LINOWES AND BLOCHER LLP

ATTORNEYS AT LAW

1010 Wayne Avenue, Tenth Floor
Silver Spring, MD 20910-5600
301.588.8580
Fax 301.495.9044
Website: www.linowes-law.com

May 29, 2001

Douglas M. Irvin
301.650.7009
dmi@linowes-law.com

VIA OVERNIGHT COURIER

Mr. Richard Gee
Water Resources Analyst
Department of Permitting Services
255 Rockville Pike, Second Floor
Rockville, Maryland 20850-4166

Re: Clarksburg Town Center/Ecological Covenant

Dear Richard:

Enclosed herewith please find the following documents:

1. Ecological Covenant, dated November, 1997 (Revised May, 2001). This document was provided to us by Biohabitats, Inc. and has been revised to reflect the comments included in your letter of May 11, 2001. We have also enclosed a computer generated black-lined copy of this document that has been marked to show the changes made.

2. Section 9.8 of the Declaration for Clarksburg Homeowners Association, Inc. We have added this section to the Declaration based upon our conversations to refer to the Ecological Covenant.

Please contact me at the above number to discuss any further comments or questions you have regarding the enclosed documents. Thank you for your assistance.

Very truly yours,

LINOWES AND BLOCHER LLP

Douglas M. Irvin

Enclosures

cc: Mr. Leo Galanko (w/enclosures)
Mr. Mike Cunningham (w/enclosures)
Mr. Jim Richmond (w/enclosures)
Ms. Tracy Graves (w/enclosures)

IMANAGE: 247221 v.1 04063.0002

DECLARATION OF COVENANTS,

CONDITIONS AND RESTRICTIONS

FOR

CLARKSBURG HOMEOWNERS ASSOCIATION, INC.

MARKED TO
SHOW CHANGES

[Section 9.8. Special Protection Area Provisions.

(a) All Owners are hereby on notice that a portion of the Property is within the drainage basin to Little Seneca Creek, an area that has been designated by Montgomery County as being a part of the Clarksburg Special Protection Area. A Special Protection Area is defined by applicable Montgomery County law and regulations as a geographic area where (a) existing water resources or other environmental features directly relating to those water resources are of high quality or unusually sensitive, and (b) proposed land uses would threaten the quality or preservation of those resources or features in the absence of special water quality protection measures which are closely coordinated with appropriate land use controls. All Owners are hereby advised that special water quality measures and certain restrictions on land uses and impervious surfaces apply within the Clarksburg Special Protection Area.

(b) Pursuant to the water quality plan applicable within the Property, the Montgomery County Department of Environmental Protection ("MCDEP") has reviewed and approved an ecological covenant dated November, 1997 (revised May, 2001) which is intended to provide mechanisms for the application, use, maintenance, and storage of fertilizers, pesticides, and toxic substances within the Property (the "Ecological Covenant"). The Ecological Covenant is intended to guide the Association and the Owners on how to be responsible stewards of Little Seneca Creek and the Clarksburg Town Center environment.

(c) The Association shall maintain a copy of the Ecological Covenant among its permanent records, and shall make copies of the Ecological Covenant available to all Owners. The information included in the Ecological Covenant has been reviewed and approved by MCDEP as of the recordation of this Declaration among the Land Records; provided, however, that the Ecological Covenant is subject to modification and amendment based upon changes in applicable Montgomery County law and regulations regarding Special Protection Areas, and based upon changes to the water quality plan and other requirements imposed or adopted by MCDEP, the Montgomery County Department of Permitting Services ("MCDPS"), and/or the Maryland-National Capital Park and Planning Commission ("MNCPPC"). For further information regarding the Ecological Covenant and the requirements of applicable Montgomery County law and regulations regarding the Clarksburg Special Protection Area, the Association and the Owners should contact MCDEP, 255 Rockville Pike, Suite 120, Rockville, Maryland 20850, phone (240) 777-7700, MCDPS, 255 Rockville Pike, 2nd Floor, Rockville, Maryland 20850, phone (240) 777-6333, or MNCPPC, 8787 Georgia Avenue, Silver Spring, Maryland 20910, phone (301) 495-4600.]

ARTICLE 10
DECLARATION OF EASEMENTS AND RIGHTS

Section 10.1. Declaration of Easements and Rights. The following easements and rights are hereby declared or reserved:

INTRODUCTION

As part of the Final Water Quality Plan, the Ecological Covenant provides homeowners and business owners of Clarksburg Town Center guidelines on how to maintain a sound, environmentally-friendly community. The goals of this document are to ensure continuous and proper environmental management of the Town Center after the developer and his agents have finished construction. This document will be provided to each resident in the community, all businesses within the Clarksburg Town Center development and any other individuals interested in environmental quality on the site.

The covenant contains recommendations to the homeowners regarding planting, land use practices (soil preparation, fertilizing, water usage, mowing, grasscycling, composting, etc.), pest management, toxic substance handling and disposal, waste management, and recycling.

The recommendations made in this covenant will not only protect the streams, wildlife, and natural resources of the Clarksburg Town Center but, if followed correctly, will save money. Furthermore, by following the recommendations made within this document, the residents of the Clarksburg Town Center will not only protect the natural resources within their community but will also help in the restoration of the Chesapeake Bay.

SECTION III: *ENVIRONMENTAL GUIDANCE*

This section will provide the Clarksburg homeowner and business owner with straight forward, cost-effective guidance on planting, land use practices, pest management, how to handle toxic and hazardous substances, recycling and maintenance of bioretention facilities. These recommendations will protect the streams, wildlife and natural resources of the Clarksburg Town Center and, in many cases, save money for the residents of Clarksburg. Ultimately, all of these steps will help improve the quality of life for the entire Clarksburg community.

PLANTING

Landscaping, in an environmentally friendly way, will not only encourage wildlife, but will result in an attractive yard that will lower heating and cooling costs and save water. Planting trees and shrubs will lower the rain runoff from your yard and add shade. Trees, shrubs and grasses will slow down the flow of water and let rainfall filter back into the soil to recharge the ground water. Recharging ground water and slowing down surface runoff helps to lessen flooding impacts to streams and, ultimately, the Chesapeake Bay. Also, storing rainwater and allowing it to filter into the soil should lower the amount of water your lawn requires.

MARKED TO SHOW CHANGES

Proper landscaping can reduce heating and cooling costs by as much as thirty percent (30%) (source: the "Baybook", The Alliance for the Chesapeake Bay, Inc., March 1993.) Trees and schrubs will provide shade in the summer and act as wind-breaks during the winter.

When choosing a species of plants, the homeowner should select native species. Native species are plants that have already adapted to the specific growing conditions of your neighborhood and these plants will be the most likely to survive. To assist you in selecting the right plants, it is recommended that a competent, professional nursery be contacted. When speaking to a nursery professional, describe the characteristics you want in planting material and where you plan to place your plantings. Some of the characteristics to look for in plants: potential wildlife habitat, amount of shade provided or how much water and fertilizer the plant needs. Additional sources of information on nurseries and what types of plants to look for can be found by contacting *The American Horticultural Society's Gardening Information Center at **1-800-777-7931** or The Maryland Native Plant Society, Inc. at P.O. Box 4877, Silver Spring, Maryland 20914.*

The following is a list of some plants native to Maryland:

Common Name	**Scientific Name**	**Features**
SHADE TREES		
Red Oak	Quercus rubra	fast-growing, tolerates variety of conditions, 60-90' in height
Redbud	Cercis canadensis	small tree, 20-40' in height with reddish flowers in showy clusters from March to May
River Birch	Betula nigra	streambank tree, 60-80' in height
American Sweetgum	Liquidambar styraciflua	green leaves with yellow-green flowers, 75-100' in height
Common Persimmon	Diospyros virginiana	dark thick bark with edible fruit, 30-50' in height, fruit provides food for songbirds and wildlife
Black Cherry	Prunus serotina	large tree, 60-80' in height, reddish

		bark, fruit provides food for songbirds and wildlife
Sassafras	Sassafras albidum	fragrant tree, 10-50' in height, fruit and twigs provide food for songbirds and wildlife
Flowering Dogwood	Cornus florida	small to medium-sized tree, 10-40' in height, fruit and twigs provide food for songbirds and wildlife
Green Ash	Fraxinus pennsylvanica	fast-growing, prefers rich well-drained soil, can reach 60' in height
Pin Oak	Quercus palustris	popular shade tree, prefers wet soil, 50-90' in height
Red Maple	Acer rubrum	fast-growing, early red blossom prefers wet but tolerates dry soil, 60-90' in height
Shadblow Serviceberry	Amelanchier canadensis	silvery grey to blue colored leaves with white flowers, 35-50' in height
Sweetbay Magnolia	Magnolia virginiana	green leaves with fragrant white flowers, 12-20' in height
Sycamore	Platanus occidentalis	green leaves, greenish-brown bark that peels in strips to reveal pale inner bark, 60-100' in height
Tulip Poplar	Liriodendron tulipifera	popular hardwood, bright orange and green flowers in the Spring, prefers moist soil, 80-120' in height
Tupelo	Nyssa sylvatica	popular ornamental, berrylike fruit eaten by variety of wildlife, prefers moist soil, 50-100' in height
White Oak	Quercus alba	one of the largest oaks in North

		America, green leaves that turn red or brown in the fall, 80-100' in height
EVERGREEN TREES		
Red Cedar	Juniperus virginiana	popular ornamental, fragrant conifer, berrylike cones are eaten by variety of wildlife, 40-60' in height
American Holly	Ilex opaca	popular ornamental, foliage used in Christmas decoration, prefers moist soil, 40-70' in height
Canada Hemlock	Tsuga canadensis	cone bearing evergreen, 75-100' in height
DECIDUOUS SHRUBS		
Highbush Blueberry	Vaccinium corymbosum	white flowers with red twigs from June to August, 5-15' in height, fruit and twigs provide food for songbirds and wildlife
Red Chokeberry	Aronia arbutifolia	flowers May - June, pale leaves, red berry, 9' in height
Red Osier Dogwood	Cornus stolonifera	blue berries with white flowers and red or green twigs, flowers from May to June and fruit from June-August, 3-10' in height
Shining Sumac	Rhus copallina	flowers early August, deep green leaves, crimson fruit, 30' in height
American Elder	Sambucus canadensis	green colored leaves with star shaped white flowers, deep purple to black berries, 6-12' in height
Arrowwood Viburnum	Viburnum dentatum	green colored leaves with white flowers, blue to black berries, 6-12' in height

Blackhaw Viburnum	Viburnum prunifolium	green colored leaves with white flowers, dark blue to black berries, 6-10' in height
Common Witchhazel	Hamamelis virginiana	green colored leaves with bright yellow flowers, 20-35' in height
Pink Pinxterbloom Azalea	Rhododendron nudiflorum	flowers April - May, pink flowers, needs moist soil, 9' in height
Silky Dogwood	Cornus amomum	red-green to medium green colored leaves with yellowish white flowers, blue berries, 6-12' in height
HERBACEOUS PLANTS		
Black Eyed Susan	Rudbeckia hirta	yellow, daisy like flower, 1-3' in height
Coreopsis	Coreopsis lanceolata	yellow flower, 1-2' in height
Coreopsis	Coreopsis verticillata	yellow flower, 1-2' in height
Dense Blazing Star	Liatris spicata	dense purple flowers, 1-5' in height
Goldenrod	Solidago spp.	yellow flower, 1-7' in height
Pearly Everlasting	Anaphalis margaritacea	white flower, 1-3' in height
Yarrow	Achillea millefolium	white flower, 1-3' in height
GROUND COVERS		
Barren Strawberry	Waldsteinia fragarioides	edging or border planting, tolerates some shade
Bird-Foot Violet	Viola pedata	purple flowers, tolerates some shade
Violet Wood Sorrel	Oxalis violacea	excellent for rock garden, tolerates

		some shade
Grass-leaved Blazing Star	Liatrus graminifolia	rose-purple flower, late summer bloom
FLOWERING PERENNIALS		
Blazing Star	Liatris scariosa	erect, bold color, 1-5' in height
Butterfly Weed	Asclepias tuberosa	attracts butterflies, brilliant orange flower, 2-3' in height
Culver's Root	Veronica virginica	3-6' in height
Geum	Geum virginianum	colorful, 2-3' in height
Moss Pink	Phlox subulata	for banks and rock gardens, small pink flowers, 3-6" in height
Virginia Spiderwort	Tradescantia virginiana	colorful, tolerates wet and dry conditions, 1-2' height
Wild Sweet William	Phlox divaricata	color all summer, 1-2' in height
Cardinal Flower	Lobelia cardinalis	bright scarlet flower, prefers moist soil, partial shade, 2.5 - 5' in height
Dwarf Crested Iris	Iris cristata	purple and yellow flower, 3- 8" in height
Fire Pink	Silene virginica	deep crimson petals, prefers well-drained sandy soil, 6-10" in height
Wild Columbine	Aquilegia canadensis	yellow sepals and red spur, prefers loamy soil and partial shade, 1.5 - 2' in height

LAND USE PRACTICES

SOIL PREPARATION

Before landscaping land next to a new home or office, the soil must be prepared for planting.

- [•] Remove all debris.
- Till the property to eliminate areas of compressed soil that may have been caused by construction equipment.
- Administer a soil test to determine the proper amounts of lime and fertilizer specifically for your land.

FERTILIZERS

Fertilizers are used on lawns to promote plant growth, provide pest resistance, and build stronger root systems. If applied improperly, fertilizer will contaminate surface and groundwater sources, including the Chesapeake Bay. The nitrogen and phosphorous in fertilizers contribute to the algae blooms in streams, the Potomac River and the Bay. Algae growth depletes the oxygen supply in water, killing fish, oysters and other aquatic species. When fertilizing your lawn, it is very important to apply the following:

- naturally fertilize land by using manure or composted material;
- do not operate the spreader over paved areas including sidewalks, driveways, and roads; if fertilizer gets onto these surfaces, sweep it back onto the lawn;
- fill, wash, and empty fertilizer spreaders over a planted area so any spillage is absorbed into the ground;
- do not over-fertilize or over-water your lawn because this causes runoff into drainage sewers and ultimately water pollution;
- never fertilize frozen ground, because it cannot absorb the fertilizer; and,
- if the lawn appears healthy, do not fertilize.

