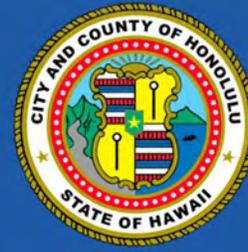


# July Construction Stormwater Quality Workshop

July 16–19, 2018

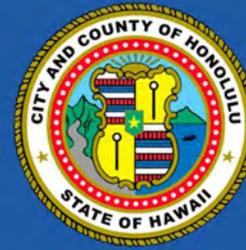




# Proper BMPs for Handling Concrete and Other Home Building Materials at Small Construction Projects (Category 1A, 1B, and 2)

Ariana Chong **JACOBS**

3rd Party Construction Inspector



# Introduction

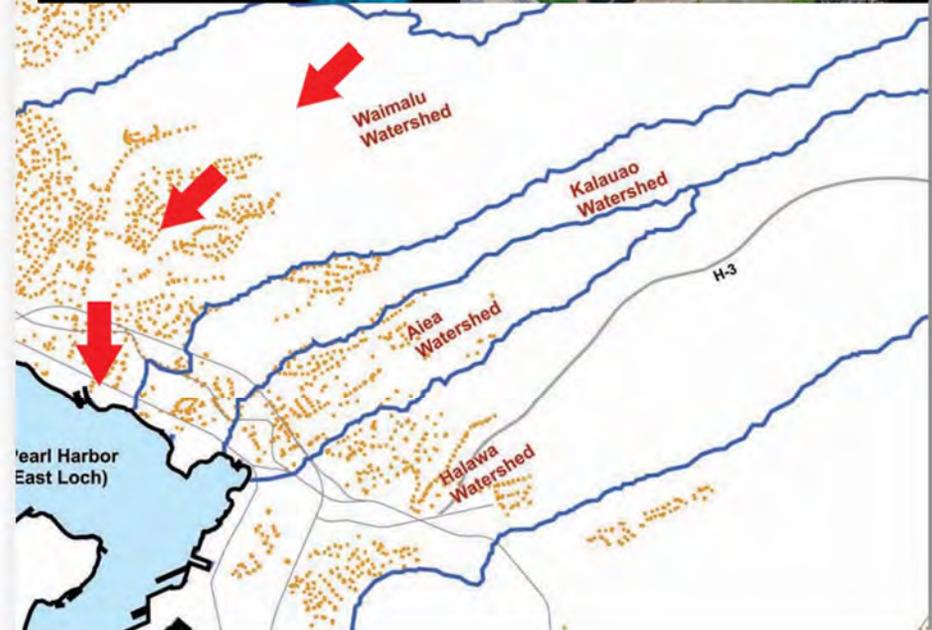
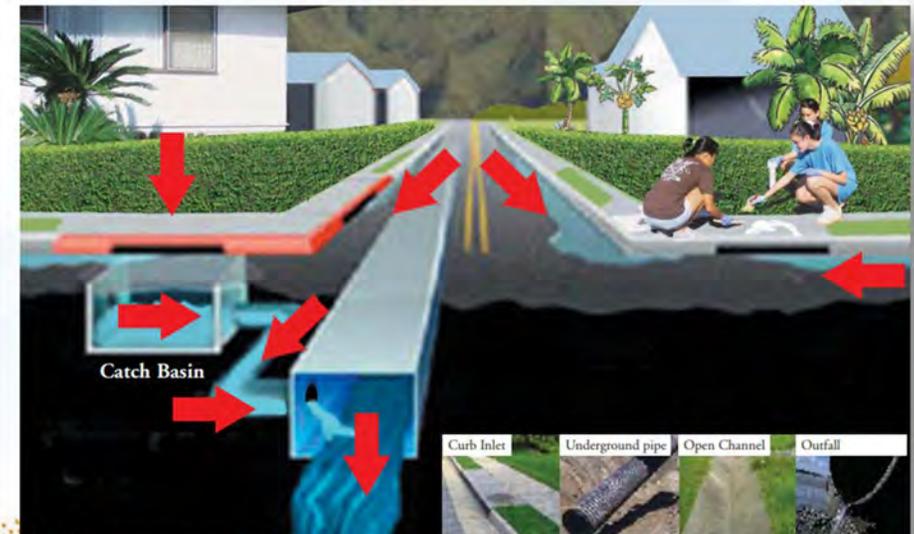
- Welcome
- Introduction

