst	Y	Institutional, Industrial	Yahara River	Major	48"	Every year				X	X	X	X	X	X	X	X
23	Dunkirk Avenue	68-09, 68-11, 68-14, 68-12	> 50	Residential, Industrial	Y	Industrial	Yahara River	Minor		Every year				X	X	X	X	X	X	X	X
24	Veterans Road at Municipal Boundary (Both sides of road)	68-18	< 50	Industrial	Y	Industrial	Yahara River	Major	CG	Every year				X	X	X	X	X	X	X	X
25	West Milwaukee Street	67-60	< 50	Residential, Institutional	Y	Institutional	Yahara River	Minor	36"	Every year				X	X	X	X	X	X	X	X
26	1069 Taylor Lane	68-27	< 50	Institutional	Y	Institutional	Yahara River	Minor	Swale	Every year				X	X	X	X	X	X	X	X
27	South end of King Street	67-67	< 50	Residential, Institutional	Y	Institutional	Yahara River	Minor	54"	Every year				X	X	X	X	X	X	X	X
28	Paradise Pond (South); Jackson Street	67-PP10, 67-PP11, 67-PP16, 67-PP17	> 50	Commercial, Industrial	Y	Institutional, Commercial	Yahara River	Major	42"	Every year				X	X	X	X	X	X	X	X
29	Across from 2008 Roby Road	67-PP06	< 50	Residential	Y	Institutional	Yahara River	Minor	48"	Every year				X	X	X	X	X	X	X	X
30	East of 318 Greig Trail	67-01	< 50	Residential	N		Yahara River	Major	42"	Every five years				X							X
31	Dam at South Fourth Street	67-58	> 50	Residential, Cemetery	N		Yahara River	Major	48"	Every five years	2011, 2012, 2013			X							X
32	Property line between Stoughton Street Department and Milfab	68-04	< 50	Industrial	N		Yahara River	Minor	8"	Screening not necessary	2011										
33	East side of South Fourth Street at River	67-58	< 50	Park	N		Yahara River	Minor	10"	Screening not necessary	2011										
34	501 Nygaard Street	67-PP07	< 50	Residential, Commercial	N		Yahara River	Minor	42"	Screening not necessary											
35	Behind 1849 Chapin Ct.	67-PP06	< 50	Residential	N		Yahara River	Minor	36"	Screening not necessary											
36	Behind 737 Nottingham Road	67-PP07	< 50	Residential	N		Yahara River	Minor	36"	Screening not necessary											
37	West Milwaukee Street	67-58	< 50	Residential	N		Yahara River	Minor	48"	Screening not necessary											
38	North of Forton Street Bridge	67-50	< 50	Residential	N		Yahara River	Minor	12"	Screening not necessary	2011, 2012, 2013										
39	North of Forton Street Bridge	67-50	< 50	Residential	N		Yahara River	Minor	12"	Screening not necessary	2011, 2012, 2013										
40	South of Forton Street Bridge	67-50	< 50	Residential	N		Yahara River	Minor	12"	Screening not necessary	2011, 2012, 2013										
41	Under Forton Street Bridge	67-24	< 50	Residential	N		Yahara River	Minor	12"	Screening not necessary	2011, 2012, 2013	No flow	No flow								
42	2219 Lincoln Avenue	66-01	< 50	Residential	N		Yahara River	Minor	21"	Screening not necessary											
43	North Page Street and Marie Drive	67-01	< 50	Residential	N		Yahara River	Minor	24"	Screening not necessary											
44	West of 1933 Johnson Street	67-01	< 50	Residential	N		Yahara River	Minor	24"	Screening not necessary											
45	Bjoin Park	67-26	< 50	Residential	N		Yahara River	Minor	24"	Screening not necessary											
46	Nordic Ridge Outlot 3 Pond	67-70	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
47	East end of Brickson Street	67-23	< 50	Residential	N		Yahara River	Minor	12"	Screening not necessary											
48	Buckingham Road	67-PP07	< 50	Residential	N		Yahara River	Minor	24"	Screening not necessary											
49	Behind 901 Virgin Lake Drive	67-PP06	< 50	Residential	N		Yahara River	Minor	18"	Screening not necessary											
50	Stone Crest Road - Stone Crest Dry Pond (NE)	68-20	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