Types

Commonly available fertilizers are prepackaged and labeled with percentage by weight of the

amounts of three (3) components: nitrogen (N), phosphate (P_2O_5), and potash (K_2O). Nitrogen promotes general growth and is usually needed every year. Phosphate supplies phosphorus for root growth, and potash supplies potassium for drought and disease resistance. Phosphate and potash may not be needed annually and should not be applied if they are not required. To determine the right type of fertilizer for your lawn, purchase a soil test and follow the provided directions or call the *Cooperative Extension Service* at **(301) 405-2907** for additional information.

Amount

The amount of fertilizer needed varies among grass types, time of year, and soil contents. Phosphate and potash should be added only when soil tests determine that they are absolutely needed. Nitrogen can be added to your lawn several times a year according to the table below.

Nitrogen Application Table (Pounds Per 1,000 Square Feet)

	Sept.	Oct.	Nov./ Dec.	Mid May/ Early June	July	Aug.	Max. Yearly
Tall fescue	1	1	0	0 - 1*	0	0	3
Fine fescue	0	1	0	0 - 1*	0	0	2
Kentucky bluegrass	1	1	0 - 1*	0 - 1*	0	0	4
Perennial ryegrass 1	1	0 - 1*	0	0	0	0	4
Bermudagrass	0	0	0	1	1	0 - 1*	2
Zoysiagrass	0	0	0	1	0 - 1*	0	2

* Only apply fertilizer if the grass looks weak or has poor color.

WATER USAGE

Proper watering of your lawn and landscape will promote healthier grass and plants. Instead of watering your lawn frequently, water it thoroughly and only when plants show signs of drought. By allowing the water to completely soak into the soil, deep roots will grow, making them more drought tolerant.

Frequency

A common mistake made by homeowners is basing the watering frequency on outside temperatures. When to water should be determined by the appearance and health of the lawn. It is best to water the lawn at the coolest time of the day to minimize evaporation. Water the lawn

when the sun is out because watering in the dark promotes fungal diseases. Morning is the best time because the sun is out and the temperature is cooler.

Some signs that your lawn and plants may need watering are:

- the grass, when stepped on, lays flat does not pop up after a few minutes;
- shrubs, bushes, and plants begin to wilt; or,
- if in doubt, dig a small hole, four inches to six inches (4" - 6") deep to feel if the soil is dry.

Amount

A strong root system must be completely soaked when it is watered so all roots absorb the water. The soil should be moist four inches to six inches (4" - 6") deep. A simple test for soil moisture is to insert a metal stick (butter knifes and screw drivers work well) into the ground. If the stick easily penetrates four inches to six inches (4" - 6") of the soil, than the ground is likely sufficiently soaked.

Once you reach the proper soil moisture, record the amount of time spent watering. This will allow the homeowner to establish a time frame for watering the lawn for in the future.

Avoid Runoff

If a lawn is over-watered, water may run off the land into drainage systems flushing it into rivers, streams, and lakes. The runoff may contain fertilizers and pesticides which will ultimately contaminate water sources such as the Potomac River and the Chesapeake Bay. To avoid runoff, do not use sprinklers over sidewalks, driveways, or other hard surfaces. Do not over-saturate the soil by watering it too quickly or too long. If the soil is not completely soaked (4"- 6") yet water is running off the lawn, then the water pressure is too high. Turn the water tap down to allow the soil to completely absorb all the water.

Some types of watering equipment help avoid water runoff while promoting the soil absorption. Drip irrigation systems are particularly effective in watering vegetable and flower gardens by consistently delivering water directly where it is needed. For lawns, soaking hoses can be used to place water right at the soil line.

Always repair leaking hoses and connections. Malfunctioning equipment increases the amount of time it takes to water your lawn and is a leading cause of wasted water.

MOWING

It is very important to mow your lawn to the proper height. Mowing too low will increase susceptibility to drought, induce weed germination, weaken the root systems, and increase insect damage. Grass that is too high may suffer from disease problems due to the increased amount of moisture retained. Maintaining the proper height of grass can reduce weed problems by more than fifty percent (50%). The following is a recommended mowing height chart for various types of grasses:

Proper Mowing Heights (inches)

	Spring & Summer	Fall
Fescue	2.5 - 3.5	2.5
Perennial ryegrass	2.5 - 3.0	2.0 - 2.5
Kentucky bluegrass	2.5 - 3.0	2.0 - 2.5
Bermudagrass	0.5 - 1.0	0.5 - 1.5
Zoysiagrass	0.5 - 1.0	0.5 - 1.5

~~*[GRASSCYCLING*~~

~~Grasscycling is the practice of leaving grass clippings on your lawn instead of bagging them for curbside pickup. Aside from saving time and landfill space, grasscycling provides many additional benefits. Grass clippings left on the lawn provide organic nutrients for the soil and make a stronger, healthier lawn and reduce the amount of fertilizer necessary for the lawn. To grasscycle with your current mower, simply remove the collection bag and let the clippings spray onto your lawn as you mow. Nearly twenty percent (20%) of all solid waste placed in landfills is yard waste. The yard waste occupying so much room in our landfills has the potential to produce benefits right in the yards that it came from. Grasscycling helps reduce solid waste collection and landfill space. For more information on grasscycling call Montgomery County at (301) 590-0046 to ask for a free grasscycling kit. Also, the Professional Lawn Care Association of America can provide additional guidance at (770) 977-5222.]~~

MULCH

Mulches made of wood chips, shredded bark, grass clippings, and/or composted leaves, aid in water absorption and weed prevention while adding an aesthetic touch to your lawn. The mulch

should be placed two to four inches (2" - 4") deep in shrub beds and flower and vegetable gardens. The mulch itself retains water, keeping the soil moist longer. Free mulch is available from the Montgomery County's Neighborhood Mulch Preserve. Call **(301) 590-0046** for details.

~~*[COMPOSTING*~~

~~Composting is a safe, easy, natural method of converting leaves, grass clippings, tree branches, plant material, and even kitchen vegetable scraps into valuable nutrients for your soil. The organic matter formed from composting yard waste is known as humus.~~
~~Decomposition of organic matter occurs in nature everyday. Composting is an easy way to speed up this process in your yard and use yard waste to increase the quality of your soil and fertilize your garden. Composting occurs as microorganisms and bacteria digest organic matter, producing nutrients for soil and plant growth.~~

~~Building a Pile~~

~~A compost pile can be built any time of the year. Fall is a good time to begin due to the abundance of fallen leaves. Leaves, grass clippings, branches, vegetable scraps, and any other plant material can be used in a compost pile. Do not use meat or fatty food scraps because those items will take a long time to decompose and will attract pests. The smaller the material, the faster it will decompose, so nothing in the pile should be larger than one inch (1"). Generally, brown colored yard waste, such as branches and leaves, have high carbon content, and green colored yard wastes, such as grass or plant clippings, are high in nitrogen content. For rapid decomposition, a mixture of half nitrogen and half carbon is best.~~

~~A composting bin is not needed but if you choose to create one, a cylindrical bin can be made easily with woven wire fencing. A composting bin can also be purchased at most gardening stores and nurseries. Once you have selected a place to put you pile, lay a three inch to four inch (3" - 4") bottom layer of coarse yard waste such as small branches and chopped brush. Then begin layering leaves followed by grass clippings or other plant material until the pile is about six inches to eight inches (6" - 8") above the bottom layer. Now add one inch (1") of soil so microorganisms are present. Repeat this process until the pile is three feet to five feet (3' - 5') tall and wide.~~

~~If the pile is made properly, it will reach temperatures of 90°F to 140° F in about four (4) days. The center of the pile will be hotter than the surface area. It is important that the pile remains at a high temperature throughout the process because heat helps the material decompose quickly. The pile should be no smaller than three feet (3') wide and tall because the smaller the core, the lower the temperature. On the other hand, a pile larger than five feet (5') wide and tall will not~~

~~receive enough oxygen in the center to quickly decompose.~~

~~The pile should always stay sponge damp. Add water as necessary and turn the pile frequently to increase aeration. If the pile is turned once a week, the composting should be complete after about two (2) months. If the pile is not stirred often, it can take six (6) to twelve (12) months.~~

~~The following chart lists some typical composting problems and solutions:~~

~~Problem~~	~~Causes]~~	~~[Solutions]~~
~~[Bad odor~~	~~Pile is too wet~~ ~~Pile is too small~~ ~~Pile is not getting enough air~~	~~Add course material to make the pile larger]~~ ~~[Turn the pile]~~
~~[Ammonia odor~~	~~Too much nitrogen~~	~~Add brown carbon material (leaves, sawdust,]~~ ~~[woodchips, etc.)]~~
~~[Low temperature~~	~~Pile is not wet enough~~ ~~Pile is too small~~ ~~Cold weather~~ ~~Pile is not getting enough air~~ ~~Lack of nitrogen~~	~~Increase the pile size~~ ~~Turn the pile]~~ ~~[Add nitrogen (grass)]~~
~~[High temperature~~	~~Pile too large~~ ~~Pile is not getting enough air~~	~~Reduce the size]~~ ~~[Turn the pile]~~

~~[For more information on backyard composting call the Cooperative Extension Service at (301)~~

~~405-2907.]~~

PEST MANAGEMENT

Integrated Pest Management

Integrated Pest Management, or IPM, is a modern approach to pest control that reduces or eliminates the need for synthetic chemical substances. Measures such as removing the pests by hand, using natural biodegradable products, using natural predators, mixing different plants, or changing growing conditions can all help reduce pest damage.

The problem and solutions vary between type of pests and type of plantings. Each problem should be analyzed and solved in the safest, most environmentally friendly way possible.

Pests	**Controls**
Grubs	- Moles, Birds and milky spore disease
Other Insects	- Birds, toads and beneficial insects such as spiders, praying mantises and other natural predators
	- Plant grass species other than Bluegrass
Other Diseases	- Plant the recommended plant species for the site, don't over-fertilize or over-water

Shrubs and Trees

The following methods can be used to rid shrubs and trees of unwanted insects:

- encourage ladybugs, big-eyed bugs, spiders, praying mantises, birds, lizards, toads, frogs, and even bats;
- remove pests by hand;
- remove dead or dying branches of shrubs and trees;
- wash leaves using a teaspoon of detergent soap and 1 gallon of water; and,

- wash leaves with a small amount of alcohol.

Vegetable Gardens

The following methods can be employed as preventative practices for pest control in vegetable gardens:

- crop rotation and planting in narrow rows;
- plant early in the season to avoid late harvest pests; and,
- natural controls such as predators, parasites, pathogens, biological products, botanical insecticides, and insecticidal soaps.

Miscellaneous Pests

The following chart lists specific methods to eliminate some pests:

Pest	Control
Mosquitoes	- Remove sources of standing water such as in old tires, buckets, etc. - Mow grass regularly
Chiggers	- Mow grass regularly
Ticks and Fleas	- Treat pets and their sleeping quarters
Wasps and Hornets	- Carefully remove the nests at night

General	- Encourage birds such as purple martins for insect control during the day and encourage bats for control of insects at night

Many pests can be eliminated by simply encouraging the existence of their predators in the garden. It is important to know the difference between predators and pests. Use the following chart as a guide:

Predators	**Prey**
Lacewings (Chrysopidae family)	Aphids, scale, whiteflies, mites, mealybugs, other lacewings, and eggs of mites, thrips and other insects
Spider (Arachnida order)	Eat anything that gets stuck in their web
Bee flies (Bombylldae family)	Locust eggs, parasites of larvae of flies, wasps, bees, beetles and ants
Praying mantises (Manteoden family)	Anything they catch
Dragon flies (Odnata order)	Small flying insects, midges, and mosquitoes
Soldier Beetles (Cantharidae family)	Cutworms, gypsymoth, larvae, cankerworms, slugs and snails

The previous pest management information was provided by the "Bayscapes" pamphlets from the Alliance for the Chesapeake Bay and the U.S. Fish & Wildlife Service, Chesapeake Bay Fields Office.

For more information on IPM contact the Chesapeake Regional Information Service at **1-800-662-CRIS.**

Pesticides

If Integrated Pest Management techniques cannot fix your pest problem, then use chemical pesticides as a last resort. Always follow the instructions on the container for the use, storage, and disposal of pesticides. Some additional guidelines for handling toxic substances are listed below.

Before Use:

- Determine specifically which plants need the chemicals and then buy a pesticide labeled for that plant type and avoid applying pesticides to plants that do not need it.
- Determine what type of pest has infested your plants and buy a specific pesticide for that type of pest.
- Buy only the amount you need. Pesticides are dangerous to store and lose their effectiveness over time. Buy no more than a two (2) year supply.
- Cover any pet food or water dishes in the area.

During Use:

- Wear protective clothing and avoid skin exposure.
- Avoid wearing leather because it absorbs and holds pesticides.
- Keep children and pets out of area during application
- If pesticide is applied to fruits or vegetables, follow the directions on the label for the amount of time necessary to elapse before safe harvest.
- Clean any spills with sawdust, kitty litter, or other absorbent materials and dispose of in a plastic bag and place in the trash.

TOXIC SUBSTANCES

Automobile

Many automobile products are toxic chemicals and, if handled improperly, have the potential to

harm people, pets and our water supplies. Before dumping oil down that storm drain, consider this: one (1) quart of oil can contaminate up to two million gallons of drinking water and the oil from your car's engine (about 4 to 6 quarts) can produce an eight (8) acre oil slick; antifreeze has ethylene glycol, which is poisonous to people, pets and fish. Many cats and dogs have been poisoned and died after drinking puddles of sweet tasting antifreeze.[1]

Proper handling of these products will help minimize any potential contamination. Because many people change their own oil or flush their radiators, the following recommendations are provided:

- don't pour the old oil or antifreeze down the drain;
- place the used antifreeze and oil in a sturdy plastic container; recycle used oil and antifreeze at your local service station. (additional recycling locations can be found by calling **1-800-473-2925**); and,
- securely store all automotive products out of reach of children and pets.

