Environmental Protection and Environmental Nuisance Abatement

Georgia Association of Code Enforcement

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ENVIRONMENTAL HISTORY

To mankind the environment was originally the greatest concern of life. Mankind depended upon the environment to supply every need that would enable them to exist. As mankind evolved in time, much of the instinct to care for the environment was gradually lost. Through time humans proceeded without using foresight and heavily relied upon free trade, thus causing ecological change to accelerate. Humans eventually realized that they themselves were the major cause of changes in the environment. Once again humans are rapidly starting to realize that the environment is a concern of all people and that our existence depends upon the environment. We all have a responsibility to conserve and protect life on earth.

Early Environmental Laws

One of the earliest environmental laws is found in the Old Testament of the Holy Bible. Moses is credited as being the writer of Genesis during the period of 1445-1405 B.C. Genesis Chapter 1 verse 28 reads: “And God blessed them and God said unto them, be fruitful and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth”.

Environmental Change and impact in North America

Aside from climate, the most powerful factor influencing environmental change in North America has been human modification of the natural habitat. The Native Americans exhibited many environmentally conscious qualities that allowing them to have a lesser impact upon the environment.

Native Americans

Through close observation Native Americans observed the seasonal rhythms of different species. They learned how to take game at different times of the year without disturbing critical cycles of reproduction and how to maximize their kills in winter when animals faced the greatest danger of starvation. Such skills enabled
the Native Americans to hunt without unduly disturbing the balance of nature, especially after they had lessened their reliance on wild game through farming. As Native Americans began to transform the landscape through farming, they did establish a system of semi permanent villages that could be occupied sequentially about every dozen years so that abandoned fields could regain their fertility. Woodland tribes made positive profound alterations to the forest with controlled burning of forest undergrowth which allowed for better quality forage, grass, berry bushes, and nut trees to which the deer, bears, and buffalo and turkey flocked.

**Colonists**

The pace of ecological change accelerated after significant numbers of Europeans occupied the Atlantic seaboard during the seventeenth century. The Native Americans’ forest clearing and extensive grasslands greatly eased the settler’s task of preparing fields. European draught animals and plows permitted far greater modification of the environment than had been characteristic of Native American agriculture in which they cultivated the soil lightly with hoes and sticks. As the colonized population grew it disturbed the ecological balance by over hunting and severely decimating major game stocks such as elk, moose, mountain lions, bears, and turkeys. In 1694 Massachusetts enacted its first closed deer season and again prohibited deer hunting from 1718 to 1721. By 1740 they began to appoint game wardens (“deer reeves”) to preserve numbers. By the mid eighteenth century beaver and other fur bearing animals had virtually disappeared from the region east of the Appalachian Mountains. As more Indians sold land, abandoned them in search of better hunting territories, colonist assumed control of vast tracts of woodland thus inevitably deteriorating the forest. Settlers lacked practical knowledge of how to maintain woodlands as many settlers were from England in which just one-eighth of its forest still remained and the Dutch had completely deforested their homeland by 1600. Industry led to significant deforestation although the greatest demand on woodlands arose from the population’s rising need for fuel. The average family burned perhaps 30 cords of wood, an amount equal to an acre of trees.
Theodore Roosevelt

Historians often site conservation of natural resources as Theodore Roosevelt’s most enduring contribution to the country. As the nation’s twenty-sixth President, Roosevelt was faced with critical conservation issues and made decisive moves to promote conservation, thus becoming the national leader most clearly associated with preservation of public land. Roosevelt was a naturalist as a child, an early interest that lasted all his life. Roosevelt was instrumental in creating a role model for conservationists. As governor of New York (1898-1900), Roosevelt defined and tried to act on conservation issues. In 1900, Roosevelt delivered a message to the New York State Assembly about the need for forest management. The Governor also tried to outlaw the use of bird feathers for adornment. Roosevelt’s greatest contributions to conservation were, setting aside and managing what are now called national forests, the initiation of the national wildlife refuge, his impact on transforming arid lands of the American West into irrigated farmland, and his efforts to promote natural resources nation-wide. Roosevelt is best known for appropriating public forestlands once controlled by private interest and “reserving” them for “our people unborn”.

Soil Conservation Act (1935)

In 1935, the Soil Conservation Act was passed during the presidential term of President Franklin Delano Roosevelt. While the potential danger of soil erosion was recognized as early as the American Revolution, it was not until the 1930’s that soil conservation became a familiar term. The soil conservation movement was a result of the droughts during the 1930’s, the effects of water erosion and terrific dust storms created by wind erosions in the Great Plains. The term “Dust Bowl” was coined by a reporter for the Washington (D.C.) Evening Star to describe the effects of severe wind erosion in the Great Plains during the 1930’s, caused by severe drought and lack of conservation practices. While damages were particularly severe in Texas, Oklahoma, Colorado, and Kansas, erosion occurred in all of the Great Plains states, from Texas to North Dakota and Montana, even into the Canadian Prairie Provinces. Dust from the Great Plains was carried high in the air and
transported as far east as the Atlantic Seaboard. In places, 3 to 4 inches of topsoil was blown away, forming dunes 15 to 20 feet high where the dust finally came to rest. The droughts and resultant wind erosion of the 1930’s created widespread economic and social problems. Large numbers of people migrated out of the Dust Bowl area during the 1930’s.

**Clean Air Act (1963, 1970, and 1990)**

In 1963, the first Clean Air Act was passed during the presidential term of President John F. Kennedy. This act provided permanent federal aid for research, support for the development of state pollution control agencies, and the federal involvement in cross-boundary air pollution cases. Efforts to control air pollution in the United States date back to 1881, when Chicago and Cincinnati passed laws to control smoke and soot from factories in the cities. Other municipalities followed suit and the momentum continued to build. In 1952 Oregon became the first state to adopt a significant program to control air pollution. The 1970 Clean Air Act and major amendments to the act in 1977 and 1990 serve as the backbone of efforts to control air pollution in the United States.

**Environmental Protection Agency (1973)**

In 1973, the Environmental Protection Agency was created during the presidential term of President Richard Nixon. Unlike most agencies of the federal government, the Environmental Protection Agency was not created as an act of Congress but by an executive order of President Richard Nixon. It was created to consolidate the environmental activities of the federal government into one agency. All of the offices and programs of the Environmental Protection Agency are directed by five main objectives, referred to as “core functions”. These core functions help define the agency’s mission and bring a common thread to all agency activities. The core functions are:

1. **Pollution Prevention**- taking measures that prevent pollution from being created rather than just cleaning up what’s already released. Also known as source reduction.
2. **Risk Assessment and Risk Reduction** - identifying problems that pose the greatest risk to human health and the environment and taking measures to reduce those risks.

