WQ-3

Best Management Practice (BMP)
Water Quality Protection Guideline
Secondary Containment Design and Operation Standards

Section 1. Introduction

According to the EPA, the majority of water pollution in our streams today is directly caused by pollutants that have been dumped or spilled onto the ground and that are then washed from these surfaces into our creeks and streams by rainwater. This pollution is caused by many different sources and activities, each of which may seem insignificant when considered in isolation. However, stormwater runoff, acting as nature's bath, collects and combines each of these small pollutant sources, which drain into a local stream and causes significant levels of water pollution.

Improper storage of potential pollutants will increase the risk of water pollution that may occur because of spills.

The risk of water pollution associated with the storage of potential pollutants can be minimized through the implementation of the simple water quality best management practices (BMPs) contained within this guideline.

With respect to secondary containment this guideline is intended to provide minimum requirements for compliance with Gwinnett County's Illicit Discharge and Illegal Connection (IDIC) Ordinance (Chapter 100, Gwinnett County Code of Ordinances). It is expected that individuals and companies involved in storing potential pollutants will fully implement these guidelines and take any additional necessary and reasonable actions, as needed on a case-by-case basis, to prevent stormwater pollution.

1.1 Definitions

For the purposes of this Water Quality Protection Guideline the following terms will be defined as follows:

"Potential pollutants" as used in this guideline refers to any liquid that could reasonably be expected to cause water pollution if it were to enter into a stream or drainage system and would include, but not be limited to; oils, fuels, detergents, pesticides and other chemicals.

"Rainwater waste" in this guideline refers to rainwater that has accumulated within a secondary containment area.

"Polluted rainwater waste" as used in this guideline will refer to rainwater waste that contains a pollutant or pollutants.

"Unpolluted rainwater waste" in this guideline will refer to rainwater waste that does not contain any pollutant or pollutants.

Section 2. Purpose

The purpose of this Water Quality Protection Guideline is to:

(1) provide details of water quality BMPs that may be implemented to assist in controlling pollutants associated with the storage of potential pollutants;
(2) serve as a reference for regulators, inspectors and others who assess the water quality impacts of operations that store these types of materials; and
(3) provide guidance that, if implemented, will assist in securing compliance with Gwinnett County's Illicit Discharge and Illegal Connection (IDIC) Ordinance.

Section 3. Best Management Practices

3.1 Design Requirements

(1) Secondary Containment shall be designed and constructed to meet the following criteria:
   (a) provide adequate backup storage capacity for stored potential pollutants; and
   (b) provide a barrier between the primary storage container and the environment, thereby reducing the potential for soil, surface water and ground water contamination; and
   (c) provide additional storage capacity for any potential pollutants which may leak or spill due to the failure, overfilling or improper draining of the primary storage container.

(2) These criteria may be achieved through implementation of the following design considerations:
   (a) Structurally, secondary containment may be constructed out of any material that will adequately contain the potential pollutants stored within the contained area. Commonly concrete, concrete block, plastic and steel are used; and
   (b) The secondary container including walls, floors and joints should be constructed of materials that are capable of adequately containing those potential pollutants stored within; and
   (c) Available capacity of the containment area shall be at least 110% of the total volume of the largest primary container. Such volume must take into consideration the volume reduction caused by the containers themselves. See Figure 1; and
   (d) Any provided drainage valves must be liquid tight and able to be locked in the fully closed position.

3.2 Secondary Containment

Rainwater will collect in uncovered secondary containers. Rainwater waste that collects within secondary containment must be removed regularly so that it does not reduce the capacity of

the secondary container to contain potential pollutants that may subsequently be spilled within. However this rainwater waste must initially be treated as if it may be polluted. The best way to handle this rainwater waste stream is to prevent its generation in the first place. This can be accomplished by providing cover to the secondary containment area.

3.2.1 Secondary Containment with Cover

(1) Effective cover should consist of a stable and permanent structure that extends beyond the outer wall of the secondary containment a distance greater than or equal to 30% of the height of the cover above the top of the secondary containment wall. For example, where the cover is situated 10 feet above the secondary containment wall it should also extend a minimum of 3 feet in all directions beyond the vertical plane of the secondary containment wall. See Figure 2 attached.

