THE GEOLOGICAL SOCIETY OF AMERICA®

GEOSCIENTISTS-IN-THE-PARKS
Internship Program

STEWARDS

PROJECT DESCRIPTION
2020 SPRING/SUMMER

NPS UNIT: MOUNT RAINIER NATIONAL PARK	**PD #: 2020098**

Position Title: Air Quality Assistant (1)
Position Type: Guest Scientist
Primary natural resource discipline: Air resources
Project keywords: air quality, monitoring, education, public health
Location: Longmire, Washington

PROJECT DESCRIPTION AND WORK PRODUCTS

Position Description: As a designated Class I area, Mount Rainier National Park is afforded special air quality protection under the federal Clean Air Act. The Air Resources Management Program at Mount Rainier is tasked with protecting air quality in the park and resources adversely affected by air pollution. These goals are accomplished through air quality monitoring, research, and interaction with local, state and federal regulatory agencies. In addition, the Air Resources Management Program develops educational products to improve the public's understanding of air quality issues in the park. The position described here will support all of these goals, with a specific focus on monitoring particulate matter from campfire smoke at Ohanapecosh Campground.

Specific duties include:

- Support air quality data collection for two national monitoring programs focused on visibility (IMPROVE) and atmospheric deposition (NADP), and one Washington State monitoring program focused on ground level ozone (WADOE).
- Operate multiple particulate matter (PM2.5) sensors at Ohanapecosh campground, where emissions from campfires can degrade air quality.
- Perform initial data analysis of PM2.5 observations, including an inter-comparison of measurement methods.
- Assist in developing a decision making tool to determine when management actions are required to limit impacts to air quality in Mount Rainier campgrounds during regional smoke events.
- Develop an interpretive resource brief focused on PM2.5 and campfire smoke to improve the public's understanding of air quality issues and how they can help.

For more information, please visit: https://www.nps.gov/mora/learn/nature/airquality.htm

Air quality is a fundamental resource of all units of the National Park System. It affects human health and visitor enjoyment, and good air quality helps ensure the integrity of park resources and values. The quality of air in Mount Rainier National Park can significantly affect park resources such as vegetation, soils, water, as well as park visitors. Park air quality monitoring is essential for understanding how air pollution affects park resources and for evaluating the effectiveness of emission reduction strategies and identifying additional strategies.

The Ohanapecosh Campground, located in the southeast corner of Mount Rainier National Park, is the largest campground in the park, serving approximately 40,000 to 50,000 visitors a year from late May to

mid- October. This area is often inundated with campfire smoke, particularly in the evening when meteorological conditions can trap smoke near the surface, and park visitors and residential staff are exposed to high levels of short term smoke events. The goal of this project is to identify the concentrations that lead to high conditions of surface-level smoke, and to develop management strategies to reduce impacts to public health and visibility. Mount Rainier has collected data related to this issue in the past, but measurements have been short term due to limited staff availability. The GIP will lead the effort to collect the data, and will work with mentors in the Air Resources Management Program to analyze the data and develop a management plan to minimize smoke exposure and outreach materials to inform park visitors.

This position is offered through the National Park Service's Geoscientists-in-the-Parks (GIP) Internship Program in partnership with Stewards Individual Placement Program (Stewards) and The Geological Society of America (GSA).

Work Products:

- A dataset of PM2.5 (particulate matter <2.5 micrometers in diameter) mass from Ohanapecosh campground utilizing multiple aerosol sensors.
- An initial analysis of the data to determine the best reliable and accurate method to install long term at Ohanapecosh and other campgrounds to track local PM2.5 conditions. A decision making tool for management to determine when conditions warrant a ban or limit of campfires in Mount Rainier campgrounds.
- Educational products focused on PM2.5 and campfire smoke to improve the public's understanding of air quality issues and how they can help.

QUALIFICATIONS

The candidate must be pursuing a science based graduate or undergraduate degree in a field related to natural resources, climate science, or environmental science and have experience collecting natural resources data. Ideally the candidate will be familiar with air quality monitoring equipment, or other techniques related to ambient measurements. Project products will require strong analytical and communication skills.

The applicant must be a U.S. citizen or U.S. permanent legal resident ("green-card-holder") between the ages of 18 and 35 years old. Prior to starting this position a government security background clearance will be required.

VEHICLE/DRIVER LICENSE REQUIREMENTS

Applicant must have a valid driver license and a good driving record. A valid driver license is required to drive government vehicles to access monitoring locations.

