

Stormwater Ponds

CITY OF ABILENE—STORMWATER UTILITY DIVISION

Rapid growth in the City of Abilene and consequent development, as well as construction of culverts, drains, and channels, continue to alter the natural flow of surface water on land and in our creeks. This has increased both the quantity and velocity of stormwater runoff. Furthermore, when rain-fall hits parking lots, driveways,

Improper use & inadequate maintenance of stormwater ponds is bad for the environment.

and other paved surfaces, it picks up gasoline, motor oil, diesel, heavy metals, sediment, litter, detergents, pesticides, spilled materials, and other pollutants which are then washed off to local waterways.

As a result, this creates flooding of property, soil erosion, and pollution of our creeks and waterways. New development in the City of Abilene is required to reduce the impacts on the drainage system and receiving creeks through the construction of on-site stormwater management ponds. Detention, filtration, and retention ponds provide various levels of stormwater runoff control by reducing flooding, channel erosion, and the amounts of debris and pollutants which are transported to our creeks and lakes.

The city of Abilene's Stormwater Utility Division is responsible for inspection and maintenance of commercial and residential ponds, which have been dedicated to the City as a public improvement. However, private stormwater ponds are to be maintained by the entity with legal ownership.

Improper use and inadequate maintenance of stormwater ponds can allow the discharge of pollutants to the environment. This fact sheet provides property owners and operators with ways to maintain stormwater ponds and preventing polluting of the ponds and the environment.

The Problem:

Not knowing what the structure is. Many Abilene businesses have one or more types of stormwater

ponds on their site. Some owners do not know the purpose of their ponds, especially if they existed when the property was purchased. If you do not know what it is, chances are you don't know how to maintain it properly or prevent its misuse. Some owners assume these ponds are receptacles for dumping waste. This is not their purpose! Nothing should be dumped into these ponds.

Illegal discharges of chemicals or waste materials into ponds.

Unlike spill containment ponds, stormwater ponds are designed for treatment and/or control of stormwater runoff only. Nothing should be spilled, dumped, or washed into these structures. Illegal discharges to these ponds can occur from flushing fuel spills, flushing radiators, leaking automobile or equipment fluids, trash from the lot, and washing

Did you know...

Rain and stormwater runoff carry automotive fluids from paved areas to stormwater ponds which can result in



expensive pond cleanup. Therefore, clean up fluid leaks and spills as they occur to prevent pollution?

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chemical cleaning agents to the ponds during pavement maintenance. Not only will these materials contaminate the pond, subsurface soils and groundwater could potentially be threatened if the pond does not have a liner. The pollutants can also be carried in stormwater runoff to a nearby storm drain or waterway after passing through the structure, potentially harming humans, animals, and aquatic life.

Commonly found pollutants, their sources, and their impacts are described below:

- Gasoline from fuel spills is flammable and toxic to humans, animals, and aquatic life. It contains benzene, a cancer causing chemical.
- Ethylene glycol, a common constituent of spilled antifreeze, is toxic to humans, animals, and aquatic life. Used antifreeze can also contain heavy metals such as lead. Animals, particularly pets, are attracted to its sweet taste and could be poisoned.
- Soaps and detergents from pavement cleaning can emulsify pollutants, such as oil, enabling transport through control structures to the environment. Soaps and

detergents that contain phosphates can promote the growth of algae in a waterway. Too much algae in a creek can deplete needed oxygen for aquatic life. In addition, some cleaning agents contain hazardous and/or toxic materials.

- Oil from spills or buildup from poor site maintenance persists in the environment even as it weathers and bio degrades. Motor oil is toxic to humans, animals, and aquatic life. Automotive oils may also contain hazardous constituents such as lead and additives.

Improper use of ponds.

Ponds must not be used for disposing of shop wastes (e.g. from oil changes), or storing chemical products, wastes, parts, and equipment. Improper use causes the pond to malfunction and leads to pollution of the pond and surrounding environment.

Inadequate maintenance of ponds.

Maintenance is extremely important in order for ponds to function as originally designed. Trash and debris promotes clogging and often become an aesthetic nuisance. Accumulated sediment, and growth of plants, trees, and brush causes pooling and prevents proper flow of water through the pond. Non-maintained filters can clog, creating ponding of water that results in stagnant water and an environment for mosquito breeding. High vegetation poses a problem in these structures, especially if it prevents inspect-

ion of their operation. These problems reduce the structure's efficiency, prevent adequate removal of pollutants from stormwater runoff, or cause the pond to fail completely. It is a violation of City Code not to maintain stormwater ponds.

Improper disposal of waste removed from ponds.

Accumulated sediments and contaminated soils and filter media in ponds require periodic removal and replacement. The removed material is considered a waste by Federal and State law and must be disposed of properly. Dumping or disposal of the material from a pond, to the ground or a dumpster, is illegal and results in stiff penalties.

The Solution:

Know what the structure on your property is.

If you have a pond on your property, find out what kind it is and how to maintain it. Contact staff with the Engineering Division or Stormwater Utility Division with the City of Abilene. See the "For More Information" section of this document for a phone number. This will ensure proper function and prevent expensive maintenance. Employees should be educated about these ponds to prevent their misuse.



