PROJECT DESCRIPTION
2020 FALL/WINTER

NPS UNIT: DENALI NATIONAL PARK AND PRESERVE

Position Title: GIS Assistant (1)
Position Type: Guest Scientist
Primary natural resource discipline: Multidisciplinary
Project keywords: historic land use; remote sensing; GIS; aerial photography; photogrammetry; structure-from-motion
Location: Denali Park, Alaska

COVID-19 NOTICE
This project description was developed prior to the onset of the COVID-19 outbreak. Therefore, project timelines and structure remain flexible and it may be necessary to postpone start dates, begin work remotely, or reformulate the project’s description. Should any development in the COVID-19 outbreak impair a project’s timeline or results, the GIP Team will work with the park and project mentors to assess the situation and determine the best course of action at that time.

PROJECT DESCRIPTION AND WORK PRODUCTS
Position Description: Photogrammetric flights conducted by Denali National Park and the Alaska Region have recently increased the amount of aerial imagery available to the park. Processing the recently collected data, making this data available to users, and comparing this data to historic data will help park management quantify changes in land use and land cover. Additionally, park operations depend upon basic utilities to continue to support park staff and provide visitor services. Documenting changes over the years, either on the surface or sub-surface, provides park staff continuity. As well, tying as-built or blueprints to geospatial coordinates allows park staff to visualize subterranean features as related to surface features through 3D spatial modeling.

This position will document the historic, current, and proposed land uses and utilities from existing geospatial data, remote sensing products, oral histories, planned and as-built project designs into a concise geospatial dataset, along with producing map products and written reports, will allow managers both a visual and quantitative assessment of land use trends.

Participants will assist with documenting changes of land use in and around Denali National Park and Preserve by:

- Working across park teams to collect and organize existing data (e.g., as built construction designs, surveyed local coordinate systems, aerial photos, satellite photos) for scanning, georeferencing, and digitizing
- Assisting in creating primary (e.g., vector lines to indicate historic roads, buildings, underground pipes) and secondary mapping products (e.g., 3D models for park management presentations) to assess change over time
- Providing metadata and writing standard operating guidelines for data creation and access
Preservation of natural and cultural resources requires documenting and monitoring resources. This project will look at previously documented but unorganized data to assess past conditions against current conditions.

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:**
Geospatial/Remote Sensing
- Design and create a geodatabase and/or theme layers specific to Denali to track raster data;
- Process aerial photos or satellite imagery, or blueprints and as-built designs for inclusion in the geodatabase;
- Digitize land use patterns to create vector feature classes and raster datasets for future analysis (e.g., subterranean pipes in a utility);
- Document metadata for all geospatial data in FGDC-compliant format for submission to the NPS Alaska Region permanent dataset.

Map products
- Create maps to identify areas of existing historic data, missing/incomplete historic data, and future or proposed development both within and near the park boundary;
- Create animated map with time enabled data for export to video format to present to the park management team.

Reports
- Detailed standard operating guidelines on accessing compiled data for submission to the park GIS Specialist;
- Summary of existing geospatial data products and identification of needs for historic and future data for presentation to park management team.

**QUALIFICATIONS**

Applicants must have at least three years towards a bachelor’s degree in cartography, a geospatial degree (including geomatics, GIS, geography, etc.), or engineering. Applicants must have taken coursework in remote sensing, georeferencing, editing, and map projections. Additional coursework in Microsoft Access, Agisoft Metashape, Quick Terrain Modelers, Trimble Business Center or AutoCAD software will make the applicant more competitive. Advanced GIS skills are required whether they are gained through coursework or applied experience. Advanced GIS skills include spatial data management, understanding of datums and projections, and the ability to recommend spatial analysis techniques.

Experience with engineering designs (specifically sub-surface utility engineering), surveying, subterranean 3D modeling OR experience with remote sensing datasets is desired but not required.

The applicant must be a U.S. citizen or U.S. permanent legal resident (“green-card-holder”) between the ages of 18 and 30 years old, inclusive, or veteran up to age 35. Prior to starting this position, a government security background clearance will be required.

