

Associated Laboratories

Stormwater Scrap Metal Permit Training

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Presenting

- Planning and Sampling
- Field Testing Equipment
- Bottle Types & Preservatives & Holding Times
- How to use a Chain-of -Custody
- Quality Control and Reporting



Before it Rains

- Planning
 - Where to sample
 - How to sample
 - Designating a key person
 - Organizing your field equipment
 - Selecting your Laboratory
 - Ordering Bottles and equipment from the Lab



Where to Sample

- Collection
- Sorting
- Processing
- Separation
- Storage – Materials and or Chemicals
- Transportation – Vehicle area
- Any where plant activity takes place
- Roof runoff if material is corrugated or uncoated zinc metal



How to Sample

- Look over the site, locate the sampling points
- If you have not already done so, walk the grounds and perimeter of your facility to identify where run-off discharges from the site (known as outfalls). Outfalls are locations where stormwater exits the site property, including pipes, ditches, swales and other structures that transport stormwater. If possible walk outside the boundary of your facility to identify outfalls that may not be apparent from within your site.
- You should note if you have a ditches, gutters or swales that contain runoff from another facility, it is important to note in your SWPPP.



How to Sample (cont)

- How you will take the Sample
 - A grab sample is a single sample “grabbed” by filling up a container, either by hand or with the container attached to a pole. Oil & Grease samples must be collected as grab samples. They must be sampled directly from the stormwater source directly.
- Samples are to be representative of the stormwater associated with industrial activities.
- Samples must be collected before the stormwater mixes with public runoff in the curb and before it mixes with flows from non-industrial areas of the site

How to Sample (cont)

- Roofs can be considered points of collection if it is corrugated metal or uncoated zinc metal.
 - Collect sample as it comes off the roof



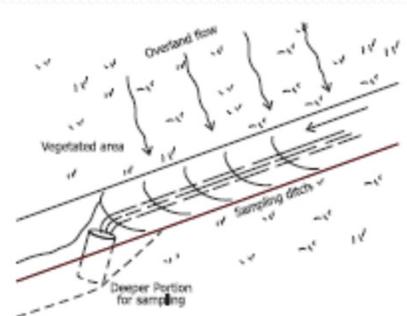
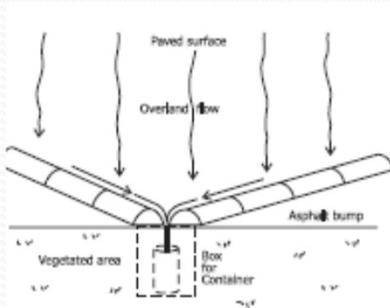
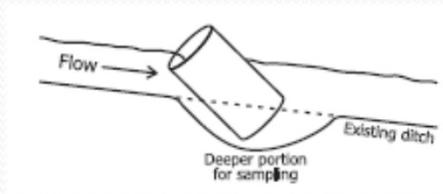


How to Sample (cont)

- Sampling Sheet Flow – From your parking lot
 - In some cases, stormwater discharge from a facility is not concentrated at any point and leaves the property in the form of sheet flow as it runs off a work area or driveway or grassy area. In this case the flow may be too shallow for collection bottle to be filled with sample.
 - To concentrate sheet flow excavate a small basin in an existing ditch or other location where stormwater runs off.
 - Install a barrier device or trough, gutter or ditch to intercept and concentrate stormwater flow.
 - The use of plastic covered sand bags can make the barrier needed for damming up water for sampling

How to Sample (cont)

- Sheet Flow Sampling using different techniques



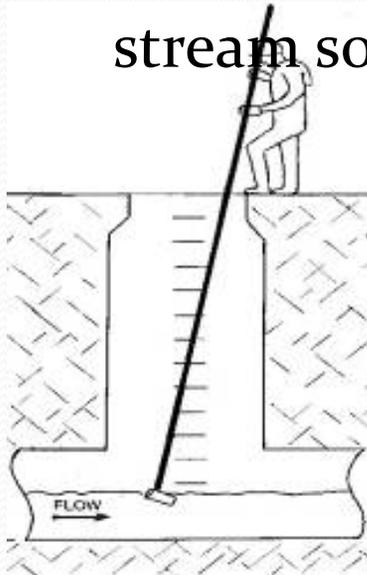
How to Sample (cont)