51	Stone Crest Road - Stone Crest Dry Pond (SW)	68-20	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
52	Stone Crest Road - Stone Crest Dry Pond (NW)	68-20	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
53	Across from 1108 South Fourth Street	68-02	< 50	Residential	N		Yahara River	Minor	12"	Screening not necessary											
54	Riverside Drive	67-58	< 50	Cemetery	N		Yahara River	Minor	12"	Screening not necessary											
55	East End of West Milwaukee Street	67-66	< 50	Residential	N		Yahara River	Minor	18"	Screening not necessary											
56	Behind 1117 West Milwaukee Street	67-66	< 50	Residential	N		Yahara River	Minor	18"	Screening not necessary											
57	West side of South Fourth Street at River	68-02	< 50	Park	N		Yahara River	Minor	12"	Screening not necessary	2011										
58	Dunkirk Avenue	68-10	< 50	Residential	N		Yahara River	Minor	12"	Screening not necessary											
59	849 US HWY 51	68-26	< 50	Residential, Agriculture	N		Yahara River	Minor	CG	Screening not necessary											
60	1308 South Fourth Street	68-01	< 50	Residential	N		Yahara River	Minor	Swale	Screening not necessary											
61	Williams Drive	67-81	< 50	Agriculture	N		Yahara River	Minor	Swale	Screening not necessary											
62	Virgin Lake Pond (NE)	67-PP03	< 50	Residential	N		Yahara River	Minor	15"	Screening not necessary											
63	Roby Road and US HWY 51	67-PP06	< 50	Commercial, Residential	N		Yahara River	Minor		Screening not necessary											
64	Behind 909 N Madison Street	67-04	< 50	Commercial	N		Yahara River	Minor	15"	Screening not necessary											
65	South Fourth Street	68-02	< 50	Residential	N		Yahara River	Minor	18"	Screening not necessary											
66	Behind 933 Virgin Lake Drive	67-PP06	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
67	Westview Ridge Park Pond (NW)	67-69	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
68	Westview Ridge Park Pond (SW)	67-69	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
69	North Page Street (NW of Bridge)	67-04	< 50	Industrial	N		Yahara River	Minor		Screening not necessary											
70	North Page Street (SE of Bridge)	67-04	< 50	Industrial	N		Yahara River	Minor		Screening not necessary											
71	North Page Street (SW of Bridge)	67-04	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
72	Virgin Lake Drive	67-PP05	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
73	Eastwood Estates Pond	68-23	< 50	Residential	N		Yahara River	Minor	36"	Screening not necessary											
74	Stone Crest Dry Pond	68-21	< 50	Residential	N		Yahara River	Minor		Screening not necessary											
75	Amundson Parkway	67-57	< 50	Residential	N		Yahara River	Minor	Curb and Gutter	Screening not necessary											
76	Milfab Property	68-04	< 50	Industrial	N		Yahara River	Minor	12"	Screening not necessary	2011, 2012, 2013										
77	Milfab Property	68-04	< 50	Industrial	N		Yahara River	Minor	12"	Screening not necessary	2011, 2012, 2013	Clear liquid flowing									
78	Milfab Property	68-04	< 50	Industrial	N		Yahara River	Minor	8"	Screening not necessary	2011, 2012, 2013										
79	Milfab Property	68-04	< 50	Industrial	N		Yahara River	Minor	8"	Screening not necessary	2011, 2012, 2013	Clear liquid flowing	Clear liquid flowing								
80	Milfab Property	68-04	< 50	Industrial	N		Yahara River	Minor	8"	Screening not necessary	2011, 2012, 2013										
81	Senior Center, 248 W. Main Street	67-88	< 50	Commercial	N		Yahara River	Minor	8"	Screening not necessary	2011, 2012, 2013										