3. **Science, Research and Technology** - conducting research that will help in developing environmental policies and promoting innovative technologies to solve environmental problems.

4. **Regulatory Development** - developing requirements such as operating procedures for facilities and standards for emissions of pollutants.

5. **Enforcement** - assuring compliance with established regulations.

6. **Environmental Education** - developing educational materials, serving as an information clearinghouse, and providing grant assistance to local educational institutes.

It is through legislation enacted by Congress that the Environmental Protection Agency obtains authority to develop regulations and enforce them. Since most state governments in the United States have their own environmental protection departments, the Environmental Protection Agency delegates the implementation and enforcement of some federal programs to the states. The State of Georgia’s environmental protection department is known as the Environmental Protection Division (EPD) that is a division of the Georgia Department of Natural Resources (DNR)


In 1976, the Resource Conservation and Recovery Act was enacted during the presidential term of President Gerald Ford. The Resource Conservation and Recovery Act was enacted to address a problem of enormous magnitude of how to safely dispose of the huge volumes of municipal and industrial solid waste generated nationwide. Studies revealed that there was a time when the amount of waste produced in the United States was small and its impact on the environment relatively minor. (A river could purify itself every 10 miles.) However, with the industrial revolution in the latter part of the nineteenth century, the country began to grow with unprecedented speed. New products were developed and consumers were offered an ever-expanding
array of material goods. Waste management was slow in coming. Much of the waste produced made its way into the environment where it began to pose a serious threat to ecological systems and public health. The goals set by the Resource Conservation and Recovery Act were:

1. To protect human health and the environment
2. To reduce waste and conserve energy and natural resources
3. To reduce or eliminate the generation of hazardous waste as expeditiously as possible.

To achieve these goals, four distinct yet interrelated programs exist under the Resource Conservation and Recovery Act.

Subtitle D encourages states to develop comprehensive plans to manage primarily non-hazardous waste, e.g. household waste.

Subtitle C establishes a system for controlling hazardous waste from the time it is generated until its ultimate disposal- or from “cradle to grave.”

Subtitle I regulates certain underground storage tanks. It establishes standards for new tanks and requires leak detection prevention and corrective action at underground tank sites.

Subtitle J, establishes a demonstration program to track medical waste from generation to disposal.

**Endangered Species Act of 1973 (ESA)**

In 1973, the Endangered Species Act was passed during the presidential term of President Richard M. Nixon. The Endangered Species Act is a law designed to save species from extinction. What began as an informal effort to protect several hundred North American vertebrate species in the 1960’s has expanded into a program that could involve hundreds of thousands of plant and animal species throughout the world. The law has become increasingly controversial, as commercial interests have viewed it as a major impediment to economic development. Government action to protect endangered species began in 1964, with the formation of the Committee on Rare and Endangered Wildlife Species within the Fish and Wildlife Service in the U.S.
Department of the Interior. Two years later in 1966 the Endangered Species Preservation Act was passed to protect species in danger of extinction. This law directed federal agencies to protect endangered species when it was “practical and consistent with the primary purposes” of these agencies. The taking of listed endangered species was prohibited only within the national refuge wildlife system; that is, species could be killed almost anywhere in the United States. Finally the law authorized the acquisition of critical habitat for these endangered species. In 1969 the Endangered Species Conservation Act was passed, which included several significant amendments to the 1966 Act. Species could now be listed if they were threatened with worldwide extinction. This substantially broadened the scope of species to be covered, but it also limited the listing of specific populations that might be endangered and some parts of the United States but not in danger elsewhere. Grizzly bears, bald eagles, and timber wolves were part of this list, although they flourished in Canada and Alaska. The 1969 law stated that mollusks and crustaceans could now be included on the list, further broadening the scope of the law. Finally, trade in illegally taken endangered species was prohibited. This substantially increased the protection offered such species, compared to the 1966 law. The Endangered Species Act of 1973 built upon and strengthened all previous laws. The law was a call by President Nixon in his State of the Union message for further protection of endangered species and the concern in Congress that the previous acts were not working well enough. The goal of the Endangered Species Act was to protect all endangered species through the use of “all methods and procedures necessary to bring endangered or threatened species to the point at which the measure provided by the Endangered Species Act are no longer necessary.” The law also provided for the establishment of cooperative agreements between the federal government and the states on endangered species protection.
Endangered and Threatened Species

Endangered species is a plant or animal “in danger of extinction throughout all or a significant portion of a range.” A “threatened” species is one that is one that is likely to become endangered in the foreseeable future. Extinct means that the plant or animal no longer exists. The single most important common threat to wildlife worldwide is the rapid loss of habitat. As our planet continually changes it causes habitats to be altered or modified usually causing only a slight impact. When change occur at a fast pace there is little or no time for the individual species to react and adjust. Additional factors causing “threatened” and “endangered” species have included the introduction of non-native species and pollution. Over exploitation of animals and plants is endangerment or extinction of a species due to the rate in which a species is being used. Georgia alone has 65 threatened and endangered plant and animal species currently listed. Today many government agencies, corporations, environmental and wildlife organizations, and concerned citizens practice wildlife preservation. Wildlife preservation is the maintaining of living species to protect them from extinction. Protecting and restoring habitat of the wild life aids preservation. Wildlife refuges are areas in which their habitats are protected. In some refuges no hunting is allowed. In others, hunting is restricted. The purpose of wildlife preservation is to preserve the wilderness for present and future generations to enjoy. Planting trees and bushes in windbreaks, which provide food and cover for the birds and other wildlife, can preserve wildlife habitats. Government regulations are important to wildlife preservation. Managing wildlife habitats and populations helps maintain balance. Regulated hunting and fishing are methods of wildlife management. Laws restrict the number of animals that may be killed and limit hunting and fishing to times when populations are at their peaks. Some government departments raise fish and game birds for stocking streams and fields, which keeps the population large enough to allow for fishing and hunting.
WATER QUALITY

All plants and animals need clean water. People use water for drinking, bathing, laundering, watering lawns and gardens, and for recreation. Water is also needed for disposal of human waste, producing electrical power and for transportation. Industry and agriculture use large amounts of water. Livestock consume water, and crops need adequate rainfall or irrigation. Water can be obtained from lakes, streams, reservoirs, wells, and the oceans. Pollution of these resources is a growing concern. Harmful chemicals and oil dumped into water can be a threat to humans and other organisms. Pesticides and fertilizers can poison cattle and other livestock that drink water as well as affecting the inhabitants of the water source.

**Thermal Pollution**

Thermal pollution is the raising of water temperature in a waterway. Higher temperatures promote the growth of bacteria and green algae. Too much growth of these organisms uses up the supply of oxygen in the water. Fish and aquatic life may die as a result.