- Open ditch or gutters that carry stormwater from your facility to and offsite location
 - Sample from the ditch by simply placing the bottle into the flow to capture the water
 - Have the bottle opening, facing the upstream position
 - The bottle used for sampling should be the extra container that the lab supplied for sampling



How to Sample (cont)

- Underground pipes that collect stormwater
 - When sampling a manhole, use a pole to safely sample from above ground. Avoid touching the side of the manhole or pipes with the bottle to prevent contamination. Place the opening of the bottle up stream so that the flow enters the bottle directly





Where NOT to Sample

- Uncontaminated condensate from:
 - Refrigeration
 - Air Conditioning
 - Compressor units
- Discharge from landscape irrigation (provided all pesticides, herbicides and fertilizer have been applied in accordance with the approved labeling)
- Passive foundation or footing drains
- Water from crawl space pumps
- Natural Springs or raising groundwater - Uncontaminated



Where NOT to Sample (cont)

- Discharge from emergency fire fighting activities
 - Best Management Practices must be implemented to the extent practicable.



What warrants a Sampling

- A rain event that has 0.1 inches of rain or greater preceded by 2 consecutive dry days.
 - Dry days are defined as days without measurable storm event or storm event with less than 0.1 inches of rain

Page 53 of 65 Part B, #4 – States “Permittees need not samples outside regular business hours”

Storm events that start before business hours but still have flow once business hours begin is considered an event to collect samples.



Sampling Simulation

- After the classroom training, go back to your facility and designate your team members and alternates do a field sampling simulation “dry run”, under the supervision of the Project Manager or Sample Team Leader. The “dry run” sampling team should run through the procedures specified in the sample collection section of the SWPPP.



Equipment Needed

- You will need a pH, Turbidity and Conductivity meter
- There are many kind on the market the following slide list venders to purchase these meters
- pH and Conductivity can be combined within one meter
- Each meter is different and has a set of instructions to follow to calibrate and care for
- If you need a demonstration of how to use your meter that you purchase your lab can assist you

Equipment Needed for the job

- pH & Conductance Meter (combination)
- Turbidity Meters





Buying Equipment

- Fisher Scientific 800-766-7000 www.fishersci.com
- Geotech Environmental Equipment 800-833-7958
www.geotechenv.com
- Oakton Waterproof pocket tester – Cole Parmer 888-358-4717 www.coleparmer.com
- Hach Portable meters 800-227-4224 www.hach.com
- Microtech Scientific 888-744-3974
www.microtechscientific.com
- <http://www.associatedlabs.com>

Calibration of Equipment

- Basic Calibration of pH Meter
 - Calibration – pH meter
 - The probe must be kept in the 7 buffer solution
 - You must calibrate according to the manufacture specifications, but the range of calibration is 4, 7, 10 and 12.45
 - The probe needs to be rinsed in between readings
 - Let the display stabilize before recording the pH value
 - Temperature is important when reading pH, the meters here today have a temperature calibration sensor build in that is for the life of the sensor. (There is a test procedure to run through to determine that it is working, check your manual)





Calibration of Equipment

- Basic Calibration for Conductance Meter
 - Select multi-point or single point calibration
 - Probe needs to be rinsed, with clean water, before reading standards
 - Follow the manufactures guide for calibration
 - The probe needs to be rinsed between sample readings
 - Conductance takes a few more minutes per reading than pH, time is need to let the display stabilize before recording the Conductance concentration



