



# STATUS & TREND NETWORKS EQUIPMENT CLEANING

Meghan Maly and Lana Neff  
Watershed Monitoring Section  
March 2024



# EQUIPMENT CLEANING

***Sampling Manual - Section 16 Table 10 (pg. 119)***





# Overview

- Why cleaning is important
- Cleaning materials & containers
- General cleaning requirements
- Documentation
- Field cleaning GW, SW, & sediment equipment
- Contamination



# Why is cleaning important?



Cleaning and decontamination procedures must remove any remaining analytes or substances that could interfere with obtaining quality data.



# Why is cleaning important?

- to preclude your data from being qualified due to detections in associated field collected blanks

| Parameter Detected  | Value | Qualifier | Units      | MDL   | PQL   | Comments                                                                                   | Spreadsheet Edited By                 | Actions Taken                                                                                                                                                              |
|---------------------|-------|-----------|------------|-------|-------|--------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Calcium (dissolved) | 0.16  | I         | mg/L       | 0.075 | 0.3   | The calcium result was confirmed on 10/15/2015.                                            | ss - 12/30/2015                       |                                                                                                                                                                            |
| Ammonia-N           | 0.003 | I         | mg N/L     | 0.002 | 0.005 | The result was confirmed on 11/12/2015.                                                    | ss - 12/30/2015; KM 3/18/16           | G qualified stations 48352 and 48351 due to ammonia detections <10.0x amount in blank                                                                                      |
| Ammonia-N           | 0.005 |           | mg N/L     | 0.002 | 0.005 | The result was confirmed on 11/17/2015.                                                    | ss - 12/30/2015; KM 3/18/16           | G qualified stations 48352 and 48351 due to ammonia detections <10.0x amount in blank                                                                                      |
| Copper              | 0.17  | I         | ug/L       | 0.1   | 0.4   | The copper result was confirmed in the undigested sample on 11/21/2015.                    | ss - 12/30/2015; KM 3/18/16 & 5/25/16 | G qualified station 48356 collected with peristaltic#2 contained copper detection <10.0x the amount in blank                                                               |
| Ammonia-N           | 0.006 |           | mg N/L     | 0.002 | 0.005 | The result was confirmed on 11/24/2015                                                     | ss - 12/30/2015; KM 3/18/16 & 5/16/16 | G qualified station 48340 & 48358 due to ammonia detections <10.0x amount in blank, and 48354 from last month's ammonia detections <10.0x amount in blank                  |
| Chromium            | 0.09  | I         | ug/L       | 0.05  | 0.2   | The presence of chromium and copper were confirmed in the undigested sample on 12/03/2015. | ss - 12/30/2015; KM 3/18/16           | G qualified stations 48358 & 48340 due to chromium detections <10.0x amount in blank, and stations 48354 & 48350 from last month's chromium detections in Flo-Masta blank. |
| Copper              | 0.21  | I         | ug/L       | 0.1   | 0.4   | The presence of chromium and copper were confirmed in the undigested sample on 12/03/2015. | ss - 12/30/2015; KM 3/18/16           | G qualified station 48340 due to copper detections <10.0x amount in blank, and stations 48354 & 48350 from last month's copper detections in Flo-Masta blank               |
| Total Coliforms-    | 1     | BO        | cfu/100 mL | 1     | 1     | Precision data for QC sample is unavailable due to the colony count                        | ss - 3/11/16                          |                                                                                                                                                                            |



# Cleaning Materials

- Analyte-free water
  - Below Method Detection Limits (MDLs)
  - Uses:
    - Final cleaning rinse
    - Prepare for Blanks





# Cleaning Materials

- Soap/Detergent
  - Non-organics sampling
    - LiquiNox, Luminox or other **non-phosphate detergent**, can be diluted
  - Luminox, or another **non-phosphate solvent-based equivalent**, is recommended for **organics** (sucralose, pharmaceuticals, pesticides)





# Cleaning Materials



- Solvent rinses **required** if Luminox, or Non-solvent-based equivalent, is **not available** and **extractable organics** are collected.
- Must rinse with **99% purity isopropanol**.



# Cleaning Materials

- Acid Rinses (metals, inorganic analytes)
  - Rinse all the **non-stainless steel** equipment with 10% HCl.
  - Dispose of acids properly
    - Page 94 of S&T Sampling Manual
    - Neutralize pH of 5-9





# Handling and Containers for Cleaning Solutions

- Soap should be kept in polyethylene (PE) or polypropylene (PP) containers
- Keep them clean, with protectors over spigots
- Avoid contamination



**Clearly label bottles as DI water, tap water, or detergent**



# Handling Containers for Analyte free water containers

- Analyte free water must be stored in clean glass, fluoropolymer (FP), polyethylene (PE), or Polypropylene (PP) containers that can be closed.
- If logistics permit, empty all DI containers daily, however at a minimum:
  - Large containers (i.e., carboys) 1-week max storage time
  - Small containers (i.e., squirt bottles) emptied daily
- Label analyte-free water containers with date filled





# All cleaning should be done as soon as possible

- Lab cleaning is preferred
- Do not let “dirty” equipment sit overnight





# General Cleaning Requirements

## 9 Steps

1. **Rinse** with hot tap water
2. **Soak** in hot soapy tap water (Organics? = Luminox)
3. **Scrub** with brush to remove particulates
4. **Rinse** with hot tap water
5. **Rinse** with hydrochloric acid (do not use on stainless steel equipment)
6. **Rinse** with pesticide grade isopropanol (Step only required if sampling for organics and Luminox is not used in step 2).