Paint

Latex paint can be disposed of at regular curbside refuse pick-up if it is dried and solidified. Paint, in its liquid form, can be dropped off at a Montgomery County hazardous waste collection site. Consider donating any unused latex paint to charity groups.

The following **[number provides]** ~~[numbers provide]~~ additional information on waste collection sites:

~~[Montgomery County Recycling Hotline: (301) 590-0046]~~
Montgomery County Recorded Recycling Information: **[(240) 777-6400]**~~[(301) 217-2870]~~

Other Hazardous Wastes

Household hazardous wastes can be found in most homes. These are products that contain dangerous chemicals that can pollute groundwater and endanger people and animals when used, stored or disposed of improperly. A hazardous product is one that is flammable, corrosive, toxic,

[1] *Baybook*, Alliance for the Chesapeake Bay, Inc., March 1993, page 23.

or poisonous. The following list identifies some hazardous products that you may use in your home.

-Household cleaners
-Bathroom cleaners
-Ammonia
-Degreasers
-Furniture finish and stripper
-Fungicides
-Lighter fluid
-Insecticides
-Nail polish
-Oven cleaner
-Paint thinner
-Photography chemicals
-Rust removers
-Spot removers
-Transmission fluid
-Anti-freeze
-Batteries
-Bleach
-Brake fluid
-Drain cleaners
-Furniture polish and wax
-Gasoline
-Herbicide
-Metal polish
-Nail polish remover
-Oil based paints
-Pesticides
-Carpet cleaner
-Scouring powders
-Swimming pool chemicals
-Upholstery cleaner

Remember the following rules when using hazardous materials.

- Read the directions and recommendations on the product label and **follow them carefully**.
- Never mix two (2) products together. Chemical reactions may occur producing toxic or lethal fumes or even explosions!
- Use protective garments to avoid direct contact with hazardous products. Eye protection and rubber or latex gloves are especially important.

Storage

- Store all hazardous products out of the reach of children and animals.
- ~~[-]~~ Different types of chemical products should be stored separately.
- Never store hazardous materials near food products.

- Never store flammable material near sources of heat.

Disposal

When disposing of hazardous materials, never pour them down sink drains, in the toilet, in storm drains or on the ground. Montgomery County provides a safe alternative for disposing of hazardous materials. The County sets up collection sites twice a month in various locations throughout the County where trained volunteers sort and collect hazardous wastes for safe disposal. For more information on times and locations of future collection sites call the *Montgomery County Division of Solid Waste Services* at [(240) 777-6400.][~~(301) 217-2770 or the Recycling Hotline at (301) 590-0046.~~]

Appliances

Refrigerators, air conditioners, microwaves, even televisions, all involve the use of toxic substances in daily operation. Proper maintenance and disposal of all household appliances are essential to assuring that harmful substances will not leak into the environment.

Maintenance

Refrigerators and air-conditioners, particularly, involve the use of CFCs (Chlorofloracarbons), most commonly in the form of Freon. These are synthetic chemicals that the environment cannot absorb. Consequently, when released into the atmosphere, CFCs deteriorate the natural stratospheric layer, ozone, that protects the earth from harmful, cancer causing, ultraviolet rays. Therefore, it is very important, when having your refrigerator or air conditioner serviced, to ask the repairperson to check the appliance for leaks and to reseal them, and not simply top them off with more Freon. If your car has an air conditioner, let it run for approximately ten (10) minutes, a least once a month, all year long.

Disposal

The proper disposal of appliances is the most important step in responsible ownership since this is when you are finally releasing the harmful substances to be absorbed by the environment. Consult a professional when disposing of old appliances. Consider the following options:

- curbside pickup is available to residents with County provided refuse and recycling collection services (for more information on arranging a pickup call [(240) 777-6410)] [~~301-217-2410~~)]; and,

- Montgomery County residents can bring old appliances to the Transfer Station (information is available by calling [(240) 777-6410] [~~the: Montgomery Co. Recycling Hotline 301-590-0046 or 301-217-2870~~] for recorded recycling information).

Pet Wastes

Pet wastes disposal is essential to avoiding health risks to humans, other animals and plants. Many diseases are transmitted to humans through pet waste including roundworms and parasites. Children are the most common victims of diseases transmitted by pet wastes. Do not let children play in areas where they are at risk. Pet wastes are toxic, contribute to weed growth in lawns and contaminate water sources. Aside from the harm caused by direct contact, diseases can spread if drinking water is contaminated.

As a courtesy to other members of your community and safety for your family, collect your pet's waste and dispose of it in one of the following ways:

- flush it down the toilet;
- bury it in the ground, 5 inches deep, away from vegetable gardens and water sources; or,
- wrap it in plastic and place in the trash.

~~[RECYCLE METALS, PLASTIC, PAPER AND GLASS~~

~~Montgomery County provides recycling services for paper, glass, plastic, aluminum, and steel. Recycled materials can either be picked up at the curb if service is available in your neighborhood, or dropped off at the Montgomery County Transfer Station. To inquire about the recycling service for your neighborhood or for directions to the transfer station call (301) 217-2410.~~

~~Metal~~

~~All metal cans should be well rinsed. Labels and lids may remain attached to the can. Do not recycle pots and pans or cans other than food containers.~~

~~The following metal items can be recycled:~~

- ~~aluminum cans (soft drinks, beer, etc.)~~
- ~~balled up aluminum foil~~
- ~~all steel cans (soup, juice, etc.)~~

~~-pet food cans~~

~~***Plastics***~~

~~Plastic bottles should be empty and well rinsed. All caps should be discarded. Montgomery County will not accept plastic containers without necks (screw on caps). Containers with recycling code numbers other than 1 or 2 will not be accepted.~~

~~***Glass***~~

~~All glass items should be rinsed well with all lids removed. Green, brown and clear glass items may be recycled, including: beer, wine, soft drink, sauce drink, sauce jars, etc. Montgomery County **will not** recycle glass other than food or drink containers. Unacceptable glasses include drinking glasses, vases, plates, or light bulbs.~~

~~***Paper***~~

~~Newspaper should be placed in paper grocery bags or tied with twine in bundles no higher than one foot (1'). Telephone books can be recycled with newspapers. All paper that is not glossy or used with food can be recycled. Tissues, paper towels, and glossy magazines cannot be recycled in Montgomery County.]~~

BIORETENTION

Many of the unique features of the Clarksburg Town Center Community are not as obvious as the picturesque streets and the architecture of the homes and businesses. Some of the special design characteristics of the community are incorporated in how runoff from rain storms is treated. Stormwater runoff is treated in sandfilters, ponds and bioretention areas. ~~[The majority of these stormwater management facilities require minimal maintenance or are maintained by the County.]~~ Bioretention facilities are scattered throughout the development in common and private space, these areas require a certain degree of attention to keep them operating at peak efficiency. If properly maintained, the bioretention facilities will treat stormwater runoff by removing pollutants, which is important for health of the Bay and our other waterways. Also, the bioretention areas can be an asset to the home or business owner as the plantings are very attractive and unique. The effort to maintain these facilities is minimal and is detailed on the following pages. Additional information can be obtained by referring to the Prince George's County, "Design Manual for Use of Bioretention in Stormwater Management", copies are available by calling Biohabitats, Incorporated at **(410) 337-3659**.

Planting Soil

Urban plant communities tend to become very acidic due to precipitation as well as the influence of storm water runoff. For this reason, it is recommended that the application of alkaline, such as limestone, be considered once or twice a year. A pH test of the organic layer and soil should precede the limestone application to determine the amount of limestone required.

Soil testing should be conducted annually to detect and prevent the accumulation of toxins and heavy metals. Over time, heavy metals and other toxic substances will tend to accumulate in the soil and the plants.

As the toxic substances accumulate, the plant's biologic functions may be impaired and the plant may experience dwarfed growth followed by mortality. The preservation measures would include the removal of the contaminated soil.

Mulch

Ground cover established by seeding or consisting of grass should not be covered with mulch.

Planting Materials

Ongoing monitoring and maintenance is vital to the overall success of bioretention areas. Annual maintenance will be required for plant material, mulch layer, and soil layer. An example maintenance schedule is shown in the following table.

Expert Maintenance Schedule for Bioretention Areas			
Description	Method	Frequency	Time of the Year
SOIL			
Inspect and Repair Erosion	Visual	Monthly	Monthly
ORGANIC LAYER			

Expert Maintenance Schedule for Bioretention Areas			
Remulch any void areas	By Hand	Whenever needed	Whenever needed
Remove previous mulch layer before applying new layer	By Hand	Once every two to three years	Spring
Any Additional mulch added	By Hand	Once every two to three years	Spring

Expert Maintenance Schedule for Bioretention Areas (Cont'd.)			
PLANTS			
Removal and replacement of all dead and diseased vegetation considered beyond treatment	See planting specifications	Twice a year	3/15 to 4/30 and 10/1 to 11/30
Treat all diseased trees and shrubs	Mechanical or by hand	N/A	Varies, depends on insect or disease infestation
Watering of plant material shall take place at the end of each day for fourteen consecutive days after planting has	By hand	Immediately after completion of project	N/A

Expert Maintenance Schedule for Bioretention Areas (Cont'd.)			
been completed			
Replace stakes after one year	By hand	Once a year	Only remove stakes in the spring
Replace any deficient stakes or wires	By hand	N/A	Whenever needed

COMMERCIAL BEST MANAGEMENT PRACTICES

Many of the recommendations presented in the previous sections for homeowners are also applicable to the business owner. If you are thinking of planting a tree in front of your store, consider using native plants. If your company uses hazardous or toxic materials, the recommendations for handling and disposal of these products for households are applicable and could reduce your disposal costs. Recycling should not be confined to the home. You can make your business more "environmentally friendly" by setting up glass and metal collection bins in your store. This will lower the amount of garbage you need to haul to the dumpster and show your customers that you care about the environment.

Additional guidance and assistance for the business owner can be obtained by calling the Montgomery County Division of Solid Waste Services at [(240) 777-6400.][~~(301) 217-2770 or the Recycling Hotline at (301) 590-0046.~~]

SECTION IV: CONCLUSIONS

The recommendations contained in this document presented ways to maintain the environmental quality of life at the Clarksburg Town Center Community. Many of these suggestions will not only benefit the environment, but will save the resident and business owner money. Trees and shrubs provide shade and can lower heating and cooling costs, using native plants will ensure that the plant chosen will most likely survive. Proper watering can reduce runoff from lawns and gardens as well as lowering water usage. Mowing lawns at the correct height will result in heathier and more attractive yards. Careful use of fertilizers and pesticides as well as safe disposal of wastes will protect our waterways and "Save the Bay". When each individual provides a small effort in cleaning up the environment, all of us will have a cleaner community

and a healthier State.

References:

The Alliance for the Chesapeake Bay, Inc. (804)-775-0951

Baybook, Alliance for the Chesapeake Bay, Baltimore, Maryland, 1993.

Familiar Trees of North America - East, National Audubon Society Pocket Guide, Alfred A. Knopf, New York, April 1994.

Hightshoe, Gary L., Native Trees, Shrubs and Vines for Urban and Rural America, Van Nostrand Reinhold, New York, 1988.

"Integrated Pest Management - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Using Beneficial Plants - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Bayscapes for Wildlife Habitat - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Fact Finder - Turf Tips: Grasscycling", Howard County, Maryland.

"Waste Prevention, Recycling and Refuse Collection in Montgomery County", Division of Solid Waste Services, Department of Public Works, Rockville, MD 1996.

"Proper Disposal of Household Hazardous Materials", Division of Solid Waste Services, Department of Public Works, Rockville, MD 1997

"Fact Finder - Learn to Handle Your Household's 'Hazardous Wastes' Properly", Howard County, Maryland.

"Fact Finder - Collection is the safe alternative to disposing of Household Hazardous Wastes", Howard County, Maryland.

"The CFC Challenge", Montgomery County Department of Environmental Protection, Rockville, Maryland, 1993.

References: (continued)

"Tips on Keeping Your Lawn Green...And the Chesapeake Bay Clean", Department of Crop and Soil Environmental Sciences and Virginia Cooperative Extension at Virginia Polytechnic Institute and State University.

"Pesticide Information Leaflet", Fact Sheet Number 11, Cooperative Extension Service, College Park, Maryland, 1990.

"Garbage! How to Get Rid of It, How to Recycle It, How to Make Less of It" Anne Arundel County Department of Public Works Waste Management Services, Annapolis Maryland, 1996.

"Fact Finder - Home composting recycling nature's way", Howard County, Maryland.

"Conservation Landscaping - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Effective Lawn Care With Reduced Pesticide and Fertilizer Use", Fact Sheet Number 637, Cooperative Extension Service, College Park, Maryland, 1993-1994.

"Home and Garden - Fertilize Your Lawn, Not the Bay", Home and Garden Mimeo Number 305, Cooperative Extension Service, Ellicott City, Maryland, 1997.

"Home and Garden - Lawns and The Chesapeake Bay", Home and Garden Mimeo Number 301, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Home and Garden - Landscapes That Help The Chesapeake Bay", Home and Garden Mimeo Number 302, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Home and Garden - Saving Your Soil And The Chesapeake Bay", Home and Garden Mimeo Number 303, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Home and Garden - Xeriscaping and Conserving Water in the Landscape", Home and Garden Mimeo Number 25, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Yard Waste Collection Manual", Anne Arundel County Department of Public Works Waste Management Services, Annapolis Maryland.

References: (continued)

"Backyard Composting", Anne Arundel County Department of Public Works Waste Management Services, Annapolis Maryland.

"Take It From Maryland's Farmers...5 Ways to Help the Bay", Maryland Department of Agriculture.

"Home Composting", Leaflet Number 245, Cooperative Extension Service, Ellicott City, Maryland, 1994

"Bayscaping for the Long Term - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Bayscaping to Conserve Water - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Creating Landscape Diversity - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"A Directory for Water Resources Planning and Management in Maryland", Water Resource Paper Number 31, Cooperative Extension Service, College Park, Maryland, 1990-91.