A personal vehicle is RECOMMENDED but not required for this position. While not required, a personal vehicle is recommended due to the distance to groceries and other services and for exploring the area on days off.

If the GIP is required to drive a park vehicle for their position, Stewards will perform a driving records search, and the GIP's ability to drive a park vehicle during work hours will be contingent upon the results. GIPs will have to have had their license for 3 years or be over the age of 21 to be insured as drivers under Stewards insurance policy. Examples of things that will preclude a GIP from driving a park vehicle include: GIP under the age of 21 years old that has been licensed less than three years, DUIs, multiple moving vehicle violations, suspended or revoked license, or three or more accidents (regardless of fault) in the last 3 years. If the driver's search is favorable, Stewards will provide driver's liability insurance while the intern is driving a NPS vehicle for their GIP position. If the GIP is denied coverage by Stewards, they will not be permitted to drive during work hours.

HOUSING

Park housing is available and will be provided at no cost to the participant. Shared housing will be provided at Longmire, the duty station of the position located within the park, or Tahoma Woods, approximately 16 miles from Longmire. Housing may be a shared two-bedroom apartment or 2-3 bedroom house. Both apartments and houses are furnished, but the participant will need to bring bedding, kitchen supplies, towels, and other household items.

INTERNSHIP DATES

Start Date: 6/15/2020
Number of weeks: 12 weeks
Flexibility of dates: Yes

LIVING ALLOWANCE

12 weeks ($400/week = $4,800)

RELOCATION ALLOWANCE

$250

AMERICORPS PROGRAM

AmeriCorps is a program that engages individuals in intensive community service work with the goal of "helping others and meeting critical needs in the community". The GIP Program is supported through AmeriCorps by providing a Segal Education Award in addition to the GIP's living stipend and relocation allowance.

Upon successful completion of the GIP position, the GIPs (AmeriCorps members) are eligible for a $1,638 - $6,195 pre-tax education award that can be used for paying back student loans or for continuing their education. The amount of the education award is based on the length of the position.

AmeriCorps limits the number of terms an individual can serve to 4 terms. If an applicant has previously completed 4 GIP or other AmeriCorps positions, they will not be eligible to apply for an additional GIP position.

NATURAL & PHYSICAL WORK ENVIRONMENT

Natural Environment: Mount Rainier National Park is located approximately 2 hours south of Seattle, near the community of Ashford. All services and amenities are available in nearby communities. The climate is considered moderate, but frequently overcast and rainy at lower elevations during fall, winter and spring, and early summer. At Longmire, the duty station of this position, substantial snowfall is common from November-May. Summers are normally sunny and pleasant with daytime temperatures ranging from the low 70's to low 80's and low humidity. The park is noted for its magnificent mountain scenery, sub-alpine meadows and ancient old growth forest. There are over 890 vascular species, 260 non-vascular plant species and fungi, and 140 exotic plant species in the park. You may visit the park's website at http://www.nps.gov/mora.

Physical Work Environment: Work will be performed both indoors and outdoors, with outdoor work requiring hiking less than 5 miles on established trails, or accessed via vehicle.

MENTORING AND LEARNING GOALS

Mentoring: While the GIP intern will be working on an independent project, the intern will work closely with the Mount Rainier Ecologist and Air Resource Division staff to coordinate data collection. Developing a management tool for decision making will include communication with other NPS units to research current strategies, and coordination with Mount Rainier's management team, park staff, and the Air Resources Division. Additional training will include park orientation, first aid/CPR, and Operational Leadership.

Learning Goals:

- An understanding of how air quality data are collected and how results support park management decisions.

- Experience developing products to communicate science to park staff and visitors, working with park interpretive staff.
- Methods to test and evaluate measurement techniques to monitor air quality data, specifically PM2.5.
- Experience working with a team of natural resource technicians collecting natural resource data to support park management and the protection of natural resources.

SUPERVISORS/MENTORS

Primary Supervisor/Mentor:	**Secondary Supervisor/Mentor:**
Rebecca Lofgren Aquatic Ecologist 55210 238th Ave East Ashford, WA 98304 (360) 569-6752 | Rebecca_A_Lofgren@nps.gov https://www.nps.gov/mora/learn/nature/index.htm	Scott Anderson Biological Science Technician 55210 238th Ave East Ashford, WA 98304 (360) 569-6754 | Scott_Anderson@nps.gov https://www.nps.gov/mora/learn/nature/index.htm