**Sewage**

Sewage is human waste material. As sewage decays, bacteria remove oxygen from the water. This loss of oxygen can be fatal to fish and other aquatic organisms. Sewage, like other nutrient based materials, often is the cause of bright green algae in streams and ponds. Using treatment plants can solve sewage pollution problems. In these plants sewage is converted to less harmful substances before it is released into the water.

**pH measurements**

pH measures the acidity or alkalinity of a solution based on its hydrogen ion concentration. The pH test is one of the most common analyses in water testing. pH measurements are on a scale from 0 to 14, with 7.0 considered neutral. Solutions with pH below 7.0 are considered acidic and those between 7.0 and 14.0 are considered alkaline/basic. The pH scale is logarithmic, so every one-unit change in pH represents ten fold. In
other words, pH 6 is ten times more acidic than pH 7; pH 5 is one hundred times more acidic than pH 7. A range of pH 6.5 to pH 8.2 is optimal for most aquatic organisms. Rapidly growing algae or submerged aquatic vegetation remove carbon dioxide (CO₂) from the water during photosynthesis and this can result in significant increases in pH levels. Low or high pH can affect egg hatching, kill sources of food for fish and insects, or make it uninhabitable for any aquatic life.

**Nephelometric Turbidity Unit (NTU)**

A numerical unit of measure based upon photometric analytical techniques for measuring the light scattered by fine particles of a substance in suspension. Georgia law 12-7-6 requires that nephelometric measurements be used when doing turbidity measurements. For storm water runoff from disturbed areas, best management practices must be properly designed, installed, and maintained. Each day of continuance that the receiving waters’ turbidity increases by more than ten (10) nephelometric units for waters classified as trout streams or more than twenty five (25) nephelometric units for waters supporting warm water fisheries shall be constituted a violation.

**National Pollutant Discharge Elimination System (NPDES)**

NPDES was introduced in 1972 and has made significant improvements to our nation’s water supply. The Clean Water Act authorizes NPDES and controls water pollution by regulating point source and non-point source pollution into the waters of the United States. NPDES permits must be obtained for both point and non-point discharges of water. Municipal wastewater plants, industrial wastewater plants and material separation ponds would be examples of point source discharge. Residential and commercial construction sites would be examples of non-point source discharge.
**Total maximum daily load (TMDL)**

This is a calculation of the maximum amount of pollutant that a water body can receive and still safely meet water quality standards. Pathogens, nutrients, sediments, mercury and metals, temperature, pesticides, and pH are all standards that are used to measure TMDL under NPDES requirements.

**Wetlands**

A wetland is an area of land whose soil is saturated with moisture either permanently or seasonally. Wetlands are disappearing rapidly in the United States. Some legislation has been enacted as a “no-net loss” plan. The idea is that for every acre of natural wetland lost, a new acre of wetland should be created, creating artificial bodies of water to act in some ways as wetlands. However, man-made wetlands are usually not successful and lack the functionality of natural wetlands. A U.S. field and wildlife scientist, Ralph Tiner, said, “Trying to create a wetland is like taking a vein in your arm and moving it where there is no vein. It may look like a vein, but it does not function like one.” Adding to the confusion, wetlands are often difficult to define. Sometimes they’re land, sometimes they’re water, and sometimes they’re both. Wetlands’ destruction, like many environmental problems, is one of sustainability. We have to learn to balance today’s needs with future environmental needs. The Okefenokee Swamp is the largest wetland in Georgia.

**Estuaries**

An estuary is a semi-enclosed body of water with a free connection to the ocean. Saltwater from the ocean is measurably diluted with freshwater from a river or stream. Freshwater also may come from local storm runoff and groundwater. Georgia’s estuaries have formed integral relationships with tidal salt marshes. The marshes develop in estuaries where the rate of sedimentation equals or exceeds the rate of rising sea level. Tidal creeks link the marshes to estuaries. Together, the estuaries and the marshes are some of the most biologically productive ecosystems on Earth. Sediment and nutrients are delivered to the estuaries by the freshwater rivers and by tides and currents from the sea. The mixing of nutrients, sediments, and water from
land and sea creates a murky brown, biologically rich mixture. Because of the many species of fish and wildlife that rely on the sheltered waters of the estuaries as protected areas to spawn, estuaries are often called “nurseries of the sea.” Thousands of species of birds, mammals, fish, and other wildlife depend on estuarine habitats as places to live, feed, and reproduce. And many marine organisms, including most commercially important species of fish, depend on estuaries at some point during their development. Most major estuaries extend inland as far as twenty miles or more, to the point where the river water becomes fresh. Since the 1980’s the quality and productivity of Georgia’s estuaries and inner shelf have declined remarkably due to both natural environmental deterioration and adverse human activities. Commercial fishery stocks have dramatically decreased with an increase in the salinity levels and harmful algal populations in coastal rivers and estuaries. The rapid growths of Georgia’s coastal population, human removal of freshwater from rivers, and pollution from the land have had a pronounced influence on the estuarine and coastal ecosystems of Georgia.