---------- COMPARISON OF FOOTNOTES ----------

-FOOTNOTE 1-
Baybook, Alliance for the Chesapeake Bay, Inc., March 1993, page 23.

---------- COMPARISON OF HEADERS ----------

-HEADER 1-
CLARKSBURG TOWN CENTER ECOLOGICAL COVENANT

Biohabitats, Inc. November, 1997[**(Revised May, 2001)**]

---------- COMPARISON OF FOOTERS ----------

-FOOTER 1-

Page

INTRODUCTION

As part of the Final Water Quality Plan, the Ecological Covenant provides homeowners and business owners of Clarksburg Town Center guidelines on how to maintain a sound, environmentally-friendly community. The goals of this document are to ensure continuous and proper environmental management of the Town Center after the developer and his agents have finished construction. This document will be provided to each resident in the community, all businesses within the Clarksburg Town Center development and any other individuals interested in environmental quality on the site.

The covenant contains recommendations to the homeowners regarding planting, land use practices (soil preparation, fertilizing, water usage, mowing, grasscycling, composting, etc.), pest management, toxic substance handling and disposal, waste management, and recycling.

The recommendations made in this covenant will not only protect the streams, wildlife, and natural resources of the Clarksburg Town Center but, if followed correctly, will save money. Furthermore, by following the recommendations made within this document, the residents of the Clarksburg Town Center will not only protect the natural resources within their community but will also help in the restoration of the Chesapeake Bay.

SECTION III: *ENVIRONMENTAL GUIDANCE*

This section will provide the Clarksburg homeowner and business owner with straight forward, cost-effective guidance on planting, land use practices, pest management, how to handle toxic and hazardous substances, recycling and maintenance of bioretention facilities. These recommendations will protect the streams, wildlife and natural resources of the Clarksburg Town Center and, in many cases, save money for the residents of Clarksburg. Ultimately, all of these steps will help improve the quality of life for the entire Clarksburg community.

PLANTING

Landscaping, in an environmentally friendly way, will not only encourage wildlife, but will result in an attractive yard that will lower heating and cooling costs and save water. Planting trees and shrubs will lower the rain runoff from your yard and add shade. Trees, shrubs and grasses will slow down the flow of water and let rainfall filter back into the soil to recharge the ground water. Recharging ground water and slowing down surface runoff helps to lessen flooding impacts to streams and, ultimately, the Chesapeake Bay. Also, storing rainwater and allowing it to filter into the soil should lower the amount of water your lawn requires.

Proper landscaping can reduce heating and cooling costs by as much as thirty percent (30%) (source: the "Baybook", The Alliance for the Chesapeake Bay, Inc., March 1993.) Trees and schrubs will provide shade in the summer and act as wind-breaks during the winter.

When choosing a species of plants, the homeowner should select native species. Native species are plants that have already adapted to the specific growing conditions of your neighborhood and these plants will be the most likely to survive. To assist you in selecting the right plants, it is recommended that a competent, professional nursery be contacted. When speaking to a nursery professional, describe the characteristics you want in planting material and where you plan to place your plantings. Some of the characteristics to look for in plants: potential wildlife habitat, amount of shade provided or how much water and fertilizer the plant needs. Additional sources of information on nurseries and what types of plants to look for can be found by contacting *The American Horticultural Society's Gardening Information Center at **1-800-777-7931** or The Maryland Native Plant Society, Inc. at P.O. Box 4877, Silver Spring, Maryland 20914.*

The following is a list of some plants native to Maryland:

Common Name	**Scientific Name**	**Features**
SHADE TREES		
Red Oak	Quercus rubra	fast-growing, tolerates variety of conditions, 60-90' in height
Redbud	Cercis canadensis	small tree, 20-40' in height with reddish flowers in showy clusters from March to May
River Birch	Betula nigra	streambank tree, 60-80' in height
American Sweetgum	Liquidambar styraciflua	green leaves with yellow-green flowers, 75-100' in height
Common Persimmon	Diospyros virginiana	dark thick bark with edible fruit, 30-50' in height, fruit provides food for songbirds and wildlife

Black Cherry	Prunus serotina	large tree, 60-80' in height, reddish bark, fruit provides food for songbirds and wildlife
Sassafras	Sassafras albidum	fragrant tree, 10-50' in height, fruit and twigs provide food for songbirds and wildlife
Flowering Dogwood	Cornus florida	small to medium-sized tree, 10-40' in height, fruit and twigs provide food for songbirds and wildlife
Green Ash	Fraxinus pennsylvanica	fast-growing, prefers rich well-drained soil, can reach 60' in height
Pin Oak	Quercus palustris	popular shade tree, prefers wet soil, 50-90' in height
Red Maple	Acer rubrum	fast-growing, early red blossom prefers wet but tolerates dry soil, 60-90' in height
Shadblow Serviceberry	Amelanchier canadensis	silvery grey to blue colored leaves with white flowers, 35-50' in height
Sweetbay Magnolia	Magnolia virginiana	green leaves with fragrant white flowers, 12-20' in height
Sycamore	Platanus occidentalis	green leaves, greenish-brown bark that peels in strips to reveal pale inner bark, 60-100' in height
Tulip Poplar	Liriodendron tulipifera	popular hardwood, bright orange and green flowers in the Spring, prefers moist soil, 80-120' in height
Tupelo	Nyssa sylvatica	popular ornamental, berrylike fruit eaten by variety of wildlife, prefers

		moist soil, 50-100' in height
White Oak	Quercus alba	one of the largest oaks in North America, green leaves that turn red or brown in the fall, 80-100' in height
EVERGREEN TREES		
Red Cedar	Juniperus virginiana	popular ornamental, fragrant conifer, berrylike cones are eaten by variety of wildlife, 40-60' in height
American Holly	Ilex opaca	popular ornamental, foliage used in Christmas decoration, prefers moist soil, 40-70' in height
Canada Hemlock	Tsuga canadensis	cone bearing evergreen, 75-100' in height
DECIDUOUS SHRUBS		
Highbush Blueberry	Vaccinium corymbosum	white flowers with red twigs from June to August, 5-15' in height, fruit and twigs provide food for songbirds and wildlife
Red Chokeberry	Aronia arbutifolia	flowers May - June, pale leaves, red berry, 9' in height
Red Osier Dogwood	Cornus stolonifera	blue berries with white flowers and red or green twigs, flowers from May to June and fruit from June-August, 3-10' in height
Shining Sumac	Rhus copallina	flowers early August, deep green leaves, crimson fruit, 30' in height
American Elder	Sambucus canadensis	green colored leaves with star shaped white flowers, deep purple to black berries, 6-12' in height

Arrowwood Viburnum	Viburnum dentatum	green colored leaves with white flowers, blue to black berries, 6-12' in height
Blackhaw Viburnum	Viburnum prunifolium	green colored leaves with white flowers, dark blue to black berries, 6-10' in height
Common Witchhazel	Hamamelis virginiana	green colored leaves with bright yellow flowers, 20-35' in height
Pink Pinxterbloom Azalea	Rhododendron nudiflorum	flowers April - May, pink flowers, needs moist soil, 9' in height
Silky Dogwood	Cornus amomum	red-green to medium green colored leaves with yellowish white flowers, blue berries, 6-12' in height
HERBACEOUS PLANTS		
Black Eyed Susan	Rudbeckia hirta	yellow, daisy like flower, 1-3' in height
Coreopsis	Coreopsis lanceolata	yellow flower, 1-2' in height
Coreopsis	Coreopsis verticillata	yellow flower, 1-2' in height
Dense Blazing Star	Liatris spicata	dense purple flowers, 1-5' in height
Goldenrod	Solidago spp.	yellow flower, 1-7' in height
Pearly Everlasting	Anaphalis margaritacea	white flower, 1-3' in height
Yarrow	Achillea millefolium	white flower, 1-3' in height
GROUND COVERS		
Barren Strawberry	Waldsteinia fragarioides	edging or border planting, tolerates some shade

Bird-Foot Violet	Viola pedata	purple flowers, tolerates some shade
Violet Wood Sorrel	Oxalis violacea	excellent for rock garden, tolerates some shade
Grass-leaved Blazing Star	Liatrus graminifolia	rose-purple flower, late summer bloom

FLOWERING PERENNIALS

Blazing Star	Liatris scariosa	erect, bold color, 1-5' in height
Butterfly Weed	Asclepias tuberosa	attracts butterflies, brilliant orange flower, 2-3' in height
Culver's Root	Veronica virginica	3-6' in height
Geum	Geum virginianum	colorful, 2-3' in height
Moss Pink	Phlox subulata	for banks and rock gardens, small pink flowers, 3-6" in height
Virginia Spiderwort	Tradescantia virginiana	colorful, tolerates wet and dry conditions, 1-2' height
Wild Sweet William	Phlox divaricata	color all summer, 1-2' in height
Cardinal Flower	Lobelia cardinalis	bright scarlet flower, prefers moist soil, partial shade, 2.5 - 5' in height
Dwarf Crested Iris	Iris cristata	purple and yellow flower, 3- 8" in height
Fire Pink	Silene virginica	deep crimson petals, prefers well-drained sandy soil, 6-10" in height
Wild Columbine	Aquilegia canadensis	yellow sepals and red spur, prefers loamy soil and partial shade, 1.5 - 2' in height

LAND USE PRACTICES

SOIL PREPARATION

Before landscaping land next to a new home or office, the soil must be prepared for planting.

- Remove all debris.
- Till the property to eliminate areas of compressed soil that may have been caused by construction equipment.
- Administer a soil test to determine the proper amounts of lime and fertilizer specifically for your land.

FERTILIZERS

Fertilizers are used on lawns to promote plant growth, provide pest resistance, and build stronger root systems. If applied improperly, fertilizer will contaminate surface and groundwater sources, including the Chesapeake Bay. The nitrogen and phosphorous in fertilizers contribute to the algae blooms in streams, the Potomac River and the Bay. Algae growth depletes the oxygen supply in water, killing fish, oysters and other aquatic species. When fertilizing your lawn, it is very important to apply the following:

- naturally fertilize land by using manure or composted material;
- do not operate the spreader over paved areas including sidewalks, driveways, and roads; if fertilizer gets onto these surfaces, sweep it back onto the lawn;
- fill, wash, and empty fertilizer spreaders over a planted area so any spillage is absorbed into the ground;
- do not over-fertilize or over-water your lawn because this causes runoff into drainage sewers and ultimately water pollution;
- never fertilize frozen ground, because it cannot absorb the fertilizer; and,
- if the lawn appears healthy, do not fertilize.

Types

Commonly available fertilizers are prepackaged and labeled with percentage by weight of the amounts of three (3) components: nitrogen (N), phosphate (P_2O_5), and potash (K_2O). Nitrogen promotes general growth and is usually needed every year. Phosphate supplies phosphorus for root growth, and potash supplies potassium for drought and disease resistance. Phosphate and potash may not be needed annually and should not be applied if they are not required. To determine the right type of fertilizer for your lawn, purchase a soil test and follow the provided directions or call the *Cooperative Extension Service* at **(301) 405-2907** for additional information.

Amount

The amount of fertilizer needed varies among grass types, time of year, and soil contents. Phosphate and potash should be added only when soil tests determine that they are absolutely needed. Nitrogen can be added to your lawn several times a year according to the table below.

Nitrogen Application Table (Pounds Per 1,000 Square Feet)

	Sept.	Oct.	Nov./ Dec.	Mid May/ Early June	July	Aug.	Max. Yearly
Tall fescue	1	1	0	0 - 1*	0	0	3
Fine fescue	0	1	0	0 - 1*	0	0	2
Kentucky bluegrass	1	1	0 - 1*	0 - 1*	0	0	4
Perennial ryegrass 1	1	0 - 1*	0	0	0	0	4
Bermudagrass	0	0	0	1	1	0 - 1*	2
Zoysiagrass	0	0	0	1	0 - 1*	0	2

* Only apply fertilizer if the grass looks weak or has poor color.

WATER USAGE

Proper watering of your lawn and landscape will promote healthier grass and plants. Instead of watering your lawn frequently, water it thoroughly and only when plants show signs of drought. By allowing the water to completely soak into the soil, deep roots will grow, making them more drought tolerant.

Frequency

A common mistake made by homeowners is basing the watering frequency on outside temperatures. When to water should be determined by the appearance and health of the lawn. It is best to water the lawn at the coolest time of the day to minimize evaporation. Water the lawn when the sun is out because watering in the dark promotes fungal diseases. Morning is the best time because the sun is out and the temperature is cooler.

Some signs that your lawn and plants may need watering are:

- the grass, when stepped on, lays flat does not pop up after a few minutes;
- shrubs, bushes, and plants begin to wilt; or,
- if in doubt, dig a small hole, four inches to six inches (4" - 6") deep to feel if the soil is dry.

Amount

A strong root system must be completely soaked when it is watered so all roots absorb the water. The soil should be moist four inches to six inches (4" - 6") deep. A simple test for soil moisture is to insert a metal stick (butter knifes and screw drivers work well) into the ground. If the stick easily penetrates four inches to six inches (4" - 6") of the soil, than the ground is likely sufficiently soaked.

Once you reach the proper soil moisture, record the amount of time spent watering. This will allow the homeowner to establish a time frame for watering the lawn for in the future.

Avoid Runoff

If a lawn is over-watered, water may run off the land into drainage systems flushing it into rivers, streams, and lakes. The runoff may contain fertilizers and pesticides which will ultimately contaminate water sources such as the Potomac River and the Chesapeake Bay. To avoid runoff, do not use sprinklers over sidewalks, driveways, or other hard surfaces. Do not over-saturate the soil by watering it too quickly or too long. If the soil is not completely soaked (4"- 6") yet water is running off the lawn, then the water pressure is too high. Turn the water tap down to allow the soil to completely absorb all the water.

Some types of watering equipment help avoid water runoff while promoting the soil absorption. Drip irrigation systems are particularly effective in watering vegetable and flower gardens by consistently delivering water directly where it is needed. For lawns, soaking hoses can be used to place water right at the soil line.

Always repair leaking hoses and connections. Malfunctioning equipment increases the amount of time it takes to water your lawn and is a leading cause of wasted water.