Notes:
1 - Major outfalls are defined as outfalls that are 36 inches in diameter (or equivalent cross-sectional area) or larger and are associated with a drainage area of 50 acres or larger. Outfalls with an inside diameter of 12 inches or more are also classified as major outfalls if they receive stormwater runoff from land zoned for industrial activity with 2 or more acres of industrial activity.
2 - Priority outfalls can be major or minor outfalls that have a higher potential for illicit discharge. Contributing drainage area characteristics or land uses that should be considered when selecting priority outfalls include:
History of known or suspected illicit discharges reported within the last five years.
Sections of storm sewer and/or sanitary sewer infrastructure that have exceeded or are approaching their design/useful life.
Contributing drainage areas with 80 or more percent impervious.
Business or industrial parks with frequent changes in property ownership or operations.
Schools or other institutional facilities.
Commercial or industrial operations that generate wastewater or wash water including food processing, metal plating or machining shops, auto and scrap recyclers, commercial car washes and chemical manufacturers or users.

Winter 2018 Storm Event Log Sheet

Event Number	Storm Detail								Snow Emergency Information		Employee Information			Product Usage		Salt Inventory			Comments
	Snow Started		Snow Ended		Duration	Total Accumulation	Accumulation Type	Temps	Snow Emergency Called	Reasoning For Snow Emergency	Operators Started At	Number of Operators	Total Employee Hours	Tons of Salt Used	Gallons of Liquid Used	Salt Delivered	Salt Used	Salt in Stock	
	Date	Time	Date	Time															
Salt Delivery	1/9/2018														90.21		369.29		
1	1/2/2018		NA	NA	NA	NA	NA	-5	No	NA	6:30 AM	3	9	0	0	0	0	369.29	
2	1/3/2018		8:00 AM	8:00 AM	4 hrs	3/4"	Light snow	-7	No	NA	6:30 AM	3	7.5	5	40	0	5.4	363.89	
3	1/7/2018		4:00 AM	4:00 AM	4 hrs	4-Mar	Light snow	-10	No	NA	6:30 AM	4	12	12.96	110	0	12.96	350.93	
4	1/11/2018		4:30 PM	4:30 PM	3 Hrs	NA	Freezing Rain	30	No	NA	14:30	5	10	16.2	0	0	16.2	334.73	
5	1/12/2018		NA	NA	NA	NA	Ice	20	No	NA	6:30 AM	1	2.5	0.54	5	0	0.54	334.19	
6	1/14/2018	5:00 PM	NA	NA	NA	NA	light and fluffy	-2	NA	NA	12:00 AM	2	11	3.24	30	0	3.24	330.95	Plowed Mains and Hills
	NA	NA	NA	NA	NA	NA	light and fluffy	5	NA	NA	8:00 AM	2	9	6.48	30	0	6.48	324.47	Plowed Mains and Hills
	NA	NA	NA	NA	NA	NA	light and fluffy	15	NA	NA	3:00 PM	2	6	7.76	70	0	7.76	316.71	Plowed Mains and Hills
	NA	NA	1/15/2018	9:00 PM	28 hrs	5-7"	light and fluffy	-2	Yes	More than 3 inches forecasted and ended up with 5-7 " total	1/14/2018 midnight	7 ops 2 Mech 1 Sup	99	30.24	325	0	30.24	286.47	Full plow
7	1/21/2018	7:00 PM	1/21/2018	9:00 PM	2 hrs	0	Rain	32	No	N/A	7:00 PM	1 op	2	1.08	0	0	1	284.67	Rain - Salted Mains
8	1/22/2018	8:00 PM	1/22/2018	12:00 AM	3 hrs	3/4"	Snow Medium	33	No	N/A	9:00 PM	4 ops	13	15.12	0	0	15.12	269.55	Light Snow / Sleet
9	1/23/2018	4:00 AM	1/23/2018	4:00 AM	9 hrs	1/2"	Light	25	No	N/A	4:30 AM	8 ops	69	33.48	230	3	33.48	236.07	Snow mix with Rain
10	1/24/2018	2:00 AAM	1/24/2018	2:00 AM	6 hrs	--	--	22	No	N/A	2:00 AM	1 op	6	1.08	10	0	1.08	234.99	Salted slippery spots / Parking Stalls
11	1/27/2018	11:30 PM	1/27/2018	Rain 2:30 PM	3 hrs	Rain / Ice	Rain	35	No	N/A	11:30 AM	2 ops	6	4.86	0	0	4.86	230.13	Mains - Rain & Ice
12	1/28/2018	6:00 AM	1/28/2018	2:30 PM	8.5 hrs	1/4"	Light Snow / Ice	33	No	N/A	10:30 AM	2 ops	6	6.48	0	0	6.48	223.65	Mains - Light snow on top of freezing rain & Ice
13	1/29/2018	-	1/28/2018	-	-	-	Light Ice	30	No	N/A	6:30 AM	2 ops	10	6.48	0	0	6.48	217.17	Patrol town & salted sippy spots on residential streets & mains
14	1/30/2018	-	-	-	-	-	-	30	-	-	-	-	-	-	-	154.04	-	371.21	
15	2/3/2018	-	-	2/3/2018	-	-	Light	-	No	N/A	5:30 AM	2 ops	8	10.8	110	0	10.8	360.41	80-10-10 CleanUp
16	2/4/2018				8 hrs	4"	Medium		No	N/A	3:00	1 sup 2 mech ops	66	49.68	460	0	49.68	310.73	80-10-10
17	2/5/2018				9 hrs	5"	Light		Yes	over 3" of snow called for 3 days	12:00 AM	2 sup 4 ops	30	24.84	200	0	24.84	285.89	80-10-10
18	2/6/2018				9 hrs	1.5"	Light & drifting		Yes	" "	12:00 AM	7 ops 1 Mech	74	44.82	405)	44.82	241.07	80-10-10
19	2/7/2018				11.25 hrs	3"	Light		Yes	" "	12:00 AM	4 ops	30.75	17.28	30.75	0	17.2	233.79	80-10-10