**VEHICLE AND DRIVER LICENSE REQUIREMENTS**

**Applicant does not need a valid driver license.** This is an office position in the Headquarters district.

**A personal vehicle is REQUIRED for this position.** Public transportation is not available (no buses, cabs, or Uber). The nearest grocery store is 11 miles away from park housing, and the nearest services and amenities available in a town are over 120 miles away.

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, DUls, 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.** Park housing is provided at no cost to the participant. The NPS winter seasonal housing area called C-Camp contains 20’ x 20’ cabins that lack running water, and are a short walk (5 min or less) from the headquarters, area offices. Cabins have 2 occupants, but each person has a small private room with the kitchen and living space shared. Showers, bathrooms, and laundry (as well as an alternative location to wash dishes) are located in the showerhouse in the center of C-Camp which is shared with the 50+ other residents during shoulder seasons and 10-15 people during the winter. Water must be carried to the cabins in the winter, and waste water removed and disposed of properly by cabin residents. Wi-Fi connections and cellular networks exist, but may be spotty depending on carriers. C-Camp residents are responsible for purchasing all of their own food and providing bedding and cleaning supplies. Some food and community services are available in Nenana Canyon outside the park entrance and in Healy (10 miles north of park). Larger city services are located in Fairbanks, 120 miles north of the park entrance. There are limited shopping opportunities after arrival, so it is very important to come prepared.

**INTERNERNSHIP DATES**

- **Start Date:** 11/9/2020
- **Number of weeks:** 20 weeks
- **Flexible start date:** Yes

**LIVING ALLOWANCE**

20 weeks ($400/week = $8,000)

**RELOCATION ALLOWANCE**

$1000

**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 $1,612 - $6,095 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 AND PHYSICAL WORK ENVIRONMENT**

**Natural Environment:** Denali is a 6 million acre park with the Alaska Range as a backbone. The park is filled with extensive glaciers and braided rivers, miles of tundra plateaus, and countless glacial lakes and ponds, all capped by the magnificent 20,310’ mountain, Denali. Denali is a spectacular outdoor playground for anyone interested in hiking and exploring. While the setting is rural, there are hundreds of year-round and seasonal employees living locally with whom to socialize and recreate.

Denali is a challenging but rewarding place to work in the winter. Extreme cold is pervasive in the winter months, with temperatures of -40 lasting for weeks at a time. While Denali is south of the Arctic Circle, the
high mountains surrounding park headquarters block the low-angled sun on the horizon, preventing any sunlight from directly striking the area for about 60 days at the peak of winter. Still, even with the cold and dark months, there are plenty of opportunities to recreate both outdoors through skiing, mushing, fat-biking, skating, etc., and for expanding indoor skills such as painting, knitting, wood-carving, etc. Socializing is often key to enjoying winter months and creates a close-knit community in both C-Camp and outlying communities.

**Physical Work Environment:** Winter work will be completely indoors at park headquarters, in a heated building with running water, kitchen and bathroom facilities. A large communal room is provided for seasonal staff to access workstations. NPS intranet and off-network Wi-Fi is available for use during off-work hours if GLP participants need to access to high-speed internet for courses/study.

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<th><strong>MENTORING AND LEARNING GOALS</strong></th>
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<td><strong>Mentoring:</strong> The GIS technician participant will be supervised directly by the Park GIS Specialist. Opportunities to interact with other remote sensing specialists in the Region or inter-agency work across the state may arise. Orientation will be conducted one-on-one by the Park GIS Specialist. Training will be provided by park staff at the level necessary for safely navigating cold climates and informal interpretation. However, much of the rest of the training occurs on the job.</td>
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<td><strong>Learning Goals:</strong> Participants will learn about photogrammetry and remote sensing applications in National Parks, as well as how to access historic and archived datasets. Participant will learn how to independently plan and implement a project, collaborate with multiple disciplines, and communicate effectively with varying audiences. Skill development will focus on those required of GIS related careers within the Federal government, with a focus on the unique mission of the NPS and the complex history of Alaska. Participant may also be exposed to surveying and mapping grade post-processing software and structure-from-motions software, and the integration of data produced by such into a GIS.</td>
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<th><strong>SUPERVISORS/MENTORS</strong></th>
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| **Primary:** Britta Schroeder  
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