MOWING

It is very important to mow your lawn to the proper height. Mowing too low will increase susceptibility to drought, induce weed germination, weaken the root systems, and increase insect damage. Grass that is too high may suffer from disease problems due to the increased amount of moisture retained. Maintaining the proper height of grass can reduce weed problems by more than fifty percent (50%). The following is a recommended mowing height chart for various types of grasses:

Proper Mowing Heights (inches)

	Spring & Summer	Fall
Fescue	2.5 - 3.5	2.5
Perennial ryegrass	2.5 - 3.0	2.0 - 2.5
Kentucky bluegrass	2.5 - 3.0	2.0 - 2.5
Bermudagrass	0.5 - 1.0	0.5 - 1.5
Zoysiagrass	0.5 - 1.0	0.5 - 1.5

MULCH

Mulches made of wood chips, shredded bark, grass clippings, and/or composted leaves, aid in water absorption and weed prevention while adding an aesthetic touch to your lawn. The mulch should be placed two to four inches (2" - 4") deep in shrub beds and flower and vegetable gardens. The mulch itself retains water, keeping the soil moist longer. Free mulch is available from the Montgomery County's Neighborhood Mulch Preserve. Call (301) 590-0046 for details.

PEST MANAGEMENT

Integrated Pest Management

Integrated Pest Management, or IPM, is a modern approach to pest control that reduces or eliminates the need for synthetic chemical substances. Measures such as removing the pests by hand, using natural biodegradable products, using natural predators, mixing different plants, or changing growing conditions can all help reduce pest damage.

The problem and solutions vary between type of pests and type of plantings. Each problem should be analyzed and solved in the safest, most environmentally friendly way possible.

Pests	**Controls**
Grubs	- Moles, Birds and milky spore disease
Other Insects	- Birds, toads and beneficial insects such as spiders, praying mantises and other natural predators
	- Plant grass species other than Bluegrass
Other Diseases	- Plant the recommended plant species for the site, don't over-fertilize or over-water

Shrubs and Trees

The following methods can be used to rid shrubs and trees of unwanted insects:

- encourage ladybugs, big-eyed bugs, spiders, praying mantises, birds, lizards, toads, frogs, and even bats;
- remove pests by hand;
- remove dead or dying branches of shrubs and trees;
- wash leaves using a teaspoon of detergent soap and 1 gallon of water; and,
- wash leaves with a small amount of alcohol.

Vegetable Gardens

The following methods can be employed as preventative practices for pest control in vegetable gardens:

- crop rotation and planting in narrow rows;
- plant early in the season to avoid late harvest pests; and,
- natural controls such as predators, parasites, pathogens, biological products, botanical insecticides, and insecticidal soaps.

Miscellaneous Pests

The following chart lists specific methods to eliminate some pests:

Pest	Control
Mosquitoes	- Remove sources of standing water such as in old tires, buckets, etc. - Mow grass regularly
Chiggers	- Mow grass regularly
Ticks and Fleas	- Treat pets and their sleeping quarters
Wasps and Hornets	- Carefully remove the nests at night
General	- Encourage birds such as purple martins for insect control during the day and encourage bats for control of insects at night

Many pests can be eliminated by simply encouraging the existence of their predators in the garden. It is important to know the difference between predators and pests. Use the following chart as a guide:

Predators	Prey
Lacewings (Chrysopidae family)	Aphids, scale, whiteflies, mites, mealybugs, other lacewings, and eggs of mites, thrips and other insects
Spider (Arachnida order)	Eat anything that gets stuck in their web
Bee flies (Bombylldae family)	Locust eggs, parasites of larvae of flies, wasps, bees, beetles and ants
Praying mantises (Manteoden family)	Anything they catch
Dragon flies (Odnata order)	Small flying insects, midges, and mosquitoes
Soldier Beetles (Cantharidae family)	Cutworms, gypsymoth, larvae, cankerworms, slugs and snails

The previous pest management information was provided by the "Bayscapes" pamphlets from the Alliance for the Chesapeake Bay and the U.S. Fish & Wildlife Service, Chesapeake Bay Fields Office.

For more information on IPM contact the Chesapeake Regional Information Service at **1-800-662-CRIS.**

Pesticides

If Integrated Pest Management techniques cannot fix your pest problem, then use chemical pesticides as a last resort. Always follow the instructions on the container for the use, storage, and disposal of pesticides. Some additional guidelines for handling toxic substances are listed below.

Before Use:

- Determine specifically which plants need the chemicals and then buy a pesticide labeled for that plant type and avoid applying pesticides to plants that do not need it.
- Determine what type of pest has infested your plants and buy a specific pesticide for that type of pest.

- Buy only the amount you need. Pesticides are dangerous to store and lose their effectiveness over time. Buy no more than a two (2) year supply.

- Cover any pet food or water dishes in the area.

During Use:

- Wear protective clothing and avoid skin exposure.

- Avoid wearing leather because it absorbs and holds pesticides.

- Keep children and pets out of area during application

- If pesticide is applied to fruits or vegetables, follow the directions on the label for the amount of time necessary to elapse before safe harvest.

- Clean any spills with sawdust, kitty litter, or other absorbent materials and dispose of in a plastic bag and place in the trash.

TOXIC SUBSTANCES

Automobile

Many automobile products are toxic chemicals and, if handled improperly, have the potential to harm people, pets and our water supplies. Before dumping oil down that storm drain, consider this: one (1) quart of oil can contaminate up to two million gallons of drinking water and the oil from your car's engine (about 4 to 6 quarts) can produce an eight (8) acre oil slick; antifreeze has ethylene glycol, which is poisonous to people, pets and fish. Many cats and dogs have been poisoned and died after drinking puddles of sweet tasting antifreeze.[1]

Proper handling of these products will help minimize any potential contamination. Because many people change their own oil or flush their radiators, the following recommendations are provided:

- don't pour the old oil or antifreeze down the drain;

[1] *Baybook*, Alliance for the Chesapeake Bay, Inc., March 1993, page 23.

- place the used antifreeze and oil in a sturdy plastic container; recycle used oil and antifreeze at your local service station. (additional recycling locations can be found by calling **1-800-473-2925**); and,

- securely store all automotive products out of reach of children and pets.

Paint

Latex paint can be disposed of at regular curbside refuse pick-up if it is dried and solidified. Paint, in its liquid form, can be dropped off at a Montgomery County hazardous waste collection site. Consider donating any unused latex paint to charity groups.

The following number provides additional information on waste collection sites:

Montgomery County Recorded Recycling Information: **(240) 777-6400**

Other Hazardous Wastes

Household hazardous wastes can be found in most homes. These are products that contain dangerous chemicals that can pollute groundwater and endanger people and animals when used, stored or disposed of improperly. A hazardous product is one that is flammable, corrosive, toxic, or poisonous. The following list identifies some hazardous products that you may use in your home.

-Household cleaners
-Bathroom cleaners
-Ammonia
-Degreasers
-Furniture finish and stripper
-Fungicides
-Lighter fluid
-Insecticides
-Nail polish
-Oven cleaner
-Paint thinner
-Photography chemicals
-Rust removers
-Batteries
-Bleach
-Brake fluid
-Drain cleaners
-Furniture polish and wax
-Gasoline
-Herbicide
-Metal polish
-Nail polish remover
-Oil based paints
-Pesticides
-Carpet cleaner
-Scouring powders

-Spot removers
-Transmission fluid
-Anti-freeze
-Swimming pool chemicals
-Upholstery cleaner

Remember the following rules when using hazardous materials.

- Read the directions and recommendations on the product label and **follow them carefully.**
- Never mix two (2) products together. Chemical reactions may occur producing toxic or lethal fumes or even explosions!
- Use protective garments to avoid direct contact with hazardous products. Eye protection and rubber or latex gloves are especially important.

Storage

- Store all hazardous products out of the reach of children and animals.
- Different types of chemical products should be stored separately.
- Never store hazardous materials near food products.
- Never store flammable material near sources of heat.

Disposal

When disposing of hazardous materials, never pour them down sink drains, in the toilet, in storm drains or on the ground. Montgomery County provides a safe alternative for disposing of hazardous materials. The County sets up collection sites twice a month in various locations throughout the County where trained volunteers sort and collect hazardous wastes for safe disposal. For more information on times and locations of future collection sites call the *Montgomery County Division of Solid Waste Services* at **(240) 777-6400.**

Appliances

Refrigerators, air conditioners, microwaves, even televisions, all involve the use of toxic substances in daily operation. Proper maintenance and disposal of all household appliances are essential to assuring that harmful substances will not leak into the environment.

Maintenance

Refrigerators and air-conditioners, particularly, involve the use of CFCs (Chlorofloracarbons), most commonly in the form of Freon. These are synthetic chemicals that the environment cannot absorb. Consequently, when released into the atmosphere, CFCs deteriorate the natural stratospheric layer, ozone, that protects the earth from harmful, cancer causing, ultraviolet rays. Therefore, it is very important, when having your refrigerator or air conditioner serviced, to ask the repairperson to check the appliance for leaks and to reseal them, and not simply top them off with more Freon. If your car has an air conditioner, let it run for approximately ten (10) minutes, a least once a month, all year long.

Disposal

The proper disposal of appliances is the most important step in responsible ownership since this is when you are finally releasing the harmful substances to be absorbed by the environment. Consult a professional when disposing of old appliances. Consider the following options:

- curbside pickup is available to residents with County provided refuse and recycling collection services (for more information on arranging a pickup call **(240) 777-6410**); and,

- Montgomery County residents can bring old appliances to the Transfer Station (information is available by calling **(240) 777-6410** for recorded recycling information).

Pet Wastes

Pet wastes disposal is essential to avoiding health risks to humans, other animals and plants. Many diseases are transmitted to humans through pet waste including roundworms and parasites. Children are the most common victims of diseases transmitted by pet wastes. Do not let children play in areas where they are at risk. Pet wastes are toxic, contribute to weed growth in lawns and contaminate water sources. Aside from the harm caused by direct contact, diseases can spread if drinking water is contaminated.

As a courtesy to other members of your community and safety for your family, collect your pet's waste and dispose of it in one of the following ways:

- flush it down the toilet;

- bury it in the ground, 5 inches deep, away from vegetable gardens and water sources; or,
- wrap it in plastic and place in the trash.

BIORETENTION

Many of the unique features of the Clarksburg Town Center Community are not as obvious as the picturesque streets and the architecture of the homes and businesses. Some of the special design characteristics of the community are incorporated in how runoff from rain storms is treated. Stormwater runoff is treated in sandfilters, ponds and bioretention areas. Bioretention facilities are scattered throughout the development in common and private space, these areas require a certain degree of attention to keep them operating at peak efficiency. If properly maintained, the bioretention facilities will treat stormwater runoff by removing pollutants, which is important for health of the Bay and our other waterways. Also, the bioretention areas can be an asset to the home or business owner as the plantings are very attractive and unique. The effort to maintain these facilities is minimal and is detailed on the following pages. Additional information can be obtained by referring to the Prince George's County, "Design Manual for Use of Bioretention in Stormwater Management", copies are available by calling Biohabitats, Incorporated at **(410) 337-3659**.

Planting Soil

Urban plant communities tend to become very acidic due to precipitation as well as the influence of storm water runoff. For this reason, it is recommended that the application of alkaline, such as limestone, be considered once or twice a year. A pH test of the organic layer and soil should precede the limestone application to determine the amount of limestone required.

Soil testing should be conducted annually to detect and prevent the accumulation of toxins and heavy metals. Over time, heavy metals and other toxic substances will tend to accumulate in the soil and the plants.

As the toxic substances accumulate, the plant's biologic functions may be impaired and the plant may experience dwarfed growth followed by mortality. The preservation measures would include the removal of the contaminated soil.

Mulch

Ground cover established by seeding or consisting of grass should not be covered with mulch.

Planting Materials

Ongoing monitoring and maintenance is vital to the overall success of bioretention areas. Annual maintenance will be required for plant material, mulch layer, and soil layer. An example maintenance schedule is shown in the following table.

Expert Maintenance Schedule for Bioretention Areas			
Description	Method	Frequency	Time of the Year
SOIL			
Inspect and Repair Erosion	Visual	Monthly	Monthly
ORGANIC LAYER			
Remulch any void areas	By Hand	Whenever needed	Whenever needed
Remove previous mulch layer before applying new layer	By Hand	Once every two to three years	Spring
Any Additional mulch added	By Hand	Once every two to three years	Spring
Expert Maintenance Schedule for Bioretention Areas (Cont'd.)			
PLANTS			
Removal and replacement of all dead and diseased vegetation considered beyond treatment	See planting specifications	Twice a year	3/15 to 4/30 and 10/1 to 11/30
Treat all diseased trees and shrubs	Mechanical or by hand	N/A	Varies, depends on insect or disease infestation

Expert Maintenance Schedule for Bioretention Areas (Cont'd.)			
Watering of plant material shall take place at the end of each day for fourteen consecutive days after planting has been completed	By hand	Immediately after completion of project	N/A
Replace stakes after one year	By hand	Once a year	Only remove stakes in the spring
Replace any deficient stakes or wires	By hand	N/A	Whenever needed

COMMERCIAL BEST MANAGEMENT PRACTICES

Many of the recommendations presented in the previous sections for homeowners are also applicable to the business owner. If you are thinking of planting a tree in front of your store, consider using native plants. If your company uses hazardous or toxic materials, the recommendations for handling and disposal of these products for households are applicable and could reduce your disposal costs. Recycling should not be confined to the home. You can make your business more "environmentally friendly" by setting up glass and metal collection bins in your store. This will lower the amount of garbage you need to haul to the dumpster and show your customers that you care about the environment.