**Water Conservation**

Between 1950 and 2000, the U.S. population nearly doubled. However, in that same period, public demand for water more than tripled. Americans now use an average of one hundred gallons of water each day, enough to fill 1,600 drinking glasses. A recent government survey showed that at least thirty-six states are anticipating local, regional, or statewide water shortages by 2013. About seventy-five percent of the water we use in our homes is used in the bathroom.
<table>
<thead>
<tr>
<th>Observable Condition</th>
<th>Likely Causes</th>
<th>For Further Investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sediment: The stream bottom is almost completely covered with deposition and there may be moving sand bars. Sedimentation may be associated with brown stream color during high flow conditions.</td>
<td>Mud, silt, or sand on the stream bottom may result from surface runoff from construction sites, eroded soils, channel alterations, or bank undercutting and slumping.</td>
<td>Examine upstream areas for development activities with inadequate sediment controls, stream bank modification, or severely undercut or slumping stream banks. Unpaved roads can also be a significant source of sediment.</td>
</tr>
<tr>
<td>Aquatic Weeds: May cover the water surface or stream bottom, especially in pond or slow moving areas with sunlight.</td>
<td>Excessive aquatic weed growth may be an indicator of elevated nutrient concentrations.</td>
<td>Examine upstream areas for sources of nutrients such as sewage, heavily fertilized areas (i.e. golf courses or croplands), car washes, livestock areas, or discharges from food processing industries.</td>
</tr>
<tr>
<td>Algae: Floating or attached tiny plants that may have a green, yellow, or brown color, may resemble seaweed when affixed to the stream bottom, may form a surface scum, and may have an oil-like appearance.</td>
<td>Algal growth indicates an upstream nutrient source.</td>
<td>Examine upstream areas for sources of nutrients (see above).</td>
</tr>
<tr>
<td>Foam or Bubbles:</td>
<td>Foam may derive from a natural source if it occurs in only a few scattered patches, is less than 3 inches high, and is cream colored. If the foam is extensive, white in color, and greater than 3 inches, it may be due to detergents or surfactants entering the stream. White foam can also be caused by fertilizer leachate.</td>
<td>Examine the stain or discharge and its nature. Sources and discharges from pipes along the stream banks are likely to result from nearby activities. However, dry weather flow from storm sewers may come from remote locations. Follow the storm sewer and listen for flow in curb inlets or storm sewer manholes until the discharge source is identified.</td>
</tr>
<tr>
<td>Bank Stains or Dry Weather Discharges from Pipes:</td>
<td>Bank stains and mats of dried materials, especially below pipes, are likely to indicate sporadic wastewater discharges from pipes. Dry weather flow from storm sewer pipes may wash water from paved areas or direct connections to commercial or industrial drains. (Storm sewer pipes are normally concrete and large.)</td>
<td>Report the problem immediately to the local public works department and the EPD District office for that area.</td>
</tr>
<tr>
<td>Leaking or Surcharging Sanitary Sewer or Manholes: White to gray musky smelling discharges from a joint or a crack in a pipe (normally cast iron) or a sewer manhole. Grey matted material draped or deposited near a manhole may indicate past overflows.</td>
<td>Sanitary sewers and manholes can clog or fail over time causing a leak or surcharge.</td>
<td>Look for nearby wastewater discharges or sources of nutrients and organic wastes.</td>
</tr>
<tr>
<td>Cinny White or Gray (or even Brown-stained) Cotton-like Tufts: Hair-like growths that are attached to the stream bottom or objects in the stream.</td>
<td>The cotton-like material is probably Sphaerotheca, a sheath or iron bacterium that thrives on organic matter. They may form colonies that resemble cinny cotton. This could sometimes be related to sulfur bacteria in South Georgia streams.</td>
<td>Examine upstream areas for source of organic wastes.</td>
</tr>
<tr>
<td>Red Nits: These may be attached to the streambed and waving with the current. They may disappear into the sediment when disturbed.</td>
<td>These are colonies of aquatic segmented worms sometimes called &quot;sludge worms.&quot; They resemble small, very red earthworms and are indicative of heavy organic waste.</td>
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### Observable Symptoms

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Orange-Red Surface Film or Flexible Deposits</td>
<td>Film may occur in slow moving water or pond areas. This is most likely a naturally occurring phenomenon resulting from iron bacterial growth. It is generally associated with acidic soils, or can be enhanced by iron in surface runoff or leachate. Heavy oils may settle out and be deposited in sediment. When the sediment is stirred up, the oil is released.</td>
<td>The surface film breaks up when stirred. (Petroleum products float on water surface but do not &quot;break up&quot; when disturbed.) Examine upstream areas for sources of organic wastes or sewage.</td>
</tr>
<tr>
<td>Sludge Deposits/Bubbles Rising to Surface</td>
<td>Sludge deposits are the result of solid organic matter that has settled to the stream bottom in calm areas. Bacteria may produce &quot;rotten egg&quot; odors (sulfides) and gas bubbles as the organic matter and nutrients in the sludge deposits are metabolized. Bacteria may contain hazardous or polluting substances.</td>
<td>Examine upstream areas for sources of heavy oil such as industries or fuel storage areas. Bacteria are likely to be evident. Look for a label to identify the contents of the barrels or containers. If there is no label or the barrel is labeled hazardous, the local Emergency Management Agency or the EPD Emergency Response Program (1-800-411-4113) should be contacted. DO NOT TOUCH, SMELL, OR REMAIN NEAR POTENTIALLY HAZARDOUS MATERIALS.</td>
</tr>
<tr>
<td>Oils Released From Sediment</td>
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<tr>
<td>Barrels or Containers</td>
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<tr>
<td>Light Green Water Color</td>
<td>Mud, silt, or sand in surface water may come from various land disturbing activities in the watershed, channel alterations, or suspension of previous sediment deposits in the stream.</td>
<td>Examine upstream areas for sources of nutrients from sewage or fertilizers, (i.e., livestock areas, golf courses &amp; cranberries, food processing industries, leaking sewer lines)</td>
</tr>
<tr>
<td>Green Water Color</td>
<td>&quot;Algae blooms&quot; may occur when nutrient, light, and temperature conditions are favorable for the growth of certain types of algae. Green and blue-green algae can cause waters to be dark green or blue-green in color.</td>
<td>Examine upstream areas for the origin of the petroleum product. Look for dark bank stains, dipping pipes, stains in tributaries, or likely sources of oil and gas such as service stations or storage tanks.</td>
</tr>
<tr>
<td>Multi-Color Film of Grease on the Water Surface</td>
<td>The surface film does not break apart when disturbed. The film is typically a hydrocarbon product such as oil or gasoline resulting from spills, discharges, or wash-off from vehicle maintenance areas.</td>
<td>Examine upstream areas for sources of greases or chemicals from various industries such as textile, leather processing, or printing.</td>
</tr>
<tr>
<td>Dark Red, Purple, Blue, or Black Water Color</td>
<td>Water may be polluted with oils from chemicals from various industries such as textile, leather processing, or printing.</td>
<td>Examine upstream areas for sources of greases or chemicals from various industries such as textile, leather processing, or printing.</td>
</tr>
<tr>
<td>&quot;Rotten-egg&quot; Odors</td>
<td>This may indicate sewage pollution or sludge deposits, but this odor may also be present naturally in swamps, marshlands, or slow moving streams where leaf litter and other organic matter has settled.</td>
<td>Examine upstream areas for a source of sewage, heavy organic wastes, or animal wastes.</td>
</tr>
<tr>
<td>Observable Symptoms</td>
<td>Likely Causes</td>
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<tr>
<td>Sewage Odor</td>
<td>Noticeable sewage odors result from the discharge of inadequately treated wastewater.</td>
<td>Examine upstream areas for raw wastewater discharges, gray discolored flows, septic tank leachate, or leaking sewers or manholes.</td>
</tr>
<tr>
<td>Acid Odor</td>
<td>May indicate the presence of industrial or pesticide pollution.</td>
<td>Examine upstream areas for industrial discharges.</td>
</tr>
<tr>
<td>Chlorine Odor</td>
<td>This may indicate that a wastewater treatment facility or chemical industry has excessive effluent chorine or that a chlorine spill has occurred.</td>
<td>Report the odor to the local public works department. IF THE SMELL IS STRONG, LEAVE THE AREA UNTIL THE SOURCE HAS BEEN IDENTIFIED AND CORRECTED.</td>
</tr>
<tr>
<td>Ammonia Odor</td>
<td>An ammonia odor may result from a leak in a cooling system.</td>
<td>Follow odor upstream and look for an industrial discharge. IF THE SMELL IS STRONG, LEAVE THE AREA.</td>
</tr>
<tr>
<td>Dead or Dying Fish</td>
<td>This may indicate the presence of toxic substances or low dissolved oxygen conditions.</td>
<td>Report conditions to the nearest Dept. of Natural Resources - Wildlife Resources Division Office.</td>
</tr>
<tr>
<td>Absence of Aquatic Organisms</td>
<td>This may indicate the presence of toxic substances.</td>
<td>Conduct physical and chemical measurements of the stream and examine upstream areas for toxic discharges.</td>
</tr>
</tbody>
</table>