(2) Even with cover provided, rainfall may occasionally still enter into a secondary container. Under these circumstances this rainwater waste must be handled in accordance with the guidelines contained within section 3.2.2 below.

(2) Use of secondary containment without a cover is not recommended. Utilizing uncovered secondary containment will increase the risk of storm water pollution and increase the potential for violations of Gwinnett County's IDIC Ordinance.

3.2.2 Secondary Containment Without Cover

(1) As stated with 3.2.1(3) above secondary containment without cover is not recommended.

(2) In circumstances where rainwater has collected in secondary containment after a rain event, all such rainwater waste must be initially treated as if it were polluted and be properly tested to ascertain whether pollutants do actually exist in the collected rainwater waste.

a. The owner of the secondary containment is deemed the generator of the rainwater waste and is therefore responsible for its storage and disposal.
b. Appropriate testing will depend on the potential pollutant(s) that are stored within the secondary containment area. Examples of appropriate testing could include:
    i. Oil/Petroleum: Visually checking for oil or petroleum sheen on the surface of the water; or
    ii. Liquid chlorine: Use a field test kit to check for the presence of chlorine; or
    iii. Acids/Alkalis: Use a pH test kit to ensure water has a pH of between 6.0 and 8.5; or
    iv. Other: Tests should be quantitative and provide objective and reproducible results.
c. Results of testing should be recorded and kept on file.
d. Any rainwater waste that tests positive for any pollutants (polluted rainwater waste) must not be discharged onto the ground or into a storm drain.

e. Collected rainwater waste that tests negative for relevant pollutants (unpolluted rainwater waste) may be discharged to the ground or to a storm drain.
f. Gwinnett County reserves the right to make a final determination on whether rainwater waste is polluted or not. The generator may be found in violation of the County's Illicit Discharge and Illegal Connection Ordinance where the county determines that polluted rainwater waste was discharged to a storm drain.
g. To be considered unpolluted rainwater waste, such rainwater waste must not contain any pollutants that may be observed through use of qualitative or quantitative laboratory or field analysis techniques

(3) Once tested the generator must make a determination on how the rainwater waste should be disposed of. Disposal options consist of onsite or offsite disposal. See section 4.0 below.

(4) Rainwater waste must not remain or be allowed to accumulate in a secondary containment structure for more time then is reasonably necessary after a rainfall event. Allowing rainfall waste to accumulate will reduce the capacity of the structure and therefore limit its effectiveness.

(5) Drainage valves to secondary containment must remain closed and locked at all times when not in use and should only be opened to drain a spill or polluted rainwater waste to a collection tanker or other appropriate container or disposal location, or to allow unpolluted rainwater waste to escape. Only employees familiar with the contents of this guideline should be issued with a key to the lock on the drainage valve.

Section 4. Rainwater Waste Disposal Options

4.1 On-Site Disposal

4.1.1 Disposal to Sanitary Sewer

(1) Disposal of polluted rainwater waste to the sanitary sewer must meet the sanitary sewer discharge standards which are administered by Gwinnett County Department of Public Utilities. Common discharge standards* are as follows:
a. Temperature: Less than 150° F;
b. PH: Between 5.5 and 10.5;
c. Oils and Grease: Less than 200 mg/L;
d. Solids or viscous substances may only be discharged in amounts that will not obstruct sewer flow;
e. Toxic Pollutants identified in Section 307(a) of the Clean Water Act (See appendix A);
f. Lead: 116 ug/L;
g. Copper: 109 ug/L;
h. Total Petroleum Hydrocarbon (TPH): 20 ug/L;
i. Biological Oxygen Demand (BOD_5): 700 (350**) mg/L;
j. Total Suspended Solids (TSS): 700 (350**) mg/L;

*Please note: This is not a complete list. If you have questions about the discharge limits of a specific pollutant please contact the Department of Public Utilities at 678-376-6700.

