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Surface Water Sampling
 SP0001
 6/27/99
 11/03/03
 2.1

DOCUMENT TYPE: Standard Operating Procedure

TITLE: Surface Water Sampling

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1. Scope and Application

- 1.1 This standard operating procedure must be followed when collecting and storing samples for laboratory analysis.
- 1.2 Samples must be collected in such a way that no foreign material is introduced into the sample and no material of interest escapes from the sample prior to analysis.

2. Summary of Procedure

- 2.1 Acquire sample containers (Refer to Sample Submission SOP # GP007).
- 2.2 Do all necessary preparation prior to sampling.
- 2.3 Assemble all equipment (see 4. Equipment and Supplies).
- 2.4 Collect QA samples.
- 2.5 Perform field analyses.
- 2.6 Obtain samples using dip sampler and certified clean collection bottle.
- 2.7 Store samples at 4° C.
- 2.8 Submit samples to laboratory (Refer to Sample Submission SOP # GP007).

3. Comments

- 3.1 If sample bottles are requested, the *29 Palms Laboratory* provides only certified clean containers.
- 3.2 Samples collected by/for the 29 Palms Tribal EPA will use only certified clean collection bottles, including the dip sampler collection bottle.
- 3.3 These are the sample bottles and preservatives previously received and recommended for each of the following analyses:
 - 3.3.1 Volatile Organic Carbon- (2) 40 mL amber glass vials containing HCl
 - 3.3.2 Microbiology- 100 mL sterile HDPE containers with sodium thiosulfate tablet
 - 3.3.3 Metals- 500 mL HDPE bottle containing HNO₃
 - 3.3.4 Physical Properties- 500 mL HDPE bottle
 - 3.3.5 Total Organic Carbon- 100 mL amber glass containing H₂SO₄
 - 3.3.6 General Minerals- 1000 mL HDPE bottle
 - 3.3.7 Cyanide- 500 mL HDPE bottle containing NaOH
 - 3.3.8 Radionuclides- (2) 1000 mL HDPE bottles containing HNO₃
 - 3.3.9 Organophosphorus/Organochlorine Pesticides- 1000 mL amber glass
 - 3.3.10 Methylcarbamate Pesticides- 1000 mL amber glass (containing chloroacetic acid for EPA method 8318)
- 3.4 Disturbance of the sample site is to be avoided and samples should be collected facing upstream.
- 3.5 The safety of the sampler must be considered when hazardous substances may be present. Samplers will wear gloves during sampling and are required to wash hands immediately following their return from the field.



4. Equipment/Supplies

Equipment that is necessary for the collection of surface water samples includes:

- 4.1** Folding chairs
- 4.2** Folding table
- 4.3** Canopy
- 4.4** Tape measure (25 ft.)
- 4.5** Dip sampler with certified clean HDPE 900 mL collection bottle
- 4.6** pH meter with probe
- 4.7** pH standards (4.00, 7.00, 10.00 + 7.00 for ICV/CCV)
- 4.8** Conductivity meter with probe
- 4.9** Conductivity standards (100, 1000 and 10, 000 + 1000 for ICV/CCV- $\mu\text{S}/\text{cm}$)
- 4.10** Batteries (9 volt and AA)
- 4.11** Kimwipes
- 4.12** 2 deionized (dI) water bottles
- 4.13** 6 250 mL beakers
- 4.14** 3 boxes dI water
- 4.15** 1 L sterile water
- 4.16** Sample bottle set
- 4.17** Waste water container
- 4.18** Ice chests with frozen blue ice
- 4.19** Latex gloves
- 4.20** Ziploc bags
- 4.21** Packing material
- 4.22** Trash bag
- 4.23** GPS unit
- 4.24** Camera
- 4.25** Logbooks
 - 4.25.1** Surface Water Monitoring
 - 4.25.2** Sample Collection
 - 4.25.3** GPS
 - 4.25.4** HACH pH Meter
 - 4.25.5** VWR EC Meter/HACH Conductivity Meter
- 4.26** 2 Waterproof (Sharpie) pens and 2 black ink writing pens
- 4.27** Chain of Custody forms
- 4.28** Sample Team box
- 4.29** Water or Gatorade in cooler