## Learning Objectives

- ❑ Understand why it is important to properly handle concrete washout water and other building materials
- ❑ Understand how to apply Best Management Practices (BMPs) at small construction sites
- ❖ Review Exercise

# The City's Storm Drain System

- Storm water runoff containing pollutants or illegal discharges can flow into the City's storm drainage system, which routes storm water directly to streams and eventually to the ocean.
- Water in the storm drain system receives no treatment or filtering process and is completely separate from the City's sewer system.



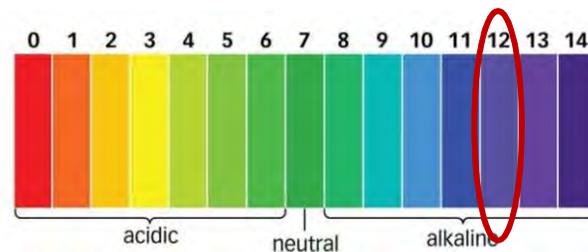
# Discharges of pollutants into the storm drains end up in our streams and oceans



# Concrete Washout Water - Overview



- ❑ Concrete washout is the receptacle or containment.
- ❑ Concrete washout water is a slurry containing toxic metals.
- ❑ It's corrosive due to high limestone content.
  - pH near 12. In comparison, Drano liquid drain cleaner has a pH of 13.5.



- ❑ Thin-set or drybond mortar, plaster, stucco, and grout.



# Concrete Washout Water - Environmental & Human Health Impacts

- ❑ Corrosive washwater can harm fish gills and eyes and interfere with reproduction.
  - The safe pH for aquatic life habitats ranges between 6.5 – 9 for freshwater and 6.5 – 8.5 for saltwater.
- ❑ If dumped on the ground,
  - run off from the site to adjoining roads and enter storm drains
  - discharge to surface waters without any treatment
  - migrate down into groundwater, and possibly impact drinking water supplies