Calibration of Equipment

- Basic Calibration for Turbidity Meter
 - The meter is for multi point calibration and the standards are supplied with the meter
 - Follow the manufactures procedure for calibrating
 - The meter uses a sample vial, cup like vessel to place the standards and the sample into, after each reading the vessel needs to be rinsed with clean water
 - Let the display stabilize before recording the Turbidity reading



Maintenance for your meters

- Each meter has sensors that need care
 - Take care when cleaning the sensor
 - Rinsing with clean water
 - Using solutions suggested in the owners manual for cleaning off oil contamination
- The meters all have batteries that need to be replaced over time
- Trouble Shooting section in manual if you are having problems with the calibration or readings.



Maintenance for your meters

- When rinsing your probe or cleaning the cup vessel clean water must be used
 - Clean water is d-Ionized (DI) water that can be purchased at local grocery stores
 - Arrow Head, Geysler, Sparkletts are just a few names that make DI water that is available at local markets



Selecting a Laboratory

- You are required to select a laboratory that is California State Certified Laboratory
- The accreditation ensure that the lab is able to do quality testing using the proper methodology for your project.
- For a list of accredited labs go to:
- <http://ww.cdhp.ca.gov/certlic/labs/pages/elap.aspx>

Contacting the Lab in Advance

- You should contact the lab well ahead of time. They will provide you with sampling bottles, gloves, COCs, Coolers and extra bottle for sampling.
- Bottle List:

Constituent	Method	Bottle Type	Preservative	Holding Times
pH	Field Test	250ml Plastic	None/ 6°C	ASAP
Turbidity	Field Test	Plastic	None/ 6°C	ASAP
Conductance	Field Test	Plastic	None/ 6°C	ASAP
Oil & Grease	EPA 1664	1 liter Amber Glass	H ₂ SO ₄ / 6°C	28 days
Total Petroleum Hydrocarbons	EPA 418.1	1 liter Amber Glass	H ₂ SO ₄ / 6°C	7 days
Metals*	EPA 200.8	500ml Plastic	HNO ₃ / 6°C	6 months
Chemical Oxygen Demand (COD)	SM 5220C	125ml Glass	H ₂ SO ₄ / 6°C	28 days
PCBs	EPA 608	1 liter Amber Glass	None/ 6°C	7 days

- *Metals- Aluminum, Arsenic, Cadmium, Copper, Iron, Lead, Nickel, Silver, Zinc

Contacting the Lab (cont)

- Labeling the bottles
 - The labels are on the bottles when you receive them
 - They indicate if they have preservative added
 - The Scientific notation is used for the preservative
 - H_2SO_4 = Sulfuric Acid
 - HNO_3 = Nitric Acid
 - 6°C = 6 degrees Celsius (about 40°F), above freezing

Contacting the Lab (cont.)

- How full the bottle need to be – most labs will supply a bottle that needs to fill to the top. Contact your laboratory if you can not fill to the top. Most labs will have a minimum sample requirement.
- Use the larger bottle labeled sampler for collecting water
 - Use this bottle to collect and fill sample bottles
 - Be careful not to over fill the bottle with preservative, the correct amount of preservative is added to adjust the samples pH



Contacting the Lab (cont)

- Some of the bottles have preservatives they will be marked on the bottle's label. These bottles should not be used for collected samples. A larger container will be provided. It is critical that you use the correct bottles because test requiring preservatives will not be valid without the correct preservative. In some cases the wrong preservative will interfere with a test.
- The Oil & Grease bottle is the one bottle that you need to sample directly into. Do Not use any other bottle!

Contacting the Lab (cont.)

- When collecting samples the sampler must wear gloves for safety and to keep from contaminating the sample.
- **DON'T**



Contacting the Lab (cont.)