*The EPD-Water Protection Branch originally prepared this table.*


- 0: Battery Acid
- 1: Lemon Juice
- 2: Vinegar
- 3: Tomatoes Cola
- 4: Carrots
- 5: Normal Rain
- 6: Milk
- 7: Distilled Water
- 8: Baking Soda
- 9: Milk of Magnesia
- 10: Ammonia
- 11: Bleach
- 12: Lye

The diagram shows the pH scale from acidic to basic, with neutral water at the center. For fish survival, the pH should be within a safe range.
Soil Erosion and Sedimentation

Erosion and sedimentation are two problems created when soil particles are detached from the ground surface, transported, and deposited. These processes are interrelated, but they cause different types of environmental damage.

**Erosion**

Erosion is the process by which the land surface is worn away by the action of wind, water, ice or gravity.

**Natural or Geologic Erosion**

Natural or geologic erosion is the action of the wind, water, ice and gravity in wearing away rock to form soil and shape the ground surface. Except for some stream and shore erosion, it is a relatively slow process, continually taking place. This type of erosion is reported to produce about 30 percent of all sediment in the United States.

**Accelerated Erosion**

By accelerated, we mean a speeding up of erosion. Whenever we destroy the natural vegetation or alter the contour of the ground without providing some sort of compensation, we increase the rate of erosion. This type of erosion is reported to account for about 70 percent of all sediment generated in this country. Farming and construction are the principal causes of accelerated erosion. These activities radically upset the delicate balance that nature has developed between rainfall and runoff. Other contributing factors to erosion in urbanized areas are the destruction of natural vegetation; the removal of organic matter from the ground surface; reshaping of the ground contour; exposure of subsoils during construction; and the placement of impermeable features like paving and rooftops on the
soil. All of these factors increase runoff and in turn increase the rate of erosion from the land surface, stream channel erosion, and the amount of sediment that enters the waterways.

**Overland Erosion**

Overland erosion occurs on denuded slopes above the natural waterways as a result of raindrop splash and runoff. It is the largest source of sediment during construction operations. It includes such types as sheet, rill, and gully erosion.

**Stream Channel Erosion**

Stream channel erosion occurs in intermittent or permanent waterways. It is brought on by increased runoff from urbanized areas, the removal of natural vegetation along the waterway, and channel alterations as a result of construction activities. It includes both stream bank and streambed erosion. Clear water may increase this kind of erosion.

**Shore Erosion**

Shore erosion occurs along bodies of water as a result of the impact of waves against a shoreline and is one shore erosion process. Erosion by littoral currents, the movement of water along the shoreline, is another process. Accelerated shore erosion is brought on by man’s activities. They include the following: the destruction of natural vegetation along the shoreline and construction encroachment onto the shoreline. The generation of waves as a result of boating activity causes shoreline erosion.

**Wind Erosion**

Wind erosion occurs in most urbanized areas because of no obstruction to wind, absence of soil moisture, and vegetation. Wind erosion does not constitute as serious an environmental threat as water erosion. In an urbanized area, the most damaging aspect of wind erosion is dust. It causes a traffic hazard, adds to cleaning costs, increases the need for equipment maintenance, and blights the appearance of the structures.
Sheet Erosion

Sheet erosion occurs because of the removal of a fairly uniform layer of soil from the land surface as a result of raindrop splash and runoff. Raindrop splash is the impact of raindrops on the soil surface. The splash detaches soil particles and forms a muddy slick on the soil surface, which is often referred to as “puddling.” Runoff carries away soil particles detached by raindrop splash, and the flowing water detaches additional soil.

Rill Erosion

Rill erosion is caused when runoff is heavy and water concentrates in rivulets. It is evidenced by the development of small grooves spaced fairly uniformly along the slope. Individual rills range in depth and width up to about one foot and reflect a tremendous loss of soil. If rilling is not corrected immediately, it may develop into gully erosion. It can be obliterated by normal tillage practices; that is, plowing or disk ing and harrowing.

Gully Erosion

Gully erosion, like rills, is also grooves washed into the soil. The greater depth of erosion makes the distinction between rills and gullies. A gully cannot be covered over by normal tillage practices. All gullies do not represent the culmination of unchecked rill erosion. Improperly designed, constructed, or protected diversion structures, in which runoff is concentrated, may cause gullying. The improper disposal of concentrated runoff from a development may also cause serious gully erosion.

