

FORM: SOP_Event-Sample-Collection; Manual ISCO Sampler operation

(revision 3/28/2017 P.B.)

MAHON Creek (2700 ISCO sampler, CR 1000 logger)

1. Plug in laptop and turn on
2. Open Data logger enclosure box on wall
3. Switch RS cable on data logger from modem connection to laptop connection
4. Once desktop is ready, open LoggerNet program
 - a. Main Menu --> "CONNECT"
 - b. Select CR1000 Mahon program and click "Connect" on top left corner of interface
 - c. Select NumDisplay on middle toolbar, open "Table 1"
 - d. Last sample number will be displayed on bottom right corner of table. Record.
 - e. Close table and click "Disconnect"
 - f. Close LoggerNet and shutdown laptop.
 - g. Unplug laptop power cord from wall and laptop
5. On ISCO sampler press "Halt Program" on the right-hand side menu
 - a. Record sample number on bottle caps using sample number from above for last sample taken. Collect sample bottles from sampler and place in cooler. Ensure consistency regarding number of bottles with sample water, and the first and last sample numbers.
 - b. Refill with clean empty bottles and ensure rack is properly aligned.
 - c. Look at sample water and record discrepancies such as empty, partially, or over-filled bottles; or unusual material in bottles such as unusually high detritus or sand which would indicate a potential problem with sample representativeness. Resolve problem if possible (e.g., inspect sample line, try flushing sample line with purge and rinse cycles, clear debris from sample intake line; check ISCO pump silicone tubing if insufficient sample volume).
6. Press "Start Program/Reset distributor arm" to restart the arm at Position 1
7. Press "Resume" program and ensure display flashes "-01-" and 0001
8. Close lid on ISCO and door of ISCO and data logger box
9. To collect forced ISCO sampler via the logger, Set "Flag 1" high (with a "1"), wait for sample at 5 minute interval.

PLUM WEST & Edge-of-Field (CR 1000 logger), PLUM MAIN & BAIRD (CR 10 logger) - all have 3700 ISCO Samplers

1. On ISCO 3700 Sampler, Press "STOP" to halt program
2. Remove samples and replace with clean empty bottles
 - a. Sample numbers can be retrieved from 1) USGS station website, 2) CR10 Logger Keypad at Plum Main & Baird, or 3) Project Laptop via logger connection at Plum West or EOF sites (see MAHON instructions).
 - b. Record sample number on bottle caps using sample number from above for last sample taken. Collect sample bottles from sampler and place in cooler. Ensure consistency regarding number of bottles with sample water, and the first and last sample numbers.
 - c. Look at sample water and record discrepancies such as empty, partially, or over-filled bottles; or unusual material in bottles such as unusually high detritus or sand which would indicate a potential problem with sample representativeness. Resolve problem if possible (e.g., inspect sample line, try flushing sample line with purge and rinse cycles, clear debris from sample intake line; check ISCO pump silicone tubing if insufficient sample volume).
3. Press "Next Bottle" to the end, and arm will reset to Position 1 automatically. Alternatively, you can press OFF, then ON, arm will reset to Position 1 (sampler battery/memory must be working though).
4. Press "Start Sampling" to reenter program, and press "enter" twice
5. Display should read "Bottle 1 After 1 Pulse"
6. Close lid on ISCO (if lid present) and door of ISCO fridge, and data logger enclosure
7. To collect forced ISCO sampler via the logger, Set "Flag 1" high (with "true", or simply click on Flag 1 to change status to true), wait for sample at 2 to 5 minute interval. For Plum Main or Baird use Flag 2, via CR10 keypad and press "D", followed by "2", wait for sample at 5 minute interval.
8. **EDGE-of-FIELD samplers, flumes and loggers** (ISCO 3700 Samplers --- refer to above).
 - a. Record observations during site visits on Form "EOF-Station-LOG-Sheet", as listed and needed according to purpose of station visit (e.g., sample collection, maintenance).
 - b. Flumes: Clear debris/dirt from inlet and outlet to ensure uninhibited flow, record findings. A shovel, scraper and/or broom may be needed to adequately clean the flume to ensure accurate flow measurements. Measure angle from inlet to outlet on floor of flume, and record angle. Should be slightly down in flow direction. Measure angle on flume inlet end from left to right facing flow direction, and record. Should be level. Make adjustments accordingly.
 - c. Record all pertinent info on the Log sheet for each visit (EOF-Station-LOG-Sheet).
 - d. CR1000 loggers --- refer to above where needed. Record present stage.
 - e. Ensure that turbidity probe is clear of debris, and observe real-time turbidity to ensure readings are not overly high or low. Record and resolve issues.

SILVER Creek (6700 ISCO sampler, CR 1000 logger; procedure more complicated than others)

1. On ISCO sampler, press RED BUTTON to end program
2. Remove samples and replace with new bottles
 - a. Sample numbers should be retrieved from USGS station website, or possibly from Project Laptop via connection to the logger (using LoggerNet, need to try yet)
 - b. Record sample number on bottle caps using sample number from above for last sample taken. Collect sample bottles from sampler and place in cooler. Ensure consistency regarding number of bottles with sample water, and the first and last sample numbers.
 - c. Look at sample water and record discrepancies such as empty, partially, or over-filled bottles; or unusual material in bottles such as unusually high detritus or sand which would indicate a potential problem with sample representativeness. Resolve problem if possible (e.g., inspect sample line, try flushing sample line with purge and rinse cycles, clear debris from sample intake line; check ISCO pump silicone tubing if insufficient sample volume).
3. Use ARROWS on bottom row of key pad and the RETURN to navigate menus
4. Select "STOP PROGRAM" to reset distributor arm
5. Use RED BUTTON to return to Main Menu, or go back one step (generally works well when in doubt); Maybe "Manual Functions"; "Move Distributor Arm"??
6. SOMEWHERE in the menu system you need to return the distributor arm to the number 1 position ("01" is entered) and let sampler know that is the location of the arm (will revise procedure later, P.B.). Basically, need to get to manual operation of sampler.
7. Select "Resume Program". Program will likely ask for which sample, so enter "01" and press return.
8. Display should read "Bottle 1 After 1 Pulse". Sometimes takes some time to do this. If it takes too long, you may leave if needed as it should be OK if everything was done correctly.
9. Close lid on ISCO and door of ISCO and data logger enclosure