Additional guidance and assistance for the business owner can be obtained by calling the Montgomery County Division of Solid Waste Services at **(240) 777-6400.**

SECTION IV: CONCLUSIONS

The recommendations contained in this document presented ways to maintain the environmental quality of life at the Clarksburg Town Center Community. Many of these suggestions will not only benefit the environment, but will save the resident and business owner money. Trees and shrubs provide shade and can lower heating and cooling costs, using native plants will ensure

that the plant chosen will most likely survive. Proper watering can reduce runoff from lawns and gardens as well as lowering water usage. Mowing lawns at the correct height will result in heathier and more attractive yards. Careful use of fertilizers and pesticides as well as safe disposal of wastes will protect our waterways and "Save the Bay". When each individual provides a small effort in cleaning up the environment, all of us will have a cleaner community and a healthier State.

References:

The Alliance for the Chesapeake Bay, Inc. (804)-775-0951

Baybook, Alliance for the Chesapeake Bay, Baltimore, Maryland, 1993.

Familiar Trees of North America - East, National Audubon Society Pocket Guide, Alfred A. Knopf, New York, April 1994.

Hightshoe, Gary L., Native Trees, Shrubs and Vines for Urban and Rural America, Van Nostrand Reinhold, New York, 1988.

"Integrated Pest Management - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Using Beneficial Plants - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Bayscapes for Wildlife Habitat - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Fact Finder - Turf Tips: Grasscycling", Howard County, Maryland.

"Waste Prevention, Recycling and Refuse Collection in Montgomery County", Division of Solid Waste Services, Department of Public Works, Rockville, MD 1996.

"Proper Disposal of Household Hazardous Materials", Division of Solid Waste Services, Department of Public Works, Rockville, MD 1997

"Fact Finder - Learn to Handle Your Household's 'Hazardous Wastes' Properly", Howard County, Maryland.

"Fact Finder - Collection is the safe alternative to disposing of Household Hazardous Wastes", Howard County, Maryland.

"The CFC Challenge", Montgomery County Department of Environmental Protection, Rockville, Maryland, 1993.

References: (continued)

"Tips on Keeping Your Lawn Green...And the Chesapeake Bay Clean", Department of Crop and Soil Environmental Sciences and Virginia Cooperative Extension at Virginia Polytechnic Institute and State University.

"Pesticide Information Leaflet", Fact Sheet Number 11, Cooperative Extension Service, College Park, Maryland, 1990.

"Garbage! How to Get Rid of It, How to Recycle It, How to Make Less of It" Anne Arundel County Department of Public Works Waste Management Services, Annapolis Maryland, 1996.

"Fact Finder - Home composting recycling nature's way", Howard County, Maryland.

"Conservation Landscaping - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Effective Lawn Care With Reduced Pesticide and Fertilizer Use", Fact Sheet Number 637, Cooperative Extension Service, College Park, Maryland, 1993-1994.

"Home and Garden - Fertilize Your Lawn, Not the Bay", Home and Garden Mimeo Number 305, Cooperative Extension Service, Ellicott City, Maryland, 1997.

"Home and Garden - Lawns and The Chesapeake Bay", Home and Garden Mimeo Number 301, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Home and Garden - Landscapes That Help The Chesapeake Bay", Home and Garden Mimeo Number 302, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Home and Garden - Saving Your Soil And The Chesapeake Bay", Home and Garden Mimeo Number 303, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Home and Garden - Xeriscaping and Conserving Water in the Landscape", Home and Garden Mimeo Number 25, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Yard Waste Collection Manual", Anne Arundel County Department of Public Works Waste Management Services, Annapolis Maryland.

References: (continued)

"Backyard Composting", Anne Arundel County Department of Public Works Waste Management Services, Annapolis Maryland.

"Take It From Maryland's Farmers...5 Ways to Help the Bay", Maryland Department of Agriculture.

"Home Composting", Leaflet Number 245, Cooperative Extension Service, Ellicott City, Maryland, 1994

"Bayscaping for the Long Term - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Bayscaping to Conserve Water - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Creating Landscape Diversity - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"A Directory for Water Resources Planning and Management in Maryland", Water Resource Paper Number 31, Cooperative Extension Service, College Park, Maryland, 1990-91.

INTRODUCTION

As part of the Final Water Quality Plan, the Ecological Covenant provides homeowners and business owners of Clarksburg Town Center guidelines on how to maintain a sound, environmentally-friendly community. The goals of this document are to ensure continuous and proper environmental management of the Town Center after the developer and his agents have finished construction. This document will be provided to each resident in the community, all businesses within the Clarksburg Town Center development and any other individuals interested in environmental quality on the site.

The covenant contains recommendations to the homeowners regarding planting, land use practices (soil preparation, fertilizing, water usage, mowing, grasscycling, composting, etc.), pest management, toxic substance handling and disposal, waste management, and recycling.

The recommendations made in this covenant will not only protect the streams, wildlife, and natural resources of the Clarksburg Town Center but, if followed correctly, will save money. Furthermore, by following the recommendations made within this document, the residents of the Clarksburg Town Center will not only protect the natural resources within their community but will also help in the restoration of the Chesapeake Bay.

SECTION III: *ENVIRONMENTAL GUIDANCE*

This section will provide the Clarksburg homeowner and business owner with straight forward, cost-effective guidance on planting, land use practices, pest management, how to handle toxic and hazardous substances, recycling and maintenance of bioretention facilities. These recommendations will protect the streams, wildlife and natural resources of the Clarksburg Town Center and, in many cases, save money for the residents of Clarksburg. Ultimately, all of these steps will help improve the quality of life for the entire Clarksburg community.

PLANTING

Landscaping, in an environmentally friendly way, will not only encourage wildlife, but will result in an attractive yard that will lower heating and cooling costs and save water. Planting trees and shrubs will lower the rain runoff from your yard and add shade. Trees, shrubs and grasses will slow down the flow of water and let rainfall filter back into the soil to recharge the ground water. Recharging ground water and slowing down surface runoff helps to lessen flooding impacts to streams and, ultimately, the Chesapeake Bay. Also, storing rainwater and allowing it to filter into the soil should lower the amount of water your lawn requires.

DEPARTMENT OF PERMITTING SERVICES

Douglas M. Duncan
County Executive

May 11, 2001

Robert C. Hubbard
Director

Mr. Douglas Irvin
Linowes and Blocher
Fax #301-495-9044

Re: Clarksburg Town Center Ecological Covenant Update

Dear Doug,

We would like to see the Ecological Covenant updated in the following ways:

Pg. 10. Delete the Grasscycling and Composting sections.

Pg. 11. Delete the end of the Composting and all of Building a pile.

Pg. 12. Delete the end of Building a pile.

Pg. 16. Delete the Recycle Hotline reference and correct the recycling number to 240-777-6400.

Pg. 18. Change the number for pickup to 240-777-6410. In both the top and bottom Disposal sections, delete the Recycle Hotline reference, and change recycling information number to 240-777-6410,

Pg. 19. Delete Recycle metal, plastic, paper and glass sections.

Pg. 20. Delete the remaining parts of the previous sections. Change the Bioretention section to delete the 4th sentence beginning with, "The Majority of.....and ending with maintained by the County". (This is an untrue statement anyway.)

Pg. 23. Change the phone number to 240-777-6400 and delete reference to Hotline.

I think to speed up the process we probably could leave blank pages as long as they are marked as "deliberately left blank". If you have any questions about these changes please call me at 240-777-6333 or Leo Galanko at 240-777-6242.

Sincerely,

Richard J Gee

Richard Gee
Water Resources Analyst

cc:S.M. File

Disposal

When disposing of hazardous materials, never pour them down sink drains, in the toilet, in storm drains or on the ground. Montgomery County provides a safe alternative for disposing of hazardous materials. The County sets up collection sites twice a month in various locations throughout the County where trained volunteers sort and collect hazardous wastes for safe disposal. For more information on times and locations of future collection sites call the *Montgomery County Division of Solid Waste Services* at **(301) 217-2770** or the *Recycling Hotline* at **(301) 590-0046.**

Appliances

Refrigerators, air conditioners, microwaves, even televisions, all involve the use of toxic substances in daily operation. Proper maintenance and disposal of all household appliances are essential to assuring that harmful substances will not leak into the environment.

Maintenance

Refrigerators and air-conditioners, particularly, involve the use of CFCs (Chlorofloracarbons), most commonly in the form of Freon. These are synthetic chemicals that the environment cannot absorb. Consequently, when released into the atmosphere, CFCs deteriorate the natural stratospheric layer, ozone, that protects the earth from harmful, cancer causing, ultraviolet rays. Therefore, it is very important, when having your refrigerator or air conditioner serviced, to ask the repairperson to check the appliance for leaks and to reseal them, and not simply top them off with more Freon. If your car has an air conditioner, let it run for approximately ten (10) minutes, a least once a month, all year long.

Disposal

The proper disposal of appliances is the most important step in responsible ownership since this is when you are finally releasing the harmful substances to be absorbed by the environment. Consult a professional when disposing of old appliances. Consider the following options:

- curbside pickup is available to residents with County provided refuse and recycling collection services (for more information on arranging a pickup call **301-217-2410**); and,
- Montgomery County residents can bring old appliances to the Transfer Station (information is available by calling the: Montgomery Co. Recycling Hotline **301-590-0046** or **301-217-2870** for recorded recycling information).

Pet Wastes

Pet wastes disposal is essential to avoiding health risks to humans, other animals and plants. Many diseases are transmitted to humans through pet waste including roundworms and parasites. Children are the most common victims of diseases transmitted by pet wastes. Do not let children play in areas where they are at risk. Pet wastes are toxic, contribute to weed growth in lawns and contaminate water sources. Aside from the harm caused by direct contact, diseases can spread if drinking water is contaminated.

As a courtesy to other members of your community and safety for your family, collect your pet's waste and dispose of it in one of the following ways:

- flush it down the toilet;
- bury it in the ground, 5 inches deep, away from vegetable gardens and water sources; or,
- wrap it in plastic and place in the trash.

RECYCLE METALS, PLASTIC, PAPER AND GLASS

Montgomery County provides recycling services for paper, glass, plastic, aluminum, and steel. Recycled materials can either be picked up at the curb if service is available in your neighborhood, or dropped off at the Montgomery County Transfer Station. To inquire about the recycling service for your neighborhood or for directions to the transfer station call **(301) 217-2410.**

Metal

All metal cans should be well-rinsed. Labels and lids may remain attached to the can. Do not recycle pots and pans or cans other than food containers.

The following metal items can be recycled:

- aluminum cans (soft drinks, beer, etc.)
- balled up aluminum foil
- all steel cans (soup, juice, etc.)
- pet food cans

Plastics

Plastic bottles should be empty and well-rinsed. All caps should be discarded. Montgomery County will not accept plastic containers without necks (screw on caps). Containers with recycling code numbers other than 1 or 2 will not be accepted.

Glass

All glass items should be rinsed well with all lids removed. Green, brown and clear glass items may be recycled, including: beer, wine, soft drink, sauce drink, sauce jars, etc. Montgomery County **will not** recycle glass other than food or drink containers. Unacceptable glasses include drinking glasses, vases, plates, or light bulbs.

Paper

Newspaper should be placed in paper grocery bags or tied with twine in bundles no higher than one foot (1'). Telephone books can be recycled with newspapers. All paper that is not glossy or used with food can be recycled. Tissues, paper towels, and glossy magazines cannot be recycled in Montgomery County.

BIORETENTION

Many of the unique features of the Clarksburg Town Center Community are not as obvious as the picturesque streets and the architecture of the homes and businesses. Some of the special design characteristics of the community are incorporated in how runoff from rain storms is treated. Stormwater runoff is treated in sandfilters, ponds and bioretention areas. ~~The majority of these stormwater management facilities require minimal maintenance or are maintained by the County.~~ Bioretention facilities are scattered throughout the development in common and private space, these areas require a certain degree of attention to keep them operating at peak efficiency. If properly maintained, the bioretention facilities will treat stormwater runoff by removing pollutants, which is important for health of the Bay and our other waterways. Also, the bioretention areas can be an asset to the home or business owner as the plantings are very attractive and unique. The effort to maintain these facilities is minimal and is detailed on the following pages. Additional information can be obtained by referring to the Prince George's County, "Design Manual for Use of Bioretention in Stormwater Management", copies are available by calling Biohabitats, Incorporated at **(410) 337-3659**.

Planting Soil

Urban plant communities tend to become very acidic due to precipitation as well as the influence of storm water runoff. For this reason, it is recommended that the application of alkaline, such as limestone, be considered once or twice a year. A pH test of the organic layer and soil should precede the limestone application to determine the amount of limestone required.

Soil testing should be conducted annually to detect and prevent the accumulation of toxins and heavy metals. Over time, heavy metals and other toxic substances will tend to accumulate in the soil and the plants.

As the toxic substances accumulate, the plant's biologic functions may be impaired and the plant may experience dwarfed growth followed by mortality. The preservation measures would include the removal of the contaminated soil.

Mulch

Ground cover established by seeding or consisting of grass should not be covered with mulch.

Planting Materials

Ongoing monitoring and maintenance is vital to the overall success of bioretention areas. Annual maintenance will be required for plant material, mulch layer, and soil layer. An example maintenance schedule is shown in the following table.

Expert Maintenance Schedule for Bioretention Areas			
Description	Method	Frequency	Time of the Year
SOIL			
Inspect and Repair Erosion	Visual	Monthly	Monthly
ORGANIC LAYER			
Remulch any void areas	By Hand	Whenever needed	Whenever needed
Remove previous mulch layer before applying new layer	By Hand	Once every two to three years	Spring
Any Additional mulch added	By Hand	Once every two to three years	Spring

Expert Maintenance Schedule for Bioretention Areas (Cont'd.)			
PLANTS			
Removal and replacement of all dead and diseased vegetation considered beyond treatment	See planting specifications	Twice a year	3/15 to 4/30 and 10/1 to 11/30
Treat all diseased trees and shrubs	Mechanical or by hand	N/A	Varies, depends on insect or disease infestation
Watering of plant material shall take place at the end of each day for fourteen consecutive days after planting has been completed	By hand	Immediately after completion of project	N/A
Replace stakes after one year	By hand	Once a year	Only remove stakes in the spring
Replace any deficient stakes or wires	By hand	N/A	Whenever needed

COMMERCIAL BEST MANAGEMENT PRACTICES

Many of the recommendations presented in the previous sections for homeowners are also applicable to the business owner. If you are thinking of planting a tree in front of your store, consider using native plants. If your company uses hazardous or toxic materials, the recommendations for handling and disposal of these products for households are applicable and could reduce your disposal costs. Recycling should not be confined to the home. You can make your business more "environmentally friendly" by setting up glass and metal collection bins in your store. This will lower the amount of garbage you need to haul to the dumpster and show your customers that you care about the environment.