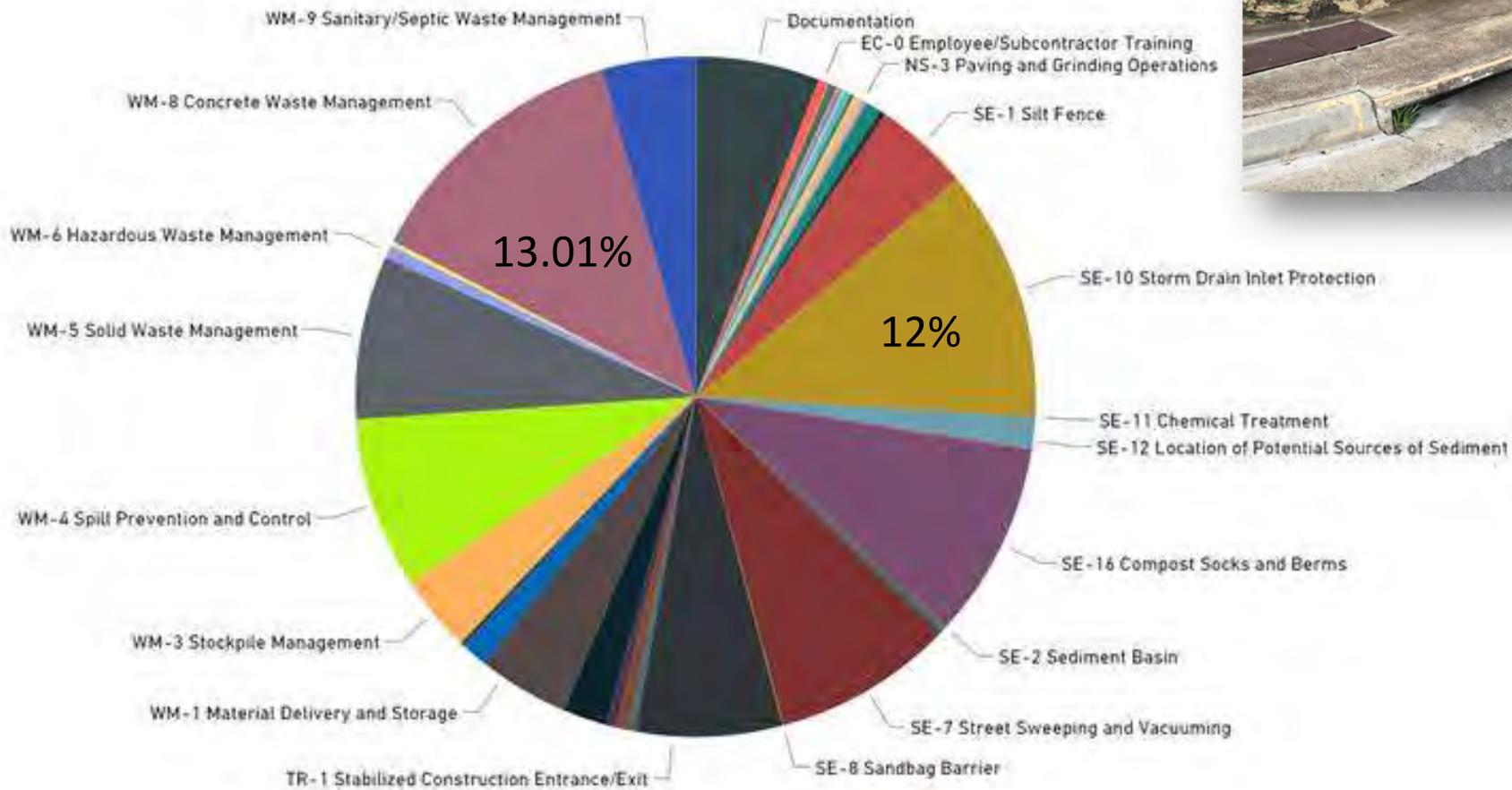
**Bottom line...**

# DO THE RIGHT THING TO TAKE CARE OF THE ENVIRONMENT

**(It's better for everyone, including yourself, in more ways than one!!!)**



# 3<sup>rd</sup> Party Inspections - Critical Deficiencies August 2017 to May 2018



## Top 10 Issues at Small Construction Projects

- 1) Concrete wastes dumped directly on the ground
- 2) Mortar, plaster, stucco, and grout dumped on the ground
- 3) Uncontained leaks from truck chutes
- 4) Uncontained leaks from pump trucks and extender hoses
- 5) Concrete washout is not leak-proof (holes, cracks, unsealed)
- 6) Unlined concrete washout pits
- 7) Overflow spills (overfilling, missing containment, moving containment, splattering out)
- 8) Uncontained saw-cutting slurry
- 9) Leaving materials unprotected from rain and runoff
- 10) Concrete washout water entering storm drains

