

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

Standard Operating Procedure (SOP) # 10

Decontamination Procedures

Version SCPN_Springs_SOP10_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 #8 Decontamination Procedures, Version 1.00 (June 2016) in Weissinger, R., M. Moran, S. Monroe, and H. Thomas. 2017. Springs and seeps monitoring protocol for park units in the Northern Colorado Plateau Network, Version 1.00. Natural Resource Report NPS/NCPN/NRR—2017/1439. National Park Service, Fort Collins, Colorado.

This SOP details proper decontamination of all sampling equipment and personal items to avoid the spread of invasive organisms. The removal of plant seeds from clothing and equipment is necessary after visiting each spring. Additional decontamination measures are used when clothing and equipment is submersed in water.

Following a visit to each spring, remove plant seeds from all equipment, personal items, and clothing. Check for seeds in backpacks, shoes, socks and pant cuffs and remove by hand picking or using a stiff brush.

In addition, at the end of a field day, the following procedures are to be used to prevent the spread of exotic invasive aquatic organisms for any items that have been submersed in water.

- Remove all mud and debris using a scrub brush.
- Spray with 5% Quat solution (instructions below) and allow to rest 10 minutes.
- Rinse with water.
- When feasible, allow to dry completely before entering another body of water.

Decontamination Procedure

- Set up a portable disinfection tank using a 5% cleaning solution of quaternary ammonium compound – common cleaning agents used in homes, swimming pools, and hospitals that are 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). Costs and effectiveness are comparable; use either.

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

- Put the 5% cleaning solution in backpack spray pumps to clean portable equipment. The solution must be in contact with the surface being sanitized for at least 10 minutes and then rinsed with water.
- Test cleaning solution before each use according to the directions below. The cleaning solution can be used repeatedly for up to a week unless heavily muddied or diluted. If the concentration is too weak, dispose of the used solution properly and make a new solution.

Safety

- Use protective, unlined rubber gloves and splash goggles or face shield when handling the cleaning solution and take extra precautions when handling undiluted chemicals. Have eye wash and clean water available on-site to treat accidental exposure.
- Consult the product label and Material Safety Data Sheet for additional information.

Testing Solution

- To determine if the solution is below the 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 ppm of ammonium compounds before it can be tested with these papers.
 - Take **one** cup of 5% *Sparquat 256*[®] cleaning solution, pour into a bucket. Add **5** cups of water. Mix. OR
 - Take **one** cup of 5% *Quat128*[®] cleaning solution, pour into a bucket. Add **4** cups of water. Mix.
- Test the diluted solution with “Quat Chek” Test Paper. Match up 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. If it is too dilute, dispose of properly and make a new cleaning solution. Do not use diluted solution for decontamination.

Disposal

- Do not dump cleaning solution into any stream or lake, or on areas where it can migrate into any stormdrain, waterbody, or sensitive habitat.

Storage

Sparquat 256[®] and *Quat128*[®] can be stored up to two years in an unopened container without losing its effectiveness. Both should be stored in a cool, dry place, out of direct sunlight. Temperatures can range from 32° to 110° F.