5. Procedure

- 5.1 *Prior to sampling*, obtain sample bottle set from laboratory or laboratories (see SOP #GP007 Laboratory Sample Submission).
- 5.2 Notify sampling personnel of sampling event plan (date and location).
- 5.3 Take inventory of standards for field analyses (pH, conductivity, turbidity and dissolved oxygen).
- 5.4 Order standards if necessary.
- 5.5 Take inventory of deionized (dI) water and gloves. Order if necessary.
- 5.6 Organize sample bottles, labeling each appropriately with indelible marker.
- 5.7 Each label should include the following information:
 - 5.8 Client name and analyte for which analysis requested.
 - 5.9 Unique sample number and description, including whether it is a grab or composite.
 - 5.10 Date and time of sampling (completed in the field with a permanent marker).
 - 5.11 Initials of sampler (completed in the field with a permanent marker).
 - 5.12 Place colored tape on lids of field blanks and equipment blanks to identify these bottles to be filled with dI water (sterile dI for microbiology samples).
 - 5.13 Verify presence of preservatives in bottles (see 3.3).
 - 5.14 Enter all relevant information in Sample Collection Logbook #32A.
 - 5.15 Enter all relevant information in laboratory Chain of Custody form(s).
 - 5.16 Prepare sterile water by autoclaving dI water in 1 L glass bottle for 30 minutes (see SOP #MP001 Autoclave Operation).
 - 5.17 Arrangements with laboratories must be made to transfer samples collected.
 - 5.17.1 Applied Physics and Chemistry Laboratories (APCL) samples are delivered to Beaumont, where samples are relinquished to a courier within 6 hours of collection if micro samples are included.
 - 5.17.2 Agriculture Priority Pollutants Laboratories (APPL) samples are shipped via Federal Express.
 - 5.18 Load red trailer with equipment (see 4.0).
 - 5.19 Purchase Gatorade and batteries for meters if necessary.
 - 5.20 On the day of sampling, prior to departure, prepare ice chests with frozen blue ice to keep samples at 4° from the time of sampling until they are received by laboratory.
 - 5.21 Once at site, collect GPS data on sample collection location (refer to SOP #SP003 GPS Data Collection) and record in GPS logbook according to Field Record Template for Surface Water Sampling.
 - 5.22 Collect flow rate data and record in Surface Water Monitoring Logbook #21A according to Field Record Template for Surface Water Sampling.
 - 5.23 Set up analysis station, making sure all instrumentation is in the shade.
 - 5.24 Calibrate field analysis meters: pH, conductivity, turbidity and dissolved oxygen (if applicable- see SOP associated with analysis).



- 5.25** Collect field blanks by pouring dI water directly into sample collection bottles designated for that purpose, using sterile dI water for micro.
- 5.25.1** Field blanks are included to account for anything in the immediate environment (contaminants, airborne particulates, etc.) that could affect sample results.
- 5.26** Collect equipment blanks by first pouring dI water into dip sampler collection bottle, then into sample collection bottle, using sterile dI water for micro.
- 5.26.1** An equipment blank is a sample consisting of reagent grade water poured into the transfer bottle prior to sampling, collected and submitted for analysis so that any contamination present in the bottle can be accounted for.
- 5.27** Analyze surface water sample using calibrated meters, recording results in Surface Water Monitoring Logbook #21A according to Field Record Template for Surface Water Sampling.
- 5.28** Record all other information included in Field Record Template for Surface Water Sampling into Surface Water Monitoring Logbook #21A.
- 5.29** *Grab samples* of surface water will be collected using the following method:
- 5.29.1** Do not rinse sample bottle prior to sample collection.
- 5.29.2** Collect samples in containers provided, filling nearly full without overflowing.
- 5.29.3** Samples of surface water should be collected from flowing, not stagnant water, if possible.
- 5.29.4** If the sample site does not have a current, be careful not to disturb sediment.
- 5.29.5** Using the dip sampler and collection bottle, carefully place bottle in current facing upstream and allow filling.
- 5.29.5.1** If there is no current, create a current artificially by pushing the bottle forward horizontally.
- 5.29.5.2** For shallow waters, such as streams, springs, seeps or other types of discharges, attempt to sample the water without touching any solids.
- 5.29.6** Carefully remove cap of sample bottle, avoiding contamination by hands or particles in air by holding on outside surface with inside surface facing down.
- 5.29.7** Collect sample by carefully pouring out contents of collection bottle into sample bottle.
- 5.29.8** Replace cap and store at 4°C in closed ice chests containing frozen blue ice.
- 5.29.9** Send to laboratory within 6 hours if microbiological samples were collected. (Refer to Sample Submission SOP- GP007 for more instructions)
- 5.30** *Composite samples* of surface water may be collected using the following method:
- 5.30.1** Following the collection of an equipment blank (see 5.22), a single bottle is used to collect the sample portions over a period of time or over a specified area.
- 5.30.2** Repeat the collection using the same bottle each time, being careful to avoid contamination.

6. Bibliography

- 6.1** 29 Palms Laboratory Quality Assurance Plan, Section 7.
- 6.2** U.S. EPA Region 9 Laboratory Field Sampling Guidance Document #1225.



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