The most common types of stormwater ponds are describe below:

- *Detention Ponds* are open impoundments (ponds, vaults, or tanks) designed to slow stormwater runoff flowing from developed areas. After a short detention period (usually in terms of hours), stormwater is slowly discharged from the pond. Detention ponds provide limited treatment of stormwater pollutants.
- *Filtration ponds* are open impoundments designed to receive stormwater runoff from a developed area and filter the runoff through layers of materials such as sand and gravel prior to its discharge to the storm sewer system or a creek. Filtration ponds treat stormwater runoff by filtering out conventional pollutants such as sediment, debris, heavy metals, phosphate, and oil. Filtration ponds are also somewhat effective at removing nutrients. These structures usually consist of an inlet/diversion structure, a settling basin (for partial removal of trash and particulate), a sand and gravel

Retention Pond

bed, under drain piping (to collect and discharge the treated stormwater), and an outlet pipe. A liner is sometimes included to prevent the treated runoff from percolating into underlying soil and groundwater. Because of the potential for clogging, these structures require a pre-treatment area such as a sedimentation basin. Other components of the filtration system which may be visible are rock berms to slow the flow of stormwater; weirs or

Filtration ponds help remove sediment that would otherwise wash into creeks, drainage channels and lakes.

devices to divert the flow; concrete baffles to isolate the initial storm flow; and overflow or emergency spillways.

- *Retention ponds*, used much less commonly, are open impoundments (ponds, vaults or tanks) designed to “retain” stormwater runoff flows from developed areas. After a retention period (usually several days), the stormwater is pumped out of the structure and irrigated on the site. Another example of a retention structure is the wet pond, which contains a permanent pool of water with an aquatic environment designed to remove nutrients through biological uptake and other pollutants through settling.

Detention Pond

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- Other types of structures which manage spills and stormwater runoff are hazardous material traps, designed for accidental spill containment, and oil/grit or oil/water separators. Hazardous material traps are used along major roadways. Oil/grit and oil/water separators are found at some businesses.

Prevent illegal discharges to ponds.

Routinely clean trash from your lot and remove any that has accumulated in your pond. Collect fluids leaking from vehicles with drip pans or other containers. Clean up spills immediately with absorbent material (e.g. kitty litter, rags, mop/bucket, etc.) to prevent them from flowing into your stormwater pond. While cleaning any paved surfaces adjacent to the structure, do not let cleaning wastewater enter the pond. Instead, contain and collect the wastewater (e.g. using mop/bucket or portable scrubbing machine) for proper disposal. All wastes generated at a business must be collected and disposed of according to applicable environmental regulations, typically through a

licensed disposal service. Nothing should be stored in the ponds (e.g. product or waste containers, equipment, vehicles, parts, etc.)

Maintain ponds properly.

Stormwater ponds should be inspected by the pond operator on a regular schedule to ensure that they are operating effectively and that structural damage or failure is not evident. The schedule should be incorporated into an overall written maintenance plan. Sediment should be removed when the accumulation exceeds 6 inches in detention ponds. Mow vegetation that has exceeded 18 inches in height, except for those provided in the design. Prevent standing water to avoid mosquito breeding and stagnant conditions. Corrective maintenance is required any time detention ponds do not drain within 60 hours. Filtration ponds require maintenance any time drainage or “draw-down” does not occur within 36 hours after the sedimentation portion of the structure has emptied. Remove trees or bushes from filtration ponds. Trees and bushes may remain in sedimentation basins

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as long as they do not impede flow, reduce pond volume or prevent proper maintenance. Remove paper, trash, and other debris every 6 months or as necessary to maintain proper operation.

The Bottom Line:

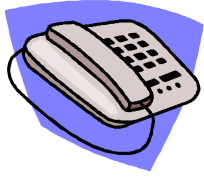
It is much more costly to dispose of the contents of an improperly used and maintained pond, than it is to dispose of the contents of a properly maintained one. This is especially true if hazardous material contamination is detected in the structure.

The cost to test and dispose of hazardous material contaminated media can be extremely high. Also, cleanup of pollutants flowing through the pond and into a storm sewer system, surface water, or groundwater is even more costly. Fines from City, State, or Federal agencies for violating applicable waste regulations can add thousands of dollars to the overall cost of a spill. In addition to administrative fines, regulatory agencies can require businesses to implement expensive water monitoring programs or require the installation of expensive pollution prevention equipment.

Did you know...

Commercial pond inspectors commonly find accumulated trash in stormwater ponds due to inadequate maintenance of the ponds.





For More Information:

City of Abilene Stormwater Utility Division

Erosion and sedimentation controls, construction inspection
Regulation of polluting discharges to storm sewer and waterways and spill reporting
(325) 676-6281

City of Abilene Environmental Recycling Center

2209 Oak Street
(325) 672-2209

Hazardous Materials Handling and Storage

City of Abilene Fire Department
(325) 676-6434

National Pollutant Discharge Elimination System (NPDES) Permits

U.S. Environmental Protection Agency (EPA)
Region 6: (214) 665-7523
Federal: (202) 564-9545

Texas Pollutant Discharge Elimination System (TPDES) Permits

Texas Commission on Environmental Quality (TCEQ)
Local: (325) 698-9674
State: (512) 239-4671

Utility types and locations

One Call Location Center
(800) 545-6005 (call 2 working days before you dig)

Waste Disposal Information

City of Abilene Solid Waste and Recycling Division
(325) 676-6053

Emergency Numbers

Abilene Fire Department (emergencies)	911
City of Abilene Hotline	(325) 676-6000
TCEQ Emergency Response Center (24-hour)	(512) 463-7727 or (800) 832-8224