Physical Factors Affecting Erosion

Climate is the amount, intensity, and frequency of rainfall, as well as the temperature. They all have a major influence on erosion. Intensity is the rate at which the rain falls. It is measured in inches of water falling in an hour of time. Infiltration rate is the rate that water is absorbed into the soil. It is also measured in inches per hour. Frequency of rainfall is the number of separate rainfall events occurring during a period of time. During periods of frequent rainfalls a greater percentage of the rainfall will become runoff. This is the result of soil
moisture. As the moisture content of the soil increases, its ability to absorb water decreases. Temperature is another part of climate influencing erosion. Frozen soil is not resistant to erosion. Rapid thawing brought on by warm rains can lead to serious erosion. Freezing and thawing action during winter weather loosens the soil surface and increases the susceptibility to erosion. Temperature influences the type of precipitation that occurs. Falling snow does not cause erosion. Heavy snowmelts in the spring can cause considerable runoff damage. The amount of organic matter in the soil surface layer is related to temperature. The warmer the climate the lower the organic matter content. Organic matter protects the soil by forming more stable soil aggregates and by runoff. Vegetation is one of the more important factors influencing soil erosion. A good cover of vegetation shields the soil from the impact of raindrops, binds the soil together to protect against runoff, provides organic matter, and slows runoff velocities. On a graded slope, the condition of the vegetation will determine whether erosion will be stopped or only slightly halted. A dense, robust cover of vegetation is one of the best protections against soil erosion. Soil properties have a major bearing on erodibility. Soil texture refers to the size of the soil particles. Soils having high concentrations of silt and fine sand, as well as those containing highly expansive clay materials, are most susceptible to erosion from raindrop splash and runoff. Coarse sand resists erosion. Soil structure influences a soil’s erodibility, which refers to the arrangement of the soil particles. It influences both the ability of the soil to absorb water and its physical resistance to erosion. Cohesion has a significant effect on the structure of a soil. It refers to the binding force between soil particles. When moist, the individual soil particles in a cohesive soil cling together to form a doughy consistency. Clay soils fall in this category. A sandy soil with a clay binder is usually relatively resistant to erosion, as are most other soils containing significant amounts of clay. Exceptions are soils containing highly expansive clays like montmorillonite. These soils can be highly erodible. When rapid expansion occurs on a natural clay soil surface, a soft and soupy film develops that is highly susceptible to erosion. Topsoil is the presence of organic material in a soil. This has an effect on soil structure. In clay soils, it
loosens the structure and allows more water to infiltrate. In granular-structured loamy soils, it tends to bind the soil into a mass that is more resistant to erosion. In all cases, it absorbs water and thus stores more water for plant use. Length and steepness of slope is another major factor affecting soil erosion. When runoff occurs on long slopes, the soil lying on the lower slope, over which all of the runoff must pass, is subjected to greater erosion. To avoid this problem, long slopes are often broken up so that they function as a series of short slopes rather than one long slope. This is accomplished by using various runoff control structures including diversion, diversion dikes, and benches. These structures function to intercept runoff and thereby prevent it from flowing over the lower slope. Steepness of slope may be expressed in percentages. A 10% slope would indicate a 10-foot vertical change for every 100 feet of horizontal distance. Slope steepness, surface roughness, and the amount and intensity of rainfall are all factors affecting the speed at which runoff flows down a slope. The steeper the slope, the faster the water will flow, and the faster it flows, the greater will be its ability to remove soil particles from the slope.

Sedimentation

Sedimentation is the accumulation of deposits of particles derived from accelerated erosion of the soil. Sediment pollution causes damage to natural waters by reducing the quality of water itself and reducing the quality of the wildlife habitat in which the water flows through. It affects man by increasing flooding, damaging water supplies, destroying recreational facilities, and increasing maintenance costs. Some sediment may benefit organisms and nourish beaches and other shorelines. Minor changes in stream flow often determine whether transport of sediment or deposition of sediment occurs. These parts are so closely interrelated that the same set of physical factors determines whether sediment is transported or deposited.
Suspended sediment is the smaller particles that are actually carried and supported by the water itself. Bed load sediment is the larger soil particles that slide, roll, or bounce along the channel bottom.

Physical factors will determine sedimentation. The interactions of several factors will determine how sediment is transported and deposited. Characteristics of flow relate mainly to the velocity and turbulence of the moving water. The greater the velocity and turbulence of flow; the greater will be the ability to carry sediment transported in suspension and as bed load. The lesser the velocity and turbulence of flow, the greater will be the chances of sediment deposited. The nature of the particles relates to the size, shape and density of the particles in the water. Smaller, lighter particles are more easily transported. Larger, heavier particles are harder to transport and thus are more easily deposited. The nature of the fluid relates to the density of the fluid the particles are located in. Due to its density, water has a certain ability to “hold” particles and keep them from being deposited.

**Best Management Practices (BMP’s)**

A collection of structural practices and vegetative measures which, when properly designed, installed and maintained, will provide effective erosion and sedimentation control for all rainfall events up to and including a twenty-five (25) year rainfall event.

**Buffer Zone**

A buffer zone is an area of undisturbed vegetation bordering state waters. Georgia state law requires a minimum 25-foot buffer for warm waters and a minimum 50-foot buffer for trout waters. Buffer zone measurements are measured horizontally from the point where vegetation has been wrested by normal stream flow or wave action. Buffer zones serve the following purposes: filter sediment, chemicals, nutrients and germs; reduce runoff velocities; stabilize stream banks; improve aesthetics, fish and wildlife habitat; reduce construction noise; and protect against flooding.
Dust Control

There is a requirement that the movement of dust be controlled during and after land disturbing activities. It prevents the movement of dust from exposed soil surfaces. It prevents the movement of airborne substances that may be harmful to health.

Sediment Barrier

A temporary structure made of silt fence supported by steel or wood posts, sandbags, straw bales, or other filtering material. A sediment barrier serves to slow the velocity of runoff and causes sediment to deposit at the structure. It filters sediment from runoff.

SOLID WASTE

Solid waste issue is an area of concern for Environmental Officers in Georgia and the United States.

Solid waste is garbage or refuse material including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, agricultural operations and from community activities.

Asbestos Containing Waste

Any waste containing more than 1 percent of asbestos form varieties. Asbestos is particularly dangerous when it is friable. Friable means that the asbestos easily crumbles which could possibly lead to inhalation of dangerous airborne material.

Biomedical Waste

Solid waste which contains pathological waste, biological waste, cultures, and stocks of infectious agents and associated biologicals, contaminated animal carcasses (body parts, their bedding, and other waste from such animals), chemotherapy waste, discarded medical equipment and parts.

Commercial Solid Waste

All types of solid waste generated by stores, offices, restaurants, warehouses, and other non-manufacturing activities, excluding residential and industrial waste.
**Construction Demolition Waste**

Waste building materials and rubble from construction, remodeling, repair and demolition operations on pavements, houses, commercial buildings and other structures. Such waste include, but are not limited to asbestos containing waste, wood, brick, metal, concrete, wall board, paper, cardboard, inert waste landfill material and other nonputrescible waste which have a low potential for groundwater contamination.

**Garbage**

Food waste including waste accumulations of animal or vegetable matter used or intended for use as food, or that attends the preparation, use, cooking, dealing in or storing of meat, fish, fowl, fruit or vegetables.

**Hazardous Waste**

Solid waste which has been defined as hazardous waste in regulations promulgated by the board of Natural Resources, Chapter 391-3-11.

**Household Waste**

Any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, campgrounds, picnic areas, and day use recreation areas).

**Industrial Waste**

Solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under the Hazardous Waste Management Act and regulations promulgated by the Board of Natural Resources, Chapter 391-3-11. Such waste include, but is not limited to, waste resulting from the following manufacturing processes: electric power generation; fertilizer / agricultural chemicals; food and related products / by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products, non ferrous metal manufacturing / foundries; organic chemicals; plastic and resin manufacturing; pulp and paper industry;
rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment byproducts.