Additional guidance and assistance for the business owner can be obtained by calling the Montgomery County Division of Solid Waste Services at **(301) 217-2770** or the Recycling Hotline at **(301) 590-0046.**

SECTION IV: CONCLUSIONS

The recommendations contained in this document presented ways to maintain the environmental quality of life at the Clarksburg Town Center Community. Many of these suggestions will not only benefit the environment, but will save the resident and business owner money. Trees and shrubs provide shade and can lower heating and cooling costs, using native plants will ensure that the plant chosen will most likely survive. Proper watering can reduce runoff from lawns and gardens as well as lowering water usage. Mowing lawns at the correct height will result in heathier and more attractive yards. Careful use of fertilizers and pesticides as well as safe disposal of wastes will protect our waterways and "Save the Bay". When each individual provides a small effort in cleaning up the environment, all of us will have a cleaner community and a healthier State.

References:

The Alliance for the Chesapeake Bay, Inc. (804)-775-0951

Baybook, Alliance for the Chesapeake Bay, Baltimore, Maryland, 1993.

Familiar Trees of North America - East, National Audubon Society Pocket Guide, Alfred A. Knopf, New York, April 1994.

Hightshoe, Gary L., Native Trees, Shrubs and Vines for Urban and Rural America, Van Nostrand Reinhold, New York, 1988.

"Integrated Pest Management - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Using Beneficial Plants - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Bayscapes for Wildlife Habitat - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Fact Finder - Turf Tips: Grasscycling", Howard County, Maryland.

"Waste Prevention, Recycling and Refuse Collection in Montgomery County", Division of Solid Waste Services, Department of Public Works, Rockville, MD 1996.

"Proper Disposal of Household Hazardous Materials", Division of Solid Waste Services, Department of Public Works, Rockville, MD 1997

"Fact Finder - Learn to Handle Your Household's 'Hazardous Wastes' Properly", Howard County, Maryland.

"Fact Finder - Collection is the safe alternative to disposing of Household Hazardous Wastes", Howard County, Maryland.

"The CFC Challenge", Montgomery County Department of Environmental Protection, Rockville, Maryland, 1993.

References: (continued)

"Tips on Keeping Your Lawn Green...And the Chesapeake Bay Clean", Department of Crop and Soil Environmental Sciences and Virginia Cooperative Extension at Virginia Polytechnic Institute and State University.

"Pesticide Information Leaflet", Fact Sheet Number 11, Cooperative Extension Service, College Park, Maryland, 1990.

"Garbage! How to Get Rid of It, How to Recycle It, How to Make Less of It" Anne Arundel County Department of Public Works Waste Management Services, Annapolis Maryland, 1996.

"Fact Finder - Home composting recycling nature's way", Howard County, Maryland.

"Conservation Landscaping - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Effective Lawn Care With Reduced Pesticide and Fertilizer Use", Fact Sheet Number 637, Cooperative Extension Service, College Park, Maryland, 1993-1994.

"Home and Garden - Fertilize Your Lawn, Not the Bay", Home and Garden Mimeo Number 305, Cooperative Extension Service, Ellicott City, Maryland, 1997.

"Home and Garden - Lawns and The Chesapeake Bay", Home and Garden Mimeo Number 301, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Home and Garden - Landscapes That Help The Chesapeake Bay", Home and Garden Mimeo Number 302, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Home and Garden - Saving Your Soil And The Chesapeake Bay", Home and Garden Mimeo Number 303, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Home and Garden - Xeriscaping and Conserving Water in the Landscape", Home and Garden Mimeo Number 25, Cooperative Extension Service, Ellicott City, Maryland, 1996

"Yard Waste Collection Manual", Anne Arundel County Department of Public Works Waste Management Services, Annapolis Maryland.

References: (continued)

"Backyard Composting", Anne Arundel County Department of Public Works Waste Management Services, Annapolis Maryland.

"Take It From Maryland's Farmers...5 Ways to Help the Bay", Maryland Department of Agriculture.

"Home Composting", Leaflet Number 245, Cooperative Extension Service, Ellicott City, Maryland, 1994

"Bayscaping for the Long Term - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Bayscaping to Conserve Water - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"Creating Landscape Diversity - A Homeowner's Guide", Alliance for the Chesapeake Bay, Inc., Richmond, Virginia, 1994.

"A Directory for Water Resources Planning and Management in Maryland", Water Resource Paper Number 31, Cooperative Extension Service, College Park, Maryland, 1990-91.

Proper landscaping can reduce heating and cooling costs by as much as thirty percent (30%) (source: the "Baybook", The Alliance for the Chesapeake Bay, Inc., March 1993.) Trees and schrubs will provide shade in the summer and act as wind-breaks during the winter.

When choosing a species of plants, the homeowner should select native species. Native species are plants that have already adapted to the specific growing conditions of your neighborhood and these plants will be the most likely to survive. To assist you in selecting the right plants, it is recommended that a competent, professional nursery be contacted. When speaking to a nursery professional, describe the characteristics you want in planting material and where you plan to place your plantings. Some of the characteristics to look for in plants: potential wildlife habitat, amount of shade provided or how much water and fertilizer the plant needs. Additional sources of information on nurseries and what types of plants to look for can be found by contacting *The American Horticultural Society's Gardening Information Center at **1-800-777-7931** or The Maryland Native Plant Society, Inc. at P.O. Box 4877, Silver Spring, Maryland 20914.*

The following is a list of some plants native to Maryland:

Common Name	**Scientific Name**	**Features**
SHADE TREES		
Red Oak	Quercus rubra	fast-growing, tolerates variety of conditions, 60-90' in height
Redbud	Cercis canadensis	small tree, 20-40' in height with reddish flowers in showy clusters from March to May
River Birch	Betula nigra	streambank tree, 60-80' in height
American Sweetgum	Liquidambar styraciflua	green leaves with yellow-green flowers, 75-100' in height
Common Persimmon	Diospyros virginiana	dark thick bark with edible fruit, 30-50' in height, fruit provides food for songbirds and wildlife
Black Cherry	Prunus serotina	large tree, 60-80' in height, reddish bark, fruit provides food for songbirds and wildlife

Sassafras	Sassafras albidum	fragrant tree, 10-50' in height, fruit and twigs provide food for songbirds and wildlife
Flowering Dogwood	Cornus florida	small to medium-sized tree, 10-40' in height, fruit and twigs provide food for songbirds and wildlife
Green Ash	Fraxinus pennsylvanica	fast-growing, prefers rich well-drained soil, can reach 60' in height
Pin Oak	Quercus palustris	popular shade tree, prefers wet soil, 50-90' in height
Red Maple	Acer rubrum	fast-growing, early red blossom prefers wet but tolerates dry soil, 60-90' in height
Shadblow Serviceberry	Amelanchier canadensis	silvery grey to blue colored leaves with white flowers, 35-50' in height
Sweetbay Magnolia	Magnolia virginiana	green leaves with fragrant white flowers, 12-20' in height
Sycamore	Platanus occidentalis	green leaves, greenish-brown bark that peels in strips to reveal pale inner bark, 60-100' in height
Tulip Poplar	Liriodendron tulipifera	popular hardwood, bright orange and green flowers in the Spring, prefers moist soil, 80-120' in height
Tupelo	Nyssa sylvatica	popular ornamental, berrylike fruit eaten by variety of wildlife, prefers moist soil, 50-100' in height
White Oak	Quercus alba	one of the largest oaks in North America, green leaves that turn red or brown in the fall, 80-100' in height

EVERGREEN TREES		
Red Cedar	Juniperus virginiana	popular ornamental, fragrant conifer, berrylike cones are eaten by variety of wildlife, 40-60' in height
American Holly	Ilex opaca	popular ornamental, foliage used in Christmas decoration, prefers moist soil, 40-70' in height
Canada Hemlock	Tsuga canadensis	cone bearing evergreen, 75-100' in height
DECIDUOUS SHRUBS		
Highbush Blueberry	Vaccinium corymbosum	white flowers with red twigs from June to August, 5-15' in height, fruit and twigs provide food for songbirds and wildlife
Red Chokeberry	Aronia arbutifolia	flowers May - June, pale leaves, red berry, 9' in height
Red Osier Dogwood	Cornus stolonifera	blue berries with white flowers and red or green twigs, flowers from May to June and fruit from June-August, 3-10' in height
Shining Sumac	Rhus copallina	flowers early August, deep green leaves, crimson fruit, 30' in height
American Elder	Sambucus canadensis	green colored leaves with star shaped white flowers, deep purple to black berries, 6-12' in height
Arrowwood Viburnum	Viburnum dentatum	green colored leaves with white flowers, blue to black berries, 6-12' in height

Blackhaw Viburnum	Viburnum prunifolium	green colored leaves with white flowers, dark blue to black berries, 6-10' in height
Common Witchhazel	Hamamelis virginiana	green colored leaves with bright yellow flowers, 20-35' in height
Pink Pinxterbloom Azalea	Rhododendron nudiflorum	flowers April - May, pink flowers, needs moist soil, 9' in height
Silky Dogwood	Cornus amomum	red-green to medium green colored leaves with yellowish white flowers, blue berries, 6-12' in height
HERBACEOUS PLANTS		
Black Eyed Susan	Rudbeckia hirta	yellow, daisy like flower, 1-3' in height
Coreopsis	Coreopsis lanceolata	yellow flower, 1-2' in height
Coreopsis	Coreopsis verticillata	yellow flower, 1-2' in height
Dense Blazing Star	Liatris spicata	dense purple flowers, 1-5' in height
Goldenrod	Solidago spp.	yellow flower, 1-7' in height
Pearly Everlasting	Anaphalis margaritacea	white flower, 1-3' in height
Yarrow	Achillea millefolium	white flower, 1-3' in height
GROUND COVERS		
Barren Strawberry	Waldsteinia fragarioides	edging or border planting, tolerates some shade
Bird-Foot Violet	Viola pedata	purple flowers, tolerates some shade
Violet Wood Sorrel	Oxalis violacea	excellent for rock garden, tolerates some shade
Grass-leaved Blazing Star	Liatrus graminifolia	rose-purple flower, late summer bloom

FLOWERING PERENNIALS

Blazing Star	Liatris scariosa	erect, bold color, 1-5' in height
Butterfly Weed	Asclepias tuberosa	attracts butterflies, brilliant orange flower, 2-3' in height
Culver's Root	Veronica virginica	3-6' in height
Geum	Geum virginianum	colorful, 2-3' in height
Moss Pink	Phlox subulata	for banks and rock gardens, small pink flowers, 3-6" in height
Virginia Spiderwort	Tradescantia virginiana	colorful, tolerates wet and dry conditions, 1-2' height
Wild Sweet William	Phlox divaricata	color all summer, 1-2' in height
Cardinal Flower	Lobelia cardinalis	bright scarlet flower, prefers moist soil, partial shade, 2.5 - 5' in height
Dwarf Crested Iris	Iris cristata	purple and yellow flower, 3- 8" in height
Fire Pink	Silene virginica	deep crimson petals, prefers well-drained sandy soil, 6-10" in height
Wild Columbine	Aquilegia canadensis	yellow sepals and red spur, prefers loamy soil and partial shade, 1.5 - 2' in height

LAND USE PRACTICES

SOIL PREPARATION

Before landscaping land next to a new home or office, the soil must be prepared for planting.

- Remove all debris.

- Till the property to eliminate areas of compressed soil that may have been caused by construction equipment.

- Administer a soil test to determine the proper amounts of lime and fertilizer specifically for your land.

FERTILIZERS

Fertilizers are used on lawns to promote plant growth, provide pest resistance, and build stronger root systems. If applied improperly, fertilizer will contaminate surface and groundwater sources, including the Chesapeake Bay. The nitrogen and phosphorous in fertilizers contribute to the algae blooms in streams, the Potomac River and the Bay. Algae growth depletes the oxygen supply in water, killing fish, oysters and other aquatic species. When fertilizing your lawn, it is very important to apply the following:

- naturally fertilize land by using manure or composted material;

- do not operate the spreader over paved areas including sidewalks, driveways, and roads; if fertilizer gets onto these surfaces, sweep it back onto the lawn;

- fill, wash, and empty fertilizer spreaders over a planted area so any spillage is absorbed into the ground;

- do not over-fertilize or over-water your lawn because this causes runoff into drainage sewers and ultimately water pollution;

- never fertilize frozen ground, because it cannot absorb the fertilizer; and,

- if the lawn appears healthy, do not fertilize.

Types

Commonly available fertilizers are prepackaged and labeled with percentage by weight of the amounts of three (3) components: nitrogen (N), phosphate (P_2O_5), and potash (K_2O). Nitrogen promotes general growth and is usually needed every year. Phosphate supplies phosphorus for root growth, and potash supplies potassium for drought and disease resistance. Phosphate and potash may not be needed annually and should not be applied if they are not required. To determine the right type of fertilizer for your lawn, purchase a soil test and follow the provided directions or call the *Cooperative Extension Service* at **(301) 405-2907** for additional information.

Amount

The amount of fertilizer needed varies among grass types, time of year, and soil contents. Phosphate and potash should be added only when soil tests determine that they are absolutely needed. Nitrogen can be added to your lawn several times a year according to the table below.

Nitrogen Application Table (Pounds Per 1,000 Square Feet)

	Sept.	Oct.	Nov./ Dec.	Mid May/ Early June	July	Aug.	Max. Yearly
Tall fescue	1	1	0	0 - 1*	0	0	3
Fine fescue	0	1	0	0 - 1*	0	0	2
Kentucky bluegrass	1	1	0 - 1*	0 - 1*	0	0	4
Perennial ryegrass 1	1	0 - 1*	0	0	0	0	4
Bermudagrass	0	0	0	1	1	0 - 1*	2
Zoysiagrass	0	0	0	1	0 - 1*	0	2

* Only apply fertilizer if the grass looks weak or has poor color.