# 1. Concrete wastes (washout or solids) dumped directly on the ground



# What's the Difference?



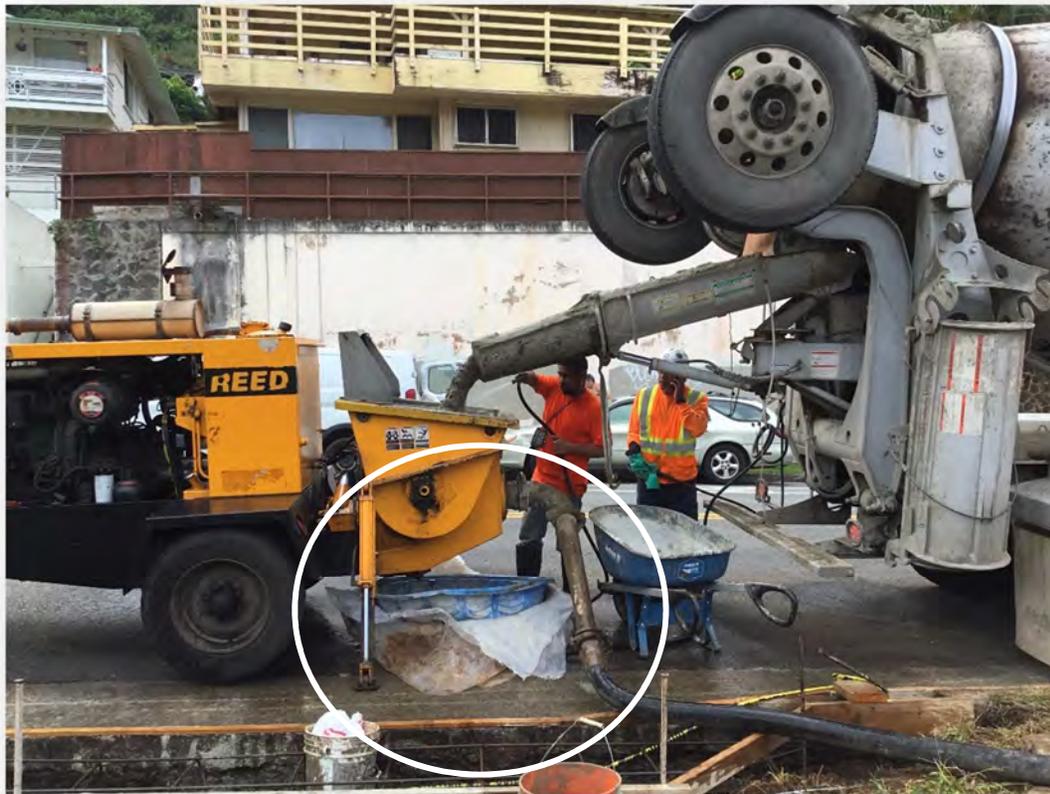
## 2. Mortar, plaster, stucco, and grout dumped on the ground



### 3. Uncontained leaks from truck chutes



## 4. Uncontained leaks from concrete pumps and extender hoses



## Who is Responsible for Providing Concrete Washouts?

- ❑ Whoever oversees the construction project
  - Homeowner/builder
  - General Contractor
  
- ❑ It is not the ready-mix concrete supplier
  - **Tip:** Look at your contract. Concrete washout requirements are included in contracts with concrete delivery companies.
  
- ❑ Your ESCP contains specific BMPs for your project
  - Install BMPs before project starts

**Tip:** Look at your contract. Concrete washout requirements are included in contracts with concrete delivery companies.

*General Terms and Conditions of Concrete Sales*

*The customer agrees to provide an area on the delivery site proximate to the delivery location that will ensure that no runoff water shall escape onto the City streets and violate the “Drainage, Flood and Pollution Control Ordinance (Chapter 14, Article 12)”, for the cleaning and washdown. We will not assume liability for any damage trespass or violation of the “Drainage, Flood and Pollution Control Ordinance as a result of this cleaning and washdown, and the customer agrees to indemnify and hold XYZ Company harmless against all liabilities, loss and expense incurred as a result of any damage or trespass caused by such cleaning and washdown.*