**Requirement in "No Business Creek"

k. All discharges to the sanitary sewer must be free of grease, oil, grit or any other material that could possibly clog the sewer. The Department of Public Utilities requires filtering the wash water through a 400 micron filter before discharging. The waste left in the filter may be bagged, dried and placed in a dumpster.
l. Any waste water that may contain oil or grease must be discharged to the sanitary sewer through an oil/water separator.

m. Discharges to the sanitary sewer must not contain pollutants that could create fire or explosion hazard.
n. Waste water must only be discharged to parts of the sanitary sewer that are privately owned. Rainwater waste must **not** be discharged directly into the publicly owned sanitary sewer system.
o. No more than 50 gallons of rainwater waste of acceptable quality may be discharged to the sanitary sewer within a 24 hour period without the prior approval of Gwinnett County Department of Public Utilities – Water Reclamation Division. Please contact this division at 678-376-7000 for additional information.

4.1.2 Disposal to Septic System

(1) Most septic systems are only permitted by the Environmental Health section of the Gwinnett County Board of Health to receive bathroom and kitchen type wastewater (domestic wastewater). Additional permits through the Georgia Environmental Protection Division would be needed to discharge non-domestic wastewater to septic systems. Non-domestic wastewater would likely include polluted rainwater waste.

(2) Prior to discharging polluted rainwater waste to a septic system, the waste generator must confirm that the discharge is covered by the appropriate EPD permit. Please contact EPD's Georgia Geologic Survey - Underground Injection Control Coordinator at (404) 656-3214 for more information.

(3) Generators must not discharge waste water to septic systems in violation of the terms of the permit.

(4) Volumes of rainwater waste otherwise eligible for discharge to a septic system, when combined with waste water from other sources, must not exceed the volume of waste water the system was designed to handle.

4.1.3 Disposal to Storm Drain

(1) Only rainwater and unpolluted rainwater waste may be discharged to a storm drain.

(2) Discharge to the storm drain of polluted rainwater waste will constitute a violation of the county's Illicit Discharge and Illegal Connection Ordinance and all appropriate penalties may be applied.

(3) Gwinnett County reserves the right to make a final determination on whether rainwater waste is polluted or not. The generator or discharger may be found in violation of the County's Illicit Discharge and Illegal Connection Ordinance where the county determines that polluted rainwater waste was discharged to a storm drain.

(4) If you have any doubt as to whether your rainwater waste water would meet all of the requirements for discharge to the storm drain it should be collected and disposed of via one of the other methods mentioned in this environmental guideline.

4.2 Off-Site Disposal

(1) If on-site disposal methods cannot be utilized because of the restrictions contained within section 4.1 above, all polluted rainwater waste must be collected and disposed of off-site.

(2) All generated polluted rainwater waste must be collected.

(3) Off-site disposal locations must be permitted to accept and handle the collected polluted rainwater waste.

(4) Polluted rainwater waste must be transported in a manner that ensures that no discharge occurs between the waste generation location and the permitted off-site disposal location.

(5) Records of off-site disposal, including at a minimum the time, date, volume and name of the disposal company, should be kept by the generator.