WATER USAGE

Proper watering of your lawn and landscape will promote healthier grass and plants. Instead of watering your lawn frequently, water it thoroughly and only when plants show signs of drought. By allowing the water to completely soak into the soil, deep roots will grow, making them more drought tolerant.

Frequency

A common mistake made by homeowners is basing the watering frequency on outside temperatures. When to water should be determined by the appearance and health of the lawn. It is best to water the lawn at the coolest time of the day to minimize evaporation. Water the lawn when the sun is out because watering in the dark promotes fungal diseases. Morning is the best time because the sun is out and the temperature is cooler.

Some signs that your lawn and plants may need watering are:

- the grass, when stepped on, lays flat does not pop up after a few minutes;

- shrubs, bushes, and plants begin to wilt; or,
- if in doubt, dig a small hole, four inches to six inches (4" - 6") deep to feel if the soil is dry.

Amount

A strong root system must be completely soaked when it is watered so all roots absorb the water. The soil should be moist four inches to six inches (4" - 6") deep. A simple test for soil moisture is to insert a metal stick (butter knifes and screw drivers work well) into the ground. If the stick easily penetrates four inches to six inches (4" - 6") of the soil, than the ground is likely sufficiently soaked.

Once you reach the proper soil moisture, record the amount of time spent watering. This will allow the homeowner to establish a time frame for watering the lawn for in the future.

Avoid Runoff

If a lawn is over-watered, water may run off the land into drainage systems flushing it into rivers, streams, and lakes. The runoff may contain fertilizers and pesticides which will ultimately contaminate water sources such as the Potomac River and the Chesapeake Bay. To avoid runoff, do not use sprinklers over sidewalks, driveways, or other hard surfaces. Do not over-saturate the soil by watering it too quickly or too long. If the soil is not completely soaked (4"- 6") yet water is running off the lawn, then the water pressure is too high. Turn the water tap down to allow the soil to completely absorb all the water.

Some types of watering equipment help avoid water runoff while promoting the soil absorption. Drip irrigation systems are particularly effective in watering vegetable and flower gardens by consistently delivering water directly where it is needed. For lawns, soaking hoses can be used to place water right at the soil line.

Always repair leaking hoses and connections. Malfunctioning equipment increases the amount of time it takes to water your lawn and is a leading cause of wasted water.

MOWING

It is very important to mow your lawn to the proper height. Mowing too low will increase susceptibility to drought, induce weed germination, weaken the root systems, and increase insect damage. Grass that is too high may suffer from disease problems due to the increased amount of moisture retained. Maintaining the proper height of grass can reduce weed problems by more than

fifty percent (50%). The following is a recommended mowing height chart for various types of grasses:

Proper Mowing Heights (inches)

	Spring & Summer	Fall
Fescue	2.5 - 3.5	2.5
Perennial ryegrass	2.5 - 3.0	2.0 - 2.5
Kentucky bluegrass	2.5 - 3.0	2.0 - 2.5
Bermudagrass	0.5 - 1.0	0.5 - 1.5
Zoysiagrass	0.5 - 1.0	0.5 - 1.5

GRASSCYCLING

Grasscycling is the practice of leaving grass clippings on your lawn instead of bagging them for curbside pickup. Aside from saving time and landfill space, grasscycling provides many additional benefits. Grass clippings left on the lawn provide organic nutrients for the soil and make a stronger, healthier lawn and reduce the amount of fertilizer necessary for the lawn. To grasscycle with your current mower, simply remove the collection bag and let the clippings spray onto your lawn as you mow. Nearly twenty percent (20%) of all solid waste placed in landfills is yard waste. The yard waste occupying so much room in our landfills has the potential to produce benefits right in the yards that it came from. Grasscycling helps reduce solid waste collection and landfill space. For more information on grasscycling call Montgomery County at **(301) 590-0046** to ask for a free grasscycling kit. Also, the Professional Lawn Care Association of America can provide additional guidance at **(770) 977-5222.**

MULCH

Mulches made of wood chips, shredded bark, grass clippings, and/or composted leaves, aid in water absorption and weed prevention while adding an aesthetic touch to your lawn. The mulch should be placed two to four inches (2" - 4") deep in shrub beds and flower and vegetable gardens. The mulch itself retains water, keeping the soil moist longer. Free mulch is available from the Montgomery County's Neighborhood Mulch Preserve. Call **(301) 590-0046** for details.

COMPOSTING

Composting is a safe, easy, natural method of converting leaves, grass clippings, tree branches, plant material, and even kitchen vegetable scraps into valuable nutrients for your soil. The organic matter formed from composting yard waste is known as humus.

Decomposition of organic matter occurs in nature everyday. Composting is an easy way to speed up this process in your yard and use yard waste to increase the quality of your soil and fertilize your garden. Composting occurs as microorganisms and bacteria digest organic matter, producing nutrients for soil and plant growth.

Building a Pile

A compost pile can be built any time of the year. Fall is a good time to begin due to the abundance of fallen leaves. Leaves, grass clippings, branches, vegetable scraps, and any other plant material can be used in a compost pile. Do not use meat or fatty food scraps because those items will take a long time to decompose and will attract pests. The smaller the material, the faster it will decompose, so nothing in the pile should be larger than one inch (1"). Generally, brown colored yard waste, such as branches and leaves, have high carbon content, and green colored yard wastes, such as grass or plant clippings, are high in nitrogen content. For rapid decomposition, a mixture of half nitrogen and half carbon is best.

A composting bin is not needed but if you choose to create one, a cylindrical bin can be made easily with woven wire fencing. A composting bin can also be purchased at most gardening stores and nurseries. Once you have selected a place to put you pile, lay a three inch to four inch (3" - 4") bottom layer of coarse yard waste such as small branches and chopped brush. Then begin layering leaves followed by grass clippings or other plant material until the pile is about six inches to eight inches (6" - 8") above the bottom layer. Now add one inch (1") of soil so microorganisms are present. Repeat this process until the pile is three feet to five feet (3' - 5') tall and wide.

If the pile is made properly, it will reach temperatures of 90°F to 140° F in about four (4) days. The center of the pile will be hotter than the surface area. It is important that the pile remains at a high temperature throughout the process because heat helps the material decompose quickly. The pile should be no smaller than three feet (3') wide and tall because the smaller the core, the lower the temperature. On the other hand, a pile larger than five feet (5') wide and tall will not receive enough oxygen in the center to quickly decompose.

The pile should always stay sponge damp. Add water as necessary and turn the pile frequently to increase aeration. If the pile is turned once a week, the composting should be complete after about two (2) months. If the pile is not stirred often, it can take six (6) to twelve (12) months.

The following chart lists some typical composting problems and solutions:

Problem	Causes	Solutions
Bad odor	- Pile is too wet - Pile is too small - Pile is not getting enough air	- Add course material to make the pile larger - Turn the pile
Ammonia odor	- Too much nitrogen	- Add brown carbon material (leaves, sawdust, woodchips, etc.)
Low temperature	- Pile is not wet enough - Pile is too small - Cold weather - Pile is not getting enough air - Lack of nitrogen	- Increase the pile size - Turn the pile - Add nitrogen (grass)
High temperature	- Pile too large - Pile is not getting enough air	- Reduce the size - Turn the pile

For more information on backyard composting call the Cooperative Extension Service at **(301) 405-2907.**

PEST MANAGEMENT

Integrated Pest Management

Integrated Pest Management, or IPM, is a modern approach to pest control that reduces or eliminates the need for synthetic chemical substances. Measures such as removing the pests by hand, using natural biodegradable products, using natural predators, mixing different plants, or changing growing conditions can all help reduce pest damage.

The problem and solutions vary between type of pests and type of plantings. Each problem should be analyzed and solved in the safest, most environmentally friendly way possible.

Pests	Controls
Grubs	- Moles, Birds and milky spore disease
Other Insects	- Birds, toads and beneficial insects such as spiders, praying mantises and other natural predators - Plant grass species other than Bluegrass
Other Diseases	- Plant the recommended plant species for the site, don't over-fertilize or over-water

Shrubs and Trees

The following methods can be used to rid shrubs and trees of unwanted insects:

- encourage ladybugs, big-eyed bugs, spiders, praying mantises, birds, lizards, toads, frogs, and even bats;
- remove pests by hand;
- remove dead or dying branches of shrubs and trees;
- wash leaves using a teaspoon of detergent soap and 1 gallon of water; and,
- wash leaves with a small amount of alcohol.

Vegetable Gardens

The following methods can be employed as preventative practices for pest control in vegetable gardens:

- crop rotation and planting in narrow rows;
- plant early in the season to avoid late harvest pests; and,
- natural controls such as predators, parasites, pathogens, biological products, botanical insecticides, and insecticidal soaps.

Miscellaneous Pests

The following chart lists specific methods to eliminate some pests:

Pest	Control
Mosquitoes	- Remove sources of standing water such as in old tires, buckets, etc. - Mow grass regularly
Chiggers	- Mow grass regularly
Ticks and Fleas	- Treat pets and their sleeping quarters
Wasps and Hornets	- Carefully remove the nests at night
General	- Encourage birds such as purple martins for insect control during the day and encourage bats for control of insects at night

Many pests can be eliminated by simply encouraging the existence of their predators in the garden. It is important to know the difference between predators and pests. Use the following chart as a guide:

Predators	Prey
Lacewings (Chrysopidae family)	Aphids, scale, whiteflies, mites, mealybugs, other lacewings, and eggs of mites, thrips and other insects
Spider (Arachnida order)	Eat anything that gets stuck in their web
Bee flies (Bombylldae family)	Locust eggs, parasites of larvae of flies, wasps, bees, beetles and ants
Praying mantises (Manteoden family)	Anything they catch
Dragon flies (Odnata order)	Small flying insects, midges, and mosquitoes
Soldier Beetles (Cantharidae family)	Cutworms, gypsymoth, larvae, cankerworms, slugs and snails

The previous pest management information was provided by the "Bayscapes" pamphlets from the Alliance for the Chesapeake Bay and the U.S. Fish & Wildlife Service, Chesapeake Bay Fields Office.

For more information on IPM contact the Chesapeake Regional Information Service at **1-800-662-CRIS.**

Pesticides

If Integrated Pest Management techniques cannot fix your pest problem, then use chemical pesticides as a last resort. Always follow the instructions on the container for the use, storage, and disposal of pesticides. Some additional guidelines for handling toxic substances are listed below.

Before Use:

- Determine specifically which plants need the chemicals and then buy a pesticide labeled for that plant type and avoid applying pesticides to plants that do not need it.
- Determine what type of pest has infested your plants and buy a specific pesticide for that type of pest.
- Buy only the amount you need. Pesticides are dangerous to store and lose their effectiveness over time. Buy no more than a two (2) year supply.
- Cover any pet food or water dishes in the area.

During Use:

- Wear protective clothing and avoid skin exposure.
- Avoid wearing leather because it absorbs and holds pesticides.
- Keep children and pets out of area during application
- If pesticide is applied to fruits or vegetables, follow the directions on the label for the amount of time necessary to elapse before safe harvest.
- Clean any spills with sawdust, kitty litter, or other absorbent materials and dispose of in a plastic bag and place in the trash.

TOXIC SUBSTANCES

Automobile

Many automobile products are toxic chemicals and, if handled improperly, have the potential to harm people, pets and our water supplies. Before dumping oil down that storm drain, consider this: one (1) quart of oil can contaminate up to two million gallons of drinking water and the oil from your car's engine (about 4 to 6 quarts) can produce an eight (8) acre oil slick; antifreeze has ethylene glycol, which is poisonous to people, pets and fish. Many cats and dogs have been poisoned and died after drinking puddles of sweet tasting antifreeze.[1]

Proper handling of these products will help minimize any potential contamination. Because many people change their own oil or flush their radiators, the following recommendations are provided:

- don't pour the old oil or antifreeze down the drain;
- place the used antifreeze and oil in a sturdy plastic container; recycle used oil and antifreeze at your local service station. (additional recycling locations can be found by calling **1-800-473-2925**); and,
- securely store all automotive products out of reach of children and pets.

Paint

Latex paint can be disposed of at regular curbside refuse pick-up if it is dried and solidified. Paint, in its liquid form, can be dropped off at a Montgomery County hazardous waste collection site. Consider donating any unused latex paint to charity groups.

The following numbers provide additional information on waste collection sites:

Montgomery County Recycling Hotline: **(301) 590-0046**
Montgomery County Recorded Recycling Information: **(301) 217-2870**

Other Hazardous Wastes

Household hazardous wastes can be found in most homes. These are products that contain dangerous chemicals that can pollute groundwater and endanger people and animals when used,

[1] *Baybook*, Alliance for the Chesapeake Bay, Inc., March 1993, page 23.

stored or disposed of improperly. A hazardous product is one that is flammable, corrosive, toxic, or poisonous. The following list identifies some hazardous products that you may use in your home.

-Household cleaners
-Bathroom cleaners
-Ammonia
-Degreasers
-Furniture finish and stripper
-Fungicides
-Lighter fluid
-Insecticides
-Nail polish
-Oven cleaner
-Paint thinner
-Photography chemicals
-Rust removers
-Spot removers
-Transmission fluid
-Anti-freeze
-Batteries
-Bleach
-Brake fluid
-Drain cleaners
-Furniture polish and wax
-Gasoline
-Herbicide
-Metal polish
-Nail polish remover
-Oil based paints
-Pesticides
-Carpet cleaner
-Scouring powders
-Swimming pool chemicals
-Upholstery cleaner

Remember the following rules when using hazardous materials.

- Read the directions and recommendations on the product label and **follow them carefully**.
- Never mix two (2) products together. Chemical reactions may occur producing toxic or lethal fumes or even explosions!
- Use protective garments to avoid direct contact with hazardous products. Eye protection and rubber or latex gloves are especially important.

Storage

- Store all hazardous products out of the reach of children and animals.
- Different types of chemical products should be stored separately.
- Never store hazardous materials near food products.
- Never store flammable material near sources of heat.