# General Cleaning Requirements

## 9 Steps

7. **Rinse** with analyte-free water
8. Air dry
9. Wrap and store properly



# Field Cleaning Materials

- Tap water
- DI water
- Tub or container for soaking
- Scrub brush
- Liquinox or Luminox solution





# General Cleaning Requirements in the **Field** (steps **7-9** the same)

1. Rinse with ~~hot~~ tap water
2. Soak in ~~hot~~ soapy tap water (Organics? = Luminox)
3. Scrub with brush to remove particulates
4. Rinse with ~~hot~~ tap water
5. Rinse with ~~hydrochloric acid~~ (do not use on stainless steel equipment)
6. Rinse with pesticide grade isopropanol (Step only required if sampling for organics and Luminox is not used in step 2).



# GW Cleaning: Pumps

- Purging Only
  - Flush with Tap/DI water before and after purging
  - Scrub exterior of pump/tubing that may contact formation water
- Purging & Sampling
  - Disassemble (if able) and decontaminate
  - If pump cannot be disassembled, then follow these next steps:



# GW Cleaning: Pumps

## Purging and Sampling

1. Fill dedicated container with sudsy tap water
2. Pump 3 volumes through tubing
3. Use sudsy tap water to clean outside
4. Rinse dedicated container with DI water and fill with DI.
5. Pump DI water through tubing/Rinse outside of pump and tubing.
6. Protect clean pump





# GW Field Cleaning

- Consider protecting equipment by using plastic ground covers while cleaning





# GW Cleaning: Tubing

- New Tubing
  - If certified clean – ok
  - If not, soak in hot soapy water, rinse with hot tap water and then DI water
  - Wrap/store in clean container (wrap ends with foil, seal in plastic bag)
- Re-used Tubing
  - In-house cleaning
  - Follow general cleaning procedure





# Surface Water Cleaning: Van Dorn

1. Half fill Van Dorn with hot tap water and Liquinox or Luminox
2. **Shake well, brush**
3. **Drain some through spigot**
4. Dump soapy water





# Surface Water Cleaning: Van Dorn

5. Rinse Van Dorn thoroughly with hot tap water
6. Rinse with HCl acid
7. Rinse with DI water
8. Rinse through spigot
9. Air dry
10. Store in a clean container or bag





# Sediment Cleaning

(Ekman Dredge, Petite Ponar, Stainless Steel Corer, PE scoops & forceps)

## 1. Rinse

Pour tap water over the equipment to prerinse. Place equipment into dedicated tub or cooler.

## 2. Soak & Scrub with brush.

Use dedicated pump spray bottles of prepared detergent solution.



Samplers maneuver the petite ponar jaws while cleaning to reveal hidden surfaces.



# Sediment Cleaning

(Ekman Dredge, Petite Ponar, Stainless Steel Corer, PE scoops & forceps)

3. Dispose soapy water, rinse tub
4. Pour 5 gal. tap water over equipment into tub
5. Dunk 4-5 times, working jaws
6. Rinse tub
7. Pour 5 gal. **DI** water over equipment into tub
8. Dunk 4-5 times, working jaws
9. Store in clean bag or container



**Reminder:** you must clean between sediment sampling sites, both at small lakes, and all sites on a large lake



For ALL cleaning, field and lab

[illegible]

- Specific piece(s) of equipment
- Date (& time if field cleaned)
- Location (lab or field)
- Procedure
- Name of person performing cleaning



# Cleaning Documentation

DEAR ROC Equipment Cleaning

Select ROC / Section Name: \*

Item 1

Item 1 Cleaning Date \*

Default is today's date. Remember to change date if entering data from a previous event.

Date

Item 1 Cleaning Time (24 hr.)

Hours \*

Minutes \*

Item 1 Cleaning Time (24 hr.):

Item 1 Equipment Type \*

Enter ROC / Section name before completing this field. Select "Other" to document cleaning for an item not listed.

Item 1 Equipment Name / ID: \*

Enter ROC / Section name before completing this field.

Item 1 Cleaning Location \*

☐ Lab ☐ Field

- Electronic cleaning log form available in Survey123 for DEP teams.
- Data are automatically transferred to cleaning log spreadsheets (OneDrive).



# Heavily Contaminated Equipment

- If sampling site is heavily contaminated, contact Tallahassee WMS
- For example: while purging a well, samplers may see or smell obvious contamination (not including Sulfur)
- If equipment comes in contact with contaminated site, use DEP SOP FC 1120, document contamination, & contact Tallahassee WMS





# QUESTIONS?

**Thank you!**  
**The End!**



**Meghan Maly**

Project Manager

[Meghan.Maly@floridadep.gov](mailto:Meghan.Maly@floridadep.gov)

850-245-8232