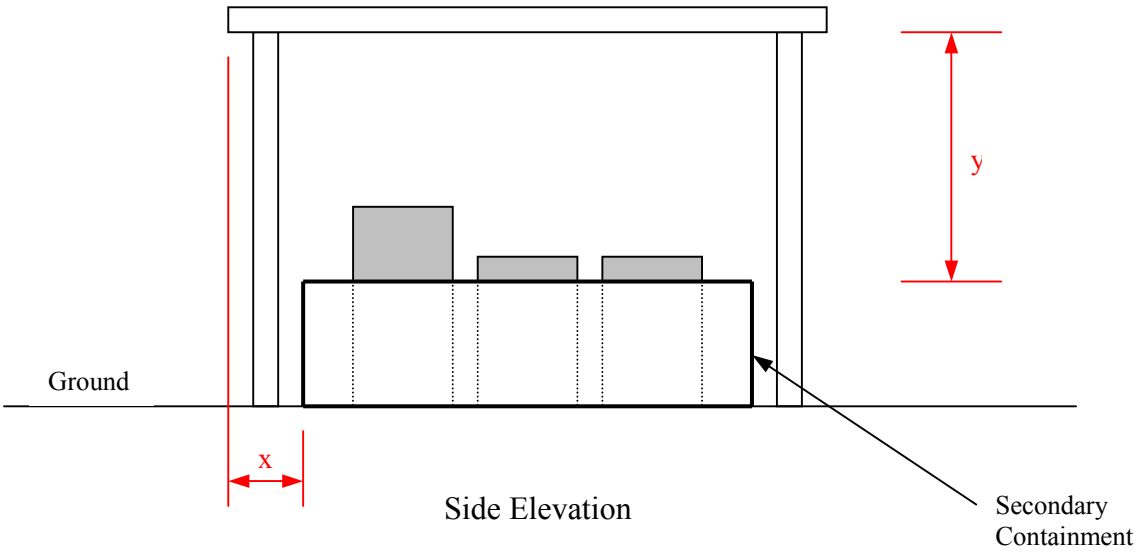
Section 5. General

(1) It is illegal to dispose of any waste or pollutants into the storm sewer system. Penalties for non-compliance include fines of up to $1,000 and/or 60 days in county jail.

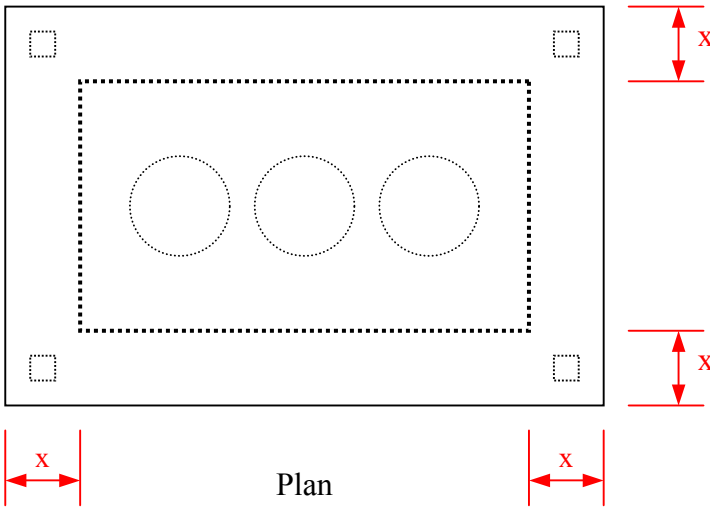
(2) To report a spill or discharge into the storm sewer system contact Gwinnett County's Storm Water Management Division's 24-hour call center at 678-376-7000.

(3) Additional information regarding water quality, storm water programs and storm water best management practice implementation can be obtained by contacting Gwinnett County's Storm Water Management Division at 678-376-6949 or visiting www.gwinnettstormwater.com.