## 5. Concrete washout is not leak-proof (holes, cracks, unsealed)



## 6. Unlined concrete washout pits



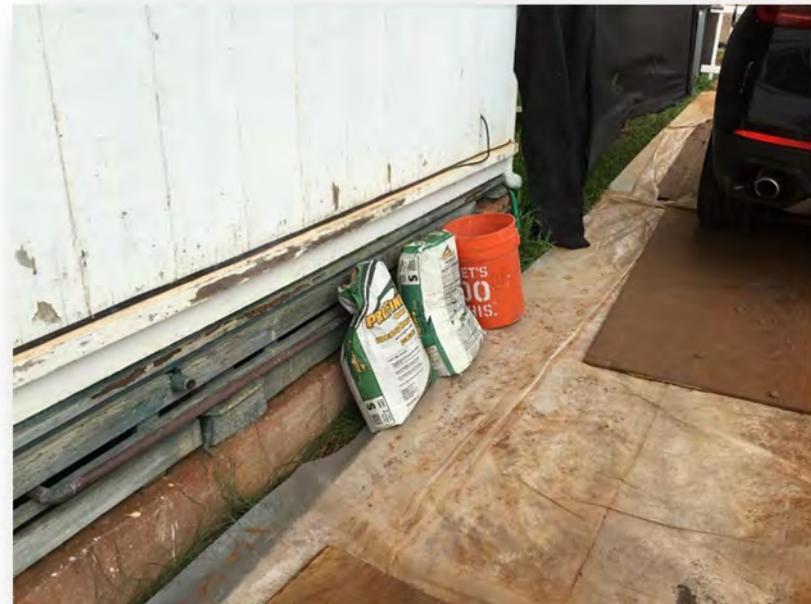
## 7. Overflow spills (overflowing, missing containment, moving containment, splattering out)



## 8. Uncontained saw-cutting slurry



## 9. Leaving materials unprotected from rain and runoff



## 10. Concrete washout water entering storm drains



# Deficient Concrete Waste Management



# Proper Concrete Waste Management



## CHECK LIST ITEMS TO CONSIDER

- ✓ STAGING – What is the best place to sit my concrete washout?
- ✓ SUPPLIES – Do I have what I need to contain slurries and solids?
- ✓ INLET PROTECTION – Are there any inlets nearby that need to be protected?
- ✓ WEATHER – If rainy, should I reschedule? Is it worth taking the risk?
- ✓ TRAINING – Is my crew aware of proper concrete washout BMPs?

**PRE-PLANNING IS KEY!**

# Best Management Practices (BMPs)

# BMP # 1 – Plan out your BMPs

- ❑ Keep supplies on hand



- ❑ Concrete washout location

- Convenient access to concrete trucks, preferably near the area where concrete is being poured.
- DO NOT place near storm drains, open ditches, or waterbodies.
- Place on level ground

- ❑ Having BMPs isn't enough, but they also need to be PROPERLY placed



## BMP # 2 – Always Collect Concrete Wastes

### ❑ Collect and retain concrete washout slurry and solids

- Use leak-proof containers
- Use a liner under containers to catch/contain spills
- Clean up any drops or spills on the ground
- Catch drips from pump trucks and hoses
- Contain or vacuum saw-cutting slurry
- Do not mix concrete next to a storm drain



# Concrete Washout - Good options

1. Kiddie pools
  - One kiddie pool per concrete truck
2. Wood box with plastic liner
3. 55-gallon drums
4. Metal or plastic bins
5. Wheel barrow
6. Buckets



## Concrete Washout - Construct your own

- Dug into the ground or built above grade
- Plastic lining should be free of tears or holes that would allow the washout water to escape.
- Use plastic sheeting as a liner (not Mirafi fabric)
- Stop using when filled to 75% capacity.
- Inspect and maintain concrete washout
- BMP Manual Fact Sheet **WM-8**



## BMP #3 – Liquid Waste Handling

- Allow washwater to evaporate and solids to harden.
  - Cover container in case of an unforeseen rain event to prevent overflows
    - Use tarps, plastic sheeting, plywood boards.