- Naming the sample for each sampling point
 - Label your sample bottles with the name of your sampling points as you have designated in the SWPPP
 - Identify facility
 - Sample location
 - Date & Time of collection
 - Name of sampler
 - Use a water proof pen to label bottles (Black Sharpies are best)

Delivering Your Samples

- Samples should be kept in cooler with ice (wet or blue ice)
 - Temperature less than 6°C
 - Transport to your lab or
 - Have the lab pick-up





Recording the Event

- Record your field analysis as you perform them
 - Date and time of sampling and person that collected the sample
 - The individual who performed the analyses and date and time of analyses
 - Analytical techniques used meter name and model
 - Results
- Retain all records for 5 years



Laboratory Report

- When the lab receives your samples they are given a unique identification
 - This is for the lab to track your samples
- The samples are assigned to batches which have quality control samples added to monitor the accuracy and precision of the tests performed
 - Method Blanks (MB) – It is a sample free of contamination that is put through the same process as your sample
 - It is to show that the system and chemicals that we are using are not contaminating your samples



Laboratory Report (cont)

- Laboratory Control Samples (LCS) – Is a clean sample that has been spiked with the constituents that we are testing for that is put through the same process as your sample
 - The LCS used to assess the performance of the measurement system, how well did we process the batch etc....your sample
- Sample Duplicates – Your sample analyzed twice, same proceed done twice
 - This gives you a measurement of precision expressed in percent

Reading Reports

Sample #: 299607-001 Client: **Company Name**
 Matrix: Water Client Sample #: Boiler Room ← **Sample ID**
 Collect Date: 02/15/12 Site:
 Collect Time: 13:31 Collector: client

Compound	Result	DF	RDL	Units	Analysis Date	Analyst
Method: EPA 1664a	Prep Method:			QCBatchID: QC1123723		
Total Oil and Grease	ND	1	5	mg/L	02/27/12	rybechay
Method: SM 2510-B	Prep Method:			QCBatchID:		
Specific Conductance	47.7	1	1	umhos/cm	02/24/12	rybechay
Method: SM 2540-D	Prep Method:			QCBatchID: QC1123569		
Total Suspended Solids	53	1	5	mg/L	02/21/12	ame
Method: SM 4500-H+B	Prep Method:			QCBatchID:		
pH	6.14	1		pH Units	02/17/12	soheir
Method: SM 5310B	Prep Method: Method			QCBatchID: QC1123526		
Total Organic Carbon (TOC)	12.0	2	1	mg/L	02/21/12	quang

↑
Constituents

↑
Results

Reading Quality Control

Laboratory Quality Control Sample

Recovery

Limits

Lab Control Spike/ Lab Control Spike Duplicate Summary										
QCLabID: QC1120277LCS1							Analysis Date: 11/07/11			
Analyte	Spike Amount		Spike Result		Units	% Recoveries			Acceptance Criteria	
	LCS	LCSD	LCS	LCSD		%LCS	%LCSD	RPD	%Rec	%RPD
Aluminum	2		1.94		mg/L	97			80-120	-
Cadmium	2		2.04		mg/L	102			80-120	-
Chromium	2		2.2		mg/L	110			80-120	-
Iron	2		2.05		mg/L	103			80-120	-
Lead	2		2.06		mg/L	103			80-120	-
Nickel	2		2.1		mg/L	105			80-120	-
Silver	1		1.1		mg/L	110			80-120	-
Zinc	2		2.08		mg/L	104			80-120	-



Review

- Contact lab well in advance of storm
 - Order bottles
 - Label bottles
- Watch the weather
- Check field Equipment for charge, may need to replace batteries
- Have your monitoring team ready
- Have Chain-Of-Custody ready
 - Ask your lab to prefill out the COCs for you



Discuss with your Lab

- What type of bottle are needed for the test on the permit?
- Can I get extra bottles for collecting the samples?
- How full do you need to fill the bottles?
- Are there safety concerns with the bottles?
- Will the lab deliver the bottles and pick-up?
- Will the lab help me fill out the chain-of-custody?



Associated Laboratories

Founded in 1922

Located in Orange California

We are here for you!