**Inert Landfills**

An Inert Waste Landfill is a disposal facility accepting only waste that will not or are not likely to cause production of leachate of environmental concern. Rules are as follows:

1. Inert Landfills must obtain a permit from the Georgia Environmental Protection Division within 30 days of commencing solid waste handling activities.
2. Only earth and earth-like products, concrete, cured asphalt, rocks, bricks, yard trimmings and land clearing debris such as stumps, limbs, and leaves are acceptable for disposal.
3. No portion of waste disposal area shall be located within 100 linear feet of any property line or enclosed structure.
4. Materials placed in inert landfills shall be spread in layers and compacted to the least practical volume; and, a uniform compacted layer of clean earth shall be placed over all exposed inert waste material at least monthly.
5. The inert waste landfill site shall be graded and drained to minimize runoff onto the landfill surface, to prevent erosion and to drain water from the surface of the landfill.
6. Access to inert waste landfills shall be limited to authorized entrances, which shall be closed when the site is not in operation.
7. Suitable means shall be provided to prevent and control fires. Stockpiled soil is considered to be the most satisfactory fire fighting material.
8. A uniform compacted layer of final cover not less than two feet in depth and a vegetative cover shall be placed over the final lift not later than one month following final placement of inert waste within that lift.
9. Notice of final closure must be provided to the EPD within 30 days of receiving the final load of waste. Any site not receiving waste within 180 days shall be deemed abandoned.

10. Property that has been used for land filling must disclose such information upon all deeds for real estate.

11. Local governing authorities shall have the approval authority for construction of a building on an abandoned landfill.

12. All waste received at a landfill must be measured and reported to the EPD.

13. All applicable local, state and federal laws, ordinances and rules, including erosion and sediment control, and any applicable federal wetlands permits, must be fully complied with prior to commencement of land filling operation.

**Landfill Unit**

Area of land or an excavation in which solid waste is placed for permanent disposal and which is not a land application unit, surface impoundment, injection well, or compost pile. Permanent disposal requires the placement of daily, intermediate, and/or final earth, synthetic, or a combination of earth and synthetic cover over the solid waste. Waste that is prohibited is lead acid batteries, radioactive waste, or regulated quantities of hazardous waste. The operator must have a plan for excluding these wastes.

**Recovered Materials**

Material which have a known use, reuse, or recycling potential; can be feasibly used, reused or recycled; and have been diverted or removed from the solid waste stream for sale, use, reuse, or recycling

**Yard Trimnings**

Leaves, brush grass, clippings, shrub and tree pruning, discarded Christmas trees, nursery and greenhouse vegetative residuals, and vegetative matter resulting from landscaping, development and maintenance other than mining, agricultural, and silvicultural operations.


Recycling

The process, by which materials, which would otherwise become solid waste, are collected, separated or processed and reused to use in the form of raw materials or products. There are many items that can be recycled. Most of these materials are used daily by human beings.

**Paper**—Each of us uses approximately an one hundred foot tall Douglas fir tree in paper and wood products per year. More than fifty-six percent of paper consumed in the United States during 2007 was recovered for recycling. This was an all-time high. This figure equals nearly three hundred sixty pounds of paper for each man, woman and child in America. Recycling one ton of paper saves seventeen mature trees, seven thousand gallons of water, three cubic yards of land fill space, two barrels of oil, and 4100 kilowatt hours of electricity. Recycling paper, instead of making it from new material, generates seventy-four percent less air pollution and uses fifty percent less water. When you toss out one aluminum can, you can waste as much energy as if you’d filled the same can half full of gasoline and poured it onto the ground.

**Metal**—Recycling aluminum saves ninety five percent of the energy needed to produce new aluminum from raw materials. Energy saved from recycling one ton of aluminum is equal to the amount of electricity used by the average home in ten years. Americans throw away enough aluminum each month to rebuild our entire commercial air fleet. An average thirty-six billion aluminum cans are land filled each year with a scrap value of more than six hundred million dollars. Most likely, someday we will be mining our landfills for our resources that we’ve buried there. Recycling steel and steel cans saves seventy-four percent of the energy used to produce them. Americans use one hundred million steel and tin cans every day. Americans throw out enough iron and steel to supply all the nation’s auto makers on a continual basis. A steel mill using recycled scrap, reduces related air and water pollution and mining waste by about seventy percent.
Glass-It never wears out and can be recycled forever. Americans throw away enough glass jars and bottles every two weeks to fill the 13,050 feet towers of the former World Trade Center. States with bottle deposit laws have 35-40% less litter by volume.

Plastic-Every year we make enough plastic film to shrink wrap Texas. Americans go through twenty-five billion plastic bottles every year. If every American household recycled just one out of every ten plastic bottles they used, we’d keep two hundred million pounds of plastic out of the landfills every year.

Tires and rubber-It takes half a barrel of crude oil to produce the rubber for just one truck tire. Every two weeks Americans wear almost five hundred million pounds of rubber off their tires. That’s enough to make 3,250,000 new tires from scratch.

Stinging and Biting Insects of Georgia

Even though many insects tend to be nuisances to mankind, they have their purpose in nature and are an important part of the environment. Insects such as mites and ticks inject saliva to aid in their own feeding; this often results in itching, swelling, and redness for their human or animal host. Insects, such as scorpions that sting and spiders that bite, subdue their prey by injecting venom. Wasps, bees, and yellow jackets that live in colonies attack in large numbers and are most problematic when they feel that their nest is being threatened. In most cases, a single sting will cause pain, stiffness, and swelling that last for only a few minutes or up to one or more days. Some people can develop more dramatic reactions which may include a systemic reaction which may require emergency treatment. Anaphylactic shock occurs when an individual’s immune system “goes wrong” within minutes of receiving a sting. Symptoms include constriction in the chest and nausea, difficulty in breathing and swallowing, fall in blood pressure, blue color in the skin, and in extreme cases, unconsciousness and death. Individuals who develop more than just the normal symptoms from a single sting should see their physician concerning the possible need to carry an allergy first aid kit.
**Stingers**

Hornets, bees, wasps, yellow jackets, and scorpions are pests that inject venom from the tip of their abdomen. You can reduce the effects of venomous stings by applying wet salt to the site within five minutes.

**Social Insects**

Bees, wasps, hornets, and ants develop colonies where there may be a few dozen up to thousands of individuals with a queen, workers, and a social structure. In most cases, if they feel that the nest is in danger, they will attack in large numbers.

**Honey Bee**- This is a widely known social insect which was brought to this country from Europe many years ago. Although most colonies are man-made, they often nest in hollow trees, walls, or attics. Honeybees are instrumental in pollination of plants as well as producing honey.