## BMP #4 - Recycle or Reuse

- Hardened concrete can be crushed and recycled or reused as a construction material.
  - Deliver to a licensed recycling facility
  - Crush and reuse onsite (fill, rock walls, etc)



## **BMP #5 - Handling of thin-set or drybond mortar, plaster, stucco, and grout.**

- Do not dump excess materials on the ground
- Contain materials, allow to harden, and dispose as a solid mass
- Avoid mixing excess amounts of materials



## BMP #6 – Protect dry materials from rain and runoff



## BMP #7 – Protect storm drain inlets



## BMP #8 – Use less water

- ❑ Use less water to wash down chute and tools
- ❑ **NEVER** wash concrete slurry - or anything - into storm drain inlets



## BMP #9 – Clean up spills and overspills

- ❑ Maintain good housekeeping
- ❑ Keep public sidewalks and roadways clean
  - Do not cover up concrete drips with spray paint!
- ❑ Preventive is better than reactive



# BMP #10 – Educate employees and subcontractors

- Educate concrete-handling workers on how to properly handle concrete and other building materials
  - Masons
  - Drywall, plaster, and stucco contractors
- Projects involving concrete:
  - Pouring of foundations, sidewalks, and driveways
  - Rock walls, CMU walls, and retaining walls
  - Drywall, plaster, stucco work
- **Tip:** Arrange for contractor's superintendent or representative to oversee and enforce concrete waste management procedures.



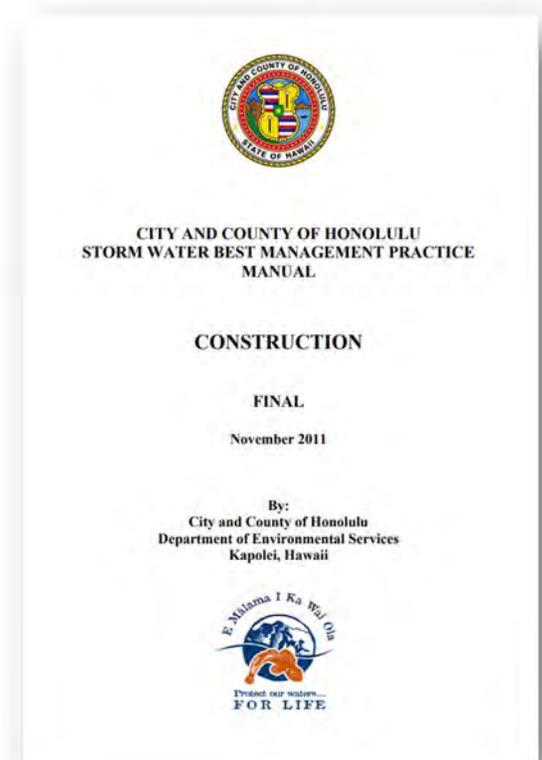
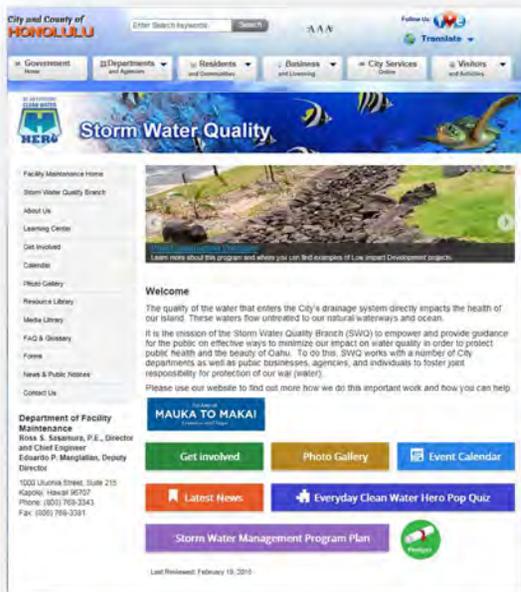
## Enforcement - Potential Penalties

The City may issue warnings or fines depending on the severity of the violation, which could range from \$1,000 to \$25,000 per violation per day. State and federal enforcement could add up to \$50,000 per violation per day, and may include criminal prosecution

- It doesn't need to enter the storm drain to be a violation. If the concrete slurry hits the road or curb it is considered a violation.