20	2/9/2018		2/12/2018		12 hrs	6"	Medium		Yes	6" of snow	12:00 AM	6 ops 1 mech	74	27	240	0	27	196.79	80-10-10
21	2/10/2018		2/12/2018		6 hrs	Clean Up	Light		Yes	" "	12:00 AM	2 ops	11.5	3.24	20	0	3.24	193.55	80-10-10
22	2/11/2018		2/12/2018		3.5 hrs		Medium		Yes	" "	5:00 AM	4 ops	14	14.04	140	0	14.04	179.51	80-10-10 Mains & Hills
23	2/12/2018		2/12/2018		2"		Light		No	N/A	3:00 AM	5 ops 1 mech	44.5	17.28	165	0	17.28	166.23	80-10-10 Full plow
24	2/12/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	243.92	0	406.15	
25	2/21/2018	7:00 AM	-			Ice	Ice	-	No	N/A	7:00 AM	2 ops	14	4.32	0	0	7.65	398.5	
26	3/5/2018		3/6/2018		4 hrs	1.5"	Medium	-	Yes	over 3" of snow called for 3 days	6:00 PM	4 ops	12	16.2	91	0	16.2	382.3	Plowed & salted Mains
27	3/6/2018		3/6/2018			4"	Medium	-	Yes	" "	12:00 AM	7 ops 1 sup	72	22.68	175	0	22.68	359.62	Full plow
28	3/7/2018		3/6/2018		-	-	Light	-	Yes	" "	12:00 AM	2 ops	12	4.32	20	0	4.32	355.3	Clean Up / Parking stalls
29	4/4/2018					2" on grass & 1/4-1/2 on street	Light & Ice	-	No	N/A	3:00 AM	6 ops	30	23.22	0	0	23.22	332.08	
30	4/12/2018															64.24		396.32	
31	4/14/2018	8:00 PM				1/2 "	Ice	30	No	N/A	8:00 PM	4 ops	8	12.96	0	0	12.96	383.36	Light Snow / Freezing Rain
32	4/15/2018	2:30 PM				3"	Snow - Ice	28	No	N/A	3:00 PM	9 ops	47 hrs	25.92	0	0	25.92	357.44	Full plow - 3" of Snow, Ice & Slush
33	4/16/2018						Ice	33	No	N/A	6:30 AM	3 ops	10 hrs	8.64	0	0	8.64	348.8	Clean Up slippery spots
34	4/18/2018					1/2 "	Ice	30	No	N/A	3:00 PM	5 ops 1 mech	7.5	12.93	0	0	7.5	335.84	Ice /Sleet
35	4/19/2018				32.5	4"	Snow / Ice	28	No	N/A	12:00 PM	5 ops 1 mech	25	15.66	0	0	15.66	320.18	4" of Snow & Ice
36	5/16/2018							78	No	N/A						111.01	0	431.19	
37	11/28/2018	11:50 PM				1/4"	Snow / Ice	25	No	N/A	11:50 PM	6 ops	15.5	29.24	235	-	29.24	401.95	1/4 " of wet snow
38	12/3/2018	6:30 AM				1/4"	Snow	26	No	N/A	6:30 AM	1	3	1.6	40	-		401.35	
39	12/17/18	6:30 AM				1/4"	Light Snow & Ice	23	No	N/A	6:30	4 ops	2	11.88	100	-	11.88	388.47	1/4" Snow / Light Rain
40	12/28/18	9:30 PM				1/4"	Freezing Rain	28	No	N/A	9:30 PM	4 ops	8	9.72	45	-	9.72	378.75	Freezing Rain
41	12/29/18					1/3 "	Freezing Rain	32	No	N/A	6:15 PM	4 ops	15	14.58	100		14.58	364.17	Freezing Rain & Snow
42	12/31/18					Ice	Rain & Snow	28	No	N/A	4:30 PM	4 ops	16	14.04	100		14.04	380.13	
Total														588	3526.75				

2018 Stormwater Program Changes

Stormwater Program Changes

In 2019 we have a programmed Bio-swale to wet detention conversion project in our Industrial Park South. This project will increase TSS & TP reductions in reach 68 to aid in meeting our TMDL reduction gap.

The City has a strong leaf collection and street sweeping program. Therefore, we also plan to have a consultant evaluate how DNR's guidance on total phosphorus reduction credit for leaf management program may affect the City. This evaluation has the potential to increase the City's existing TP reduction resulting in reduced costs to reach the Yahara Wins baseline.