

Riparian Monitoring Protocol Implementation Plan for Park Units in the Southern Colorado Plateau Network

Standard Operating Procedure (SOP) # 7

After each Field Visit

Version SCPN_Riparian_SOP7_20180930

Revision History Log:

Previous Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #

This SOP is adopted from the Northern Colorado Plateau Network's SOP #11 After each field visit, Version 1.02 (September 2016) in Weissinger, R., D. Witwicki, H. Thomas, A. Wight, K. Lund, and M. Van Grinsven. 2018. Riparian monitoring of wadeable streams protocol for park units in the Northern Colorado Plateau Network: Version 1.05. Natural Resource Report NPS/NCPN/NRR—2018/1636. National Park Service, Fort Collins, Colorado

This SOP lists procedures performed at the end of each field visit, including equipment maintenance, data management tasks, trip reports, and decontamination procedures.

Procedures

1. Follow check-out procedures detailed in the SCPN Field Plan.
2. Make sure that all cameras, lasers, satellite phones, and GPS units are returned to the office as well as the total station, data logger, water level meter, and/or PDA, if used.
3. Complete data entry and verification (see SOP #8). Resolve any questions with the crew members who collected the data.
4. Organize and file data sheets.
5. Download photos into appropriate folders within Z:\Common Files. Organize by year, park code, reach name, and transects.
6. Charge camera, satellite phone, and vehicle jump starter batteries. Also charge batteries for the total station, data logger, PDA, and field laptop if these electronics were used.

7. Return GPS units to the GIS technician for downloading and charging.
8. Report all broken or missing equipment to the field crew coordinator. Repair equipment if possible or indicate if new equipment needs to be purchased before the next field hitch. Clean stoves and any other equipment that is dirty.
9. Remove plant collections from the press or cooler, and store them in a secure location where they will not be damaged. If possible, identify any remaining unknown plants within a day or two of returning to the office. Annotate data sheets with species information once plants have been identified.
10. Download data from total station or RTK surveys (see SOP #6) or hydrologic monitoring (see SOP #5) and perform any post-processing.
11. The crew leader should complete a trip report detailing the dates of field work, crew members participating, work completed, travel and housing availability, safety concerns and how they were accommodated, weather conditions, any equipment problems or needs, and any other pertinent information. Also note any interesting or unusual findings, observations of disturbance, human or animal activity, deviations from the SOP, or access issues.
12. Organize monitoring boxes for the next hitch.
13. Clean the insides of vehicles. Especially dirty or muddy vehicles may be washed as often as monthly when needed. Report vehicle repair needs to the field crew coordinator.
14. Decontaminate all equipment, personal items, and clothing that have come into contact with water or mud to minimize the potential for spreading of exotic aquatic invasive species between streams.

A. Remove all mud and debris using a scrub brush.

B. Make a 5% cleaning solution of quaternary ammonium compound. This is a common cleaning agent used in homes, swimming pools, and hospitals that is safe for gear and equipment when used at the recommended concentration. Two brands are readily available from GSA or local suppliers: *Quat128*[®] (by Waxie) or *Sparquat 256*[®] (by Spartan). Use one of these products and the appropriate amount of tap water to make the 5% cleaning solution (Table 1). Cost and effectiveness of the two brands are comparable.

Safety

- Use protective, unlined rubber gloves and splash goggles or a face shield when handling the cleaning solution. Take extra precautions when handling undiluted chemicals. Have an eye wash and clean water available to treat accidental exposure.

- Consult the product label and Material Safety Data Sheet for additional information before working with these products.

Table 1. Recipe for 5% cleaning solution using either *Quat128*[®] or *Sparquat 256*[®]

Volume of tap water	Volume of <i>Quat128</i> [®]	Volume of <i>Sparquat 256</i> [®]
100 mL water	4.63 mL	3.00 mL
1 gallon water	6.35 liquid oz.	4.12 liquid oz.
1 gallon water	12.7 tbsp	8.2 tbsp
1 gallon water	0.79 cups	0.51 cups
100 gallons water	4.96 gallons	3.22 gallons
1000 gallons water	49.6 gallons	32.2 gallons

- C. **Test the cleaning solution before each use.** If the concentration is too weak, adjust the concentration or dispose of the used solution properly and make a new solution.
- To determine if the solution is below 5% strength use “Quat Chek 1000” Test Papers (purchase these from the supplier of the cleaning compound). The used cleaning solution needs to be diluted to about 600 parts per million (ppm) of ammonium compounds before it can be tested with these papers.
 - Take **one** cup of 5% cleaning solution made from *Sparquat 256*[®], and pour it into a bucket. Add **5** cups of water and mix. **OR**
 - Take **one** cup of 5% cleaning solution made from *Quat128*[®], pour it into a bucket. Add **4** cups of water and mix.
 - Test the diluted solution with “Quat Chek” Test Paper. Match the color of the paper with the ppm’s on the color chart. For optimal disinfection, the diluted solution should have a concentration between 600 and 800 ppm. **Do not use the diluted solution for decontamination.**
- D. **Decontaminate sampling equipment.** Place the 5% cleaning solution in a backpack spray pump, and use this to apply the solution to equipment. The solution must be in contact with the surface being sanitized for at least 10 minutes.
- E. **Rinse sanitized equipment with water.** When feasible, allow to dry completely before entering another body of water.
- F. **Dispose of used cleaning solution properly.** Disposal of used cleaning solution must be in compliance with all local, state, and federal regulations. Do not dump cleaning solution into any stream or lake, or on areas where it can migrate into any storm drain, body of water, or sensitive habitat.

- G. **Store unopened *Sparquat 256*[®] and *Quat128*[®] in a cool, dry place, out of direct sunlight.** These products will keep for up to two years at temperatures ranging from 32° to 110° F without losing effectiveness.
15. Fill out and submit any necessary administrative paperwork (i.e., travel vouchers, timesheets, extra work authorizations, leave requests).