### Project Description:

**Background Information:**
During many times of year, the Colorado River food web below Glen Canyon Dam (GCD) is phosphorus (P) limited. This is largely due to nutrient retention behind GCD (in Lake Powell). The Paria River, which enters the Colorado ~25 km below GCD, is an important source of sediment to the river and also contains the highest reported concentrations of total P of any tributary below GCD. This project aims to characterize the quality and the magnitude of these P inputs to the Colorado River. The project also aims to discern the environmental controls on P bio-availability in the river. Results of this study will inform an active adaptive management program that aims to inform the management of GCD for the Colorado River ecosystem below the dam.

**Objectives:**
Assess the role of temperature and pH in affecting summertime aquatic P bio-availability. Assist with sampling that aims to quantify the role of the Paria River in delivering P to the Colorado River at base flow and during summer monsoon storms.

**Intern Tasks:**
Depending on interest, the intern will lead bioassay experiments to quantify P bio-availability and its controls, analyzing data and writing up results (ideally for a poster presentation at a regional conference). The intern will also assist with P budgeting exercises--mainly by helping with laboratory prep and field water and sediment sampling.

**Expected Outcomes:**
The intern will gain valuable experience with designing, implementing and analyzing a bioassay experiment. The intern will be situated largely at the Grand Canyon Monitoring and Research Center in Flagstaff, AZ where they will have the opportunity to learn from a diverse group of scientists that study the Grand Canyon ecosystem. In addition, this internship will involve travel to the Moab, UT branch of the Southwest Biological Science Center where the intern will have the opportunity to work with the biogeochemistry lab to carry out bioassay experiments and conduct laboratory P analyses. We hope that the
intern will be able to work towards a final product, such as a poster presentation at a regional conference.

Details for Matching:

**Type of Project:** Field Work, Lab Work, Office Work

**Project Discipline:** Ecology, Surface Water, General Geology, Biogeochemistry

**Project Start Date:** Mon Jul 01 2019 00:00:00 GMT-0400 (EDT)

**Project Duration:** 3 months with opportunity for extension

**Level of Physical Demand:** Level 8-2: The work requires some physical exertion such as long periods of standing, walking over rough, uneven, or rocky surfaces; recurring bending, crouching, stooping, stretching, reaching, or similar activities; or recurring lifting of moderately heavy items. The work may require specific, but common, physical characteristics and abilities such as above-average agility and dexterity.

**GIS Training:** ESA

**Special Skills and Interests:** biogeochemistry, ecosystem ecology, intersection between science and management