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Haukadal, 4. júlí 2016
UST201606-163/L.K.

Subject: Research permit in Hveravellir.

The Environment Agency of Iceland has received the request from the SETI Institute, dated 21st of June, 2016, regarding permits to examine hot spring silica sinter conditions in the protected area Hveravellir.

Hveravellir is protected as a natural monument. Disturbance to geological formations, vegetation and wild animal life in the protected area is prohibited without permission from the Environment Agency of Iceland. That also includes sampling for scientific research.

Description of the project:

The project will take place from the 28th of July until the 2nd of August and from the 26th until the 28th of August 2016, participants on location are seven. This project will use several sinter deposits at different stages of development to test out strategies for exploring hot spring sinter deposits on Mars. Hveravellir is analogous to what may have existed on early Mars. We will research the distribution of vents and sinter aprons and how they control the locations of biosignatures preservation. Here will look at how the active water and thermal systems control the development of the geologic features. This will allow the researchers to look at relict systems on Earth and Mars and reconstruct the formational environments that may have once hosted biological systems.

This effort is focused on imaging and mapping the geologic, biologic and thermal features of the system. Most of this can be done with observations and imaging from the boardwalk and trails. The researchers do request a few samples and observations that will have the potential to disturbed the geologic features. In the section below the researchers offer solutions to limit the effect on the system as a whole and to completely mitigate disturbance to areas that are in public view. Observations with potential for disturbance include: Collecting limited water samples from vents and the collection of glass slides left during a permitted project last summer. Geologic samples from the sinters aprons would be collect for chemical and mineralogical laboratory analysis. Sampling will be planned minimize observational impact as shown in the attached map and described below. The researchers will use a Ground Penetrating Radar, that requires the movement of an antenna over the sinters. This will need to come in contact with the surface. However by setting it down and picking it up, researchers can avoid leaving and physical marks.

No chemicals will be directly applied to the environment. However, the rock coring machine will use gasoline and 2 stroke oil. This will be poured only at researcher's camp at the meteorological hut and transported to the coring sites sealed up. The researchers will also have cloths and containers on hand at all times to capture and clean any potential leakage.

The researchers will plan to do all mapping and imaging from the boardwalk and trails to prevent disruption to the sinters. The researchers will sample sinters in places that cannot be viewed from the trails. Location 2. Drill cores will be made underneath the boardwalk to limit any visual effect. Operations can be done in the early mornings to avoid visitors on the walkways. The researchers request guidance for the proper procedure to reduce all impact from coring to an acceptable level. Water sampling will be done form the boardwalk with a long handled scope or from vent surrounded by grasses. Ground Penetrating Radar pathways will follow the boardwalks with the operators remaining on the walks. At intervals the antenna will be placed on the sinters to avoid any disturbance or drag marks.

Two motors would be required. The first is for a 200 watt generator to power hyperspectral cameras. The second is for a gasoline powered rock corer. The researchers can modify operation times and sampling to limit public and natural disturbance.

The researchers would need to go off path to access the vents for water samples, the sinter aprons for sampling and some limited imaging. All other activities will be limited to the walkways and trails.

The numbers relate to the type of sampling. There are three places that we will collect water, one place we will collect sinters and 2 places that we will collect cores. 1: Water samples. 5 x 50 ml vials at each spring. 15 vials total. 2: 200 grams of sinter sample from biosignature rich apron terrain. 3: Drill cores from near vent and apron terrains. Two cores at 25 mm wide by 30 cm deep.

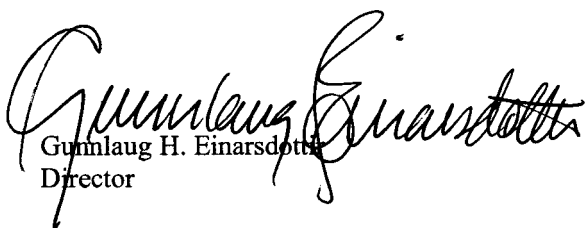
According to article 60 of the Icelandic nature conservation law it is prohibited to collect fossils and minerals in Iceland except with permit from the minister of the environment and natural resources. Your application has therefore been forwarded to the ministry for the environment and natural resources. Permission to collect samples of silica sinter and from the microbial mat in Icelandic geothermal sites must therefore be obtained from the ministry.

The Environmental Agency of Iceland grants you permission to collect water samples in Hveravellir. The research permit for the water samples is subject to the following conditions:


- This permission is granted for the period 28th of July to 2nd of August and from the 26th to 28th of August 2016
- The Environment Agency requests that the researcher will contact the rangers working in these areas before field work begins and inform him on your intentions.
- Sampling should be conducted while visitor number is at minimum.
- Keep the signed permit letter with you during your research.
- Sample quantity is restricted to maximum 3 small test tubes per site as described above.
- This permit is only valid for research purposes. It does not include permit to utilize the samples for commercial purposes. The samples cannot be signed over to third party for the purpose of commercial use.
- Every measure should be taken to avoid damage to the sites and unnecessary disturbance while collecting the samples.
- It is strictly prohibited to walk on the sinter.
- The Environment Agency of Iceland wishes to be secured, free of charge, a copy of all reports and scientific articles that result from the research project.
- Off road driving is prohibited in all circumstances.
- All research equipment should be placed and removed with utmost care and the natural monument left undisturbed by the process.
- Please mark your equipment to inform other guests in the area about the experiment, especially if the research equipment is visible from paths.
- The Environment Agency charges a fee of 13.200 ISK per hour for supervision of the research. The site in question will be evaluated before and after the research and EA's advisor will be available for guidance. An estimate of less than 10 hours of supervision is needed for this research project.

The Environment Agency notes the following:

- A separate permit from the National Energy Authority in Iceland, os@os.is is needed to conduct research at geothermal sites in Iceland which should also be kept with you at the research site.
- If you wish to transport the samples from Iceland you will need a permission from the Icelandic Institute of Natural History (www.ni.is), e-mail: ni@ni.is


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Director

Sincerely


Svava Pétursdóttir
Lawyer