**Bumblebee**- This is a big, buzzing, furry, yellow and black bee that can produce a painful sting. Nests are usually constructed in cavities of the soil. People are usually not stung unless they disturb the nest.

**Yellow jacket**- These are small, one-half inch wasps marked with yellow. Their paper nests are constructed underground, but occasionally in hollow trees, walls, and attics. They feed on a variety of pest insects but are well known for pursuing meat or soft drinks at picnic, camp, and garbage sites. They become very aggressive as a group when their nest is threatened and will vigorously pursue the intruder. They are generally considered the most dangerous of the social insects.

**Hornet**- White or yellowish markings on the face, thorax, and part of the abdomen identify the hornet. It makes a paper nest in hollow trees, tree trunks, buildings, and in aerial situations in which the nest looks like a bloated football. Hornets are not usually a problem unless their nest is near human activity.

**Fire ant**- Fire ants inject venom from the tip of their abdomen in which the sting causes a swollen red area with a blister that fills with a pus-like material that tends to heal slowly. A single mound may contain up to 200,000 workers.
**Biters**

Mosquitoes, fleas, flies, ticks, chiggers, and spiders are all considered biting pests. The puncture wound from the bite, the saliva used in feeding, or venom can cause pain, swelling and itching.

**Mosquitoes**-There are over fifty mosquitoes in Georgia, but only a few feed on man. The female mosquito must have a blood meal before her eggs will develop. Eggs are laid near or on the water, depending on the mosquitoes. The eggs hatch into larvae (wigglers). Egg to adult can occur in seven to ten days. Female mosquitoes will range from three hundred feet to twenty miles in search of a blood meal. Most can fly in a radius of at least one mile. Most mosquitoes prefer to feed in the evening. The saliva they inject helps keep the blood from coagulating as they feed and is also in irritant responsible for the itching and swelling. Mosquitoes breed in ditches, ponds, temporary pools, marshes and swamps. Mosquitoes that bite during the day often breed in artificial containers such as tires, buckets, bottles, etc. The West Nile virus has been associated with the mosquito bite.

**Deer and horse flies**-These are strong fliers and serious pests of warm-blooded animals and people. Only the female needs a blood meal. Their mouth parts are blade-like and it is painful when they cut through the skin. When the blood is flowing from the wound, they will lap it up. Feeding usually takes place during the warmer parts of the day.

**Biting Midges (no-see-ums or sand flies)**-They are very small flies about 1/25th to 1/10th inch long whose small blade-like mouth parts make a painful wound. Welts and lesions from the bite may last for days. The larvae from various species breed in damp or wet places, high in organic matter. They are small enough to pass through ordinary screens.

**Fleas**-All adult fleas feed exclusively on the blood of their host. Fleas are common in most mammals, including dogs, cats, and rodents. They are wingless and have very strong legs for jumping. Eggs hatch in about ten days into tiny wormlike larvae that feed on flea excrement, skin scales, and other debris. The larvae take from
a week to several months to complete development before they pupate and emerge as adults. Adult fleas can survive from two to four months without a blood meal. Fleas most often bite people on the legs and ankles. A small red spot usually appears at the bite site surrounded by a red halo with little swelling.

**Chiggers**- The chigger is a tiny, red colored mite which in its immature stage will feed on man, rodent, birds, snakes, and a wide variety of other animals. Chiggers are very active in crawling about looking for a host, and may crawl over the skin for some hours before beginning to feed. When the mouth parts are inserted into the skin, a fluid is injected that dissolves the cells upon which it feeds. The chigger does not, as commonly believed, burrow into the skin. Itching can begin three to six hours after exposure. A soapy bath, taken soon after their presence is noted, will often remove many of them before they begin feeding.

**Ticks**- The two most common ticks that will feed on man in Georgia are the American dog tick and the lone star tick. The adult female tick drops from the host after a blood meal to lay her eggs. These will hatch and develop in turn into three stages. The larva, which is very tiny and looks very similar to the adult and nymph, is sometimes called a seed tick. Ticks are most common along trails, feeding and resting areas of their host. Both can carry the Rocky Mountain Spotted Fever. Another tick, the black legged tick, is less commonly found on people, but carries Lyme disease.

**Spiders**- While spiders are beneficial in that they feed on various insects, there are at least two in Georgia which are dangerous to man. One is the black widow. It is shiny black with a red hour glass design under the abdomen. This spider makes an irregular web in piles of trash and lumber. She is timid and usually will not bit unless handled. The other is a brown recluse. Its dark violin-shaped marking is distinctive. It is also a timid spider and seldom seen since it lives in undisturbed areas inside buildings or outside under rocks, piles of tires, or under houses. The bite of the black widow is very painful. While the bite of the brown recluse can cause a spreading ulcer that is slow to heal and can lead to a scar. Suspected bites should be treated promptly by a physician and identification of the spider should be confirmed.
Noxious Plants in Georgia

Poison ivy, oak, and sumac are three noxious plants in Georgia. Each contains an oil called urushiol (you-ROO-shee-all). When this oil touches the skin, many people develop an allergic reaction that causes a rash. While urushiol begins to penetrate the skin in minutes, the rash usually takes time to appear. Typically twelve to seventy-two hours pass before the person experiences itching, redness, and swelling. This can be followed by small or large blisters. When the rash develops, streaks or lines often reveal where the urushiol has brushed against the skin. The rash can appear on any part of the body. While it may seem to spread, it is actually a delayed reaction. The rash does not spread and is not contagious.

Poison ivy

It grows as vines or low shrubs and has three leaflets. In the spring, poison ivy develops yellow-green flowers.

Come early fall, the leaves on some of these poisonous plants turn red or yellow.

Poison oak

This has oak like leaves and is a shrub. The plants often bear berry-like fruit. The mature plants have fruit that often turns an off-white color.

Poison sumac

This can be identified by its row of paired leaflets that contain an additional leaflet at the end. Often the leaves have spots that resemble black enamel paint. These spots are actually urushiol which when exposed to air, turn brownish-black. Poison sumac typically grows in swampy areas in parts of the southeast.

There are three ways to get a rash from poison oak, ivy or sumac:

- Direct contact- which involves touching a plant which contains urushiol
- Indirect contact-urushiol can stick to almost anything. Touching a pet’s fur, gardening tool, or sports equipment which has come into contact with urushiol can cause the rash.
- Air borne contact-burning these poisonous plants releases particles of urushiol into the air. These air
borne particles can land on the skin.

Fast facts about potent urushiol-

Only one billionth of a gram is needed to cause rash

One-fourth ounce of urushiol is all that is needed to cause a rash in every person on Earth.

Five hundred people could itch from the amount covering the head of a pin

One to five years is normal for urushiol to stay active on any surface, including dead plants.