Figure 1
Secondary Containment Cover Overhang Detail



Side Elevation



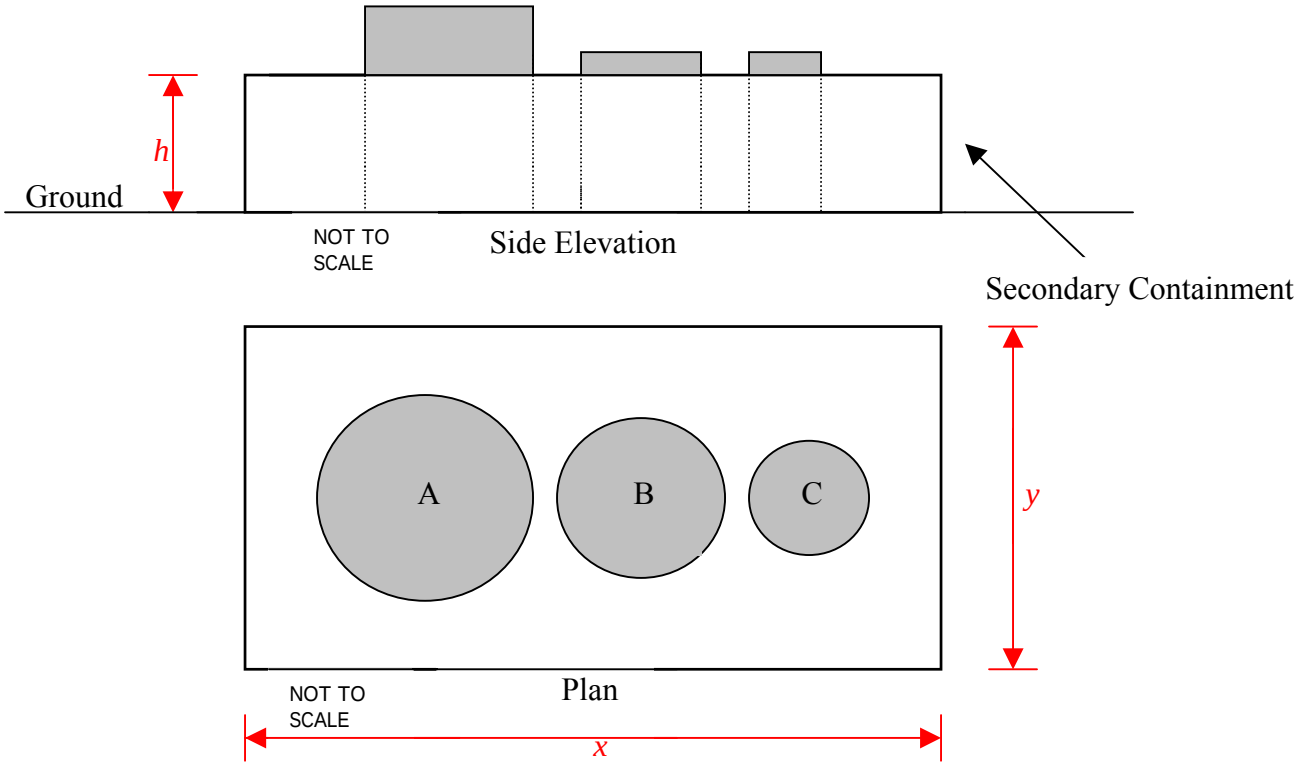
Plan

Minimum Roof Overhang: $x \geq 0.3y$

Where x = overhang; and
Where y = distance between roof and top of secondary containment

Example: If y=10ft; then 0.3x10 = 3ft.
So, the overhang needs to be at least 3 feet.

Figure 2
Example Calculations for Secondary Containment
Storage Capacity



Assumptions:

x = 25 feet	Volume Tank A = 6,000 gal.	Radius Tank A = 3 ft.
y =15 feet	Volume Tank B = 4,500 gal.	Radius Tank B = 2.5 ft.
h = *to be calculated*	Volume Tank C = 3,500 gal.	Radius Tank C = 2 ft.

Secondary Containment Storage Capacity Calculations

Step 1. Calculate *Required Containment Volume*
= 110% of single largest tank
= 6,000 x 1.1
= <u>6,600 gallons</u>

Step 2. Convert *Required Containment Volume* to cubic feet
= *Required Containment Volume* x [0.1337 cu. ft./gal.] conversion factor
= **6,600 gals. x [0.1337 cu. ft./gal.]**
= **<u>883 cu. ft.</u>**

Step 3. Calculate *Total Contained Surface Area*
= (xy)
= **25 ft. x 15 ft.**
= **<u>375 sq. ft</u>**

Step 4. Calculate *Total Cross-Sectional Area of Tanks*
= Πr^2
= 3.14 x (radius of tank)^2

Tank A
= [3.14 x (**3**)^2]
= **28.26 sq. ft.**

Tank B
= [3.14 x (**2.5**)^2]
= **19.63 sq. ft.**

Tank C
= [3.14 x (**2**)^2]
= **12.56 sq. ft.**

Total Cross-Sectional Area of Tanks
= **28.26** + **19.63 + 12.56**
= **<u>61 sq. ft.</u>**

Step 5. Calculate *Available Contained Surface Area*
= (*Total Contained Surface Area*) – (*Total Cross-Sectional Area of Tanks*)
= **(375 sq. ft.) – (61 sq. ft.)**
= **<u>314 sq. ft.</u>**

Therefore, to determine the required height for the containment wall (h):

Volume(V) = Length(x) x Width(y) x Height(h)

(h) = V/xy

So where:

V = *Required Containment Volume* (Step 2) = **883 cu. ft**.
xy = *Available Contained Surface Area (*Step 5*)* = **314 sq. ft**.

Height ***of Containment Wall (h)***
= **(883 cu. ft. / 314 sq. ft.)**
= **<u>2.81 ft. (33.75 inches)</u>**

In this example, the containment wall must be at least <u>2.81 feet</u> in height to provide the required containment capacity.