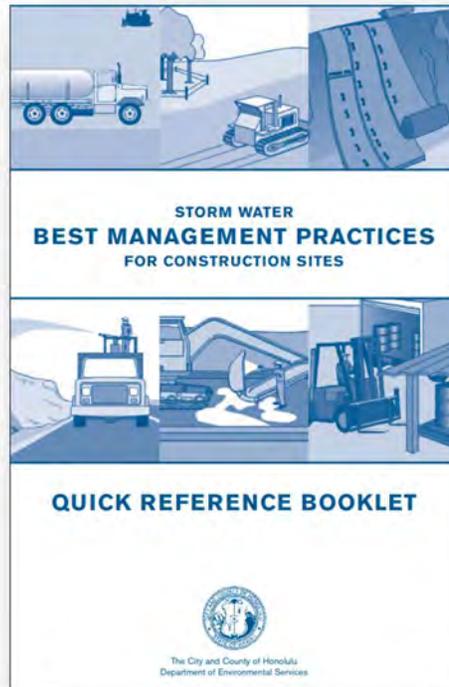
# These public resources provide guidance:

- ❑ [www.cleanwaterhonolulu.com](http://www.cleanwaterhonolulu.com)
- ❑ EPA's Concrete Washout Fact Sheet
- ❑ City & County BMP Manual for Construction



# BMPs Quick Reference Booklet

- [http://www.honolulu.gov/rep/site/dfmswgq/library/QuickRefBook\\_July2013.pdf](http://www.honolulu.gov/rep/site/dfmswgq/library/QuickRefBook_July2013.pdf)





## Review Exercise

Please log into the following website:

[www.kahoot.it](http://www.kahoot.it)



**We will now review the answers**

# Poll Question #1

Who is responsible for properly handling concrete and other home building materials at the jobsite?

- A. **Main Contractor or Homeowner/Builder**
- B. Concrete delivery company
- C. Pump truck company



# Poll Question #2

Which ones are good options for concrete washout?

A.



B.



C.



D. All of the above



## Poll Question #3

How could this be prevented?

- A. Provide more washout containers or larger capacity
- B. Train workers
- C. **A and B**
- D. Cannot be prevented



## Poll Question #4

How could this be prevented?

- A. Vacuum slurry as it is generated
- B. Protect storm drain inlet before saw-cutting
- C. Train workers
- D. **A, B, and C**
- E. Cannot be prevented



# Poll Question #5



Which BMP is missing?

A. Containment berms

B. Nothing



## Poll Question #6

How could this be prevented?

- A. Keep washout containers on hand
- B. Train workers
- C. **A and B**
- D. Cannot be prevented



# Poll Question #7

Which one is a proper concrete washout?

A.



B.



## Poll Question #8

Is this deficiency subject to fines?

A. Yes, it is an illicit discharge hitting the curb and then entering the storm drain

B. No, there's nothing wrong with this picture



# Poll Question #9

Which one is the correct use of concrete?

A.



B.



# Poll Question #10

**How do you feel about concrete washout BMPs?**

- A. I'm on board with it!
- B. I want to comply, but it's impractical
- C. I want to comply but it's expensive
- D. I don't see the point





# Take Our Online Survey!

Please log into the following website:

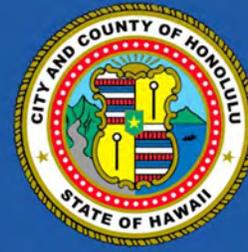
<https://www.surveymonkey.com/r/concrete-washout2018>

**Thank you for participating in this exercise**

**Thank you for completing the survey**



**Thank you!**



# Questions?

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