

Valles Caldera National Preserve
Inventory Program: Earth Coring Project in Valle Grande
Stewardship Register

Stewardship Action: Earth Coring Project in Valle Grande	File Number: PLAN –
Target Start Date: 13 May, 2004	Responsible Official: Preserve Scientist
Target Completion Date: 23 May, 2004	Signature Date: 12 May, 2004
Actual Start Date: May 13, 2004	Actual Date of Completion May 25, 2004

This Stewardship Register is for a sub-project within the VCT “Inventory of VCNP Natural Resources Program” Stewardship Register approved by the Board of Trustees in the 2004 Annual Operating Plan.

Introduction

The Valles Caldera Trust is proposing to conduct a collaborative scientific inventory project that will involve the collection of a soil core from the Valle Grande for the purpose of assessing long term climate changes in the Jemez Mountains. The ~ 1.2 million year old Valles Caldera can be thought of as a bowl or basin collecting sediments worn from the volcanic rocks surrounding the highlands you see about you. Today there are only small streams flowing throughout the caldera, but in the past lakes were present and sedimentary layer-cake deposits formed in the basin. These layered deposits contain a record of the past climate of this region in the form of pollen, charcoal, fossils and sediment chemistry. The Valles Caldera National Preserve has teamed up with the United States Geological Survey, Los Alamos National Laboratory, the University of New Mexico, the National Science Foundation, and other organizations to examine the record of past climate in the caldera. In the 1940’s, the United States Geological Survey drilled test wells in the caldera to evaluate water supplies. From these wells we learned that there are thick sequences of lake deposits in Valle Grande. The age of these deposits remains unknown due to the lack of geological dating techniques available at the time of initial drilling. Pollen studies of sediments from one of the wells, however, revealed changes over time in the plant species that grew in this area (amount of pine versus oak) suggesting that climate was significantly wetter in past times. If successful, this project will reconstruct past local and regional climate over time scales of tens to hundreds of thousands of years. By understanding past climate we can better understand how future climate change might affect this region.

Proposed Action:

The scientific team will use a core-drilling rig to take a continuous sediment core to ~ 500 ft depth. The core will be dated to determine the age of sediments at various depths. Information from the core will be used to determine when lakes were present in the caldera and what past temperature and rainfall conditions were like. The team will be on site for 10 days (13-23 May, 2004).

Location:

- The core will be taken from the middle of the Valle Grande (see Figure 1), where previous geological studies have suggested that the sediment layers are the deepest and most likely to yield the most valuable information.

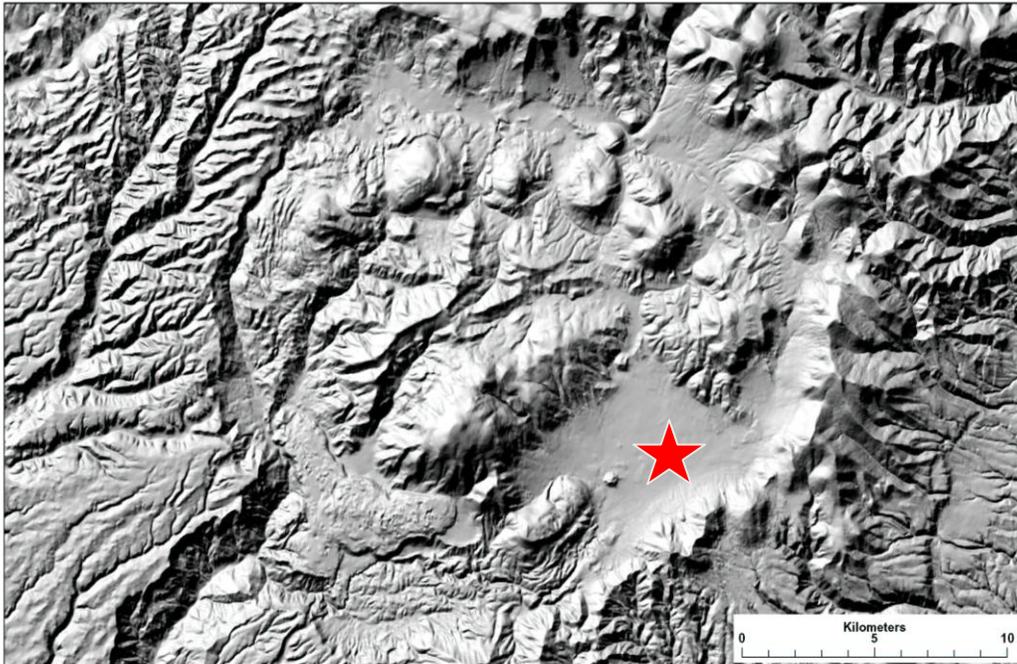


Figure 1. Location of proposed coring site in the Valle Grande, VCNP.

Purpose and Need:

- Provide the scientific basis for understanding past climate changes, species composition of plants (and possibly some species of animals, e.g., insects), and the timing and extent of freshwater lake formations and drainages.
- Provide education and interpretation to the public on geological, ecological, and climatological values of the Preserve's prehistoric changes.

Performance Requirements:

Cultural Resources

1. The site has been inspected by the VCT Archaeologist, and has been found to contain no cultural artifacts.
2. Access for public vehicles will be prohibited; only workers associated with the project will be allowed access to the site.
3. All vehicles will be restricted to existing roads and the access jeep trail.

4. No permanent facilities will be constructed in support of these activities.

Soil/Water Quality

1. Soil and surface vegetation will be protected by covering the work area (~30 ft x 30 ft) with heavy plastic. Plastic will be removed during clean-up of site.
2. Mud and water used in the drilling process will be captured in a closed container, allowed to dry, and then transported off site to be deposited in a gravel quarry on the VCNP.
3. Vehicle access to the work site will be restricted to authorized personnel (visitors will walk from the main road), and will remain on the existing jeep road.
4. Education and interpretive messages will be provided to visitors at a point along Highway 4.

Vegetation

1. Measures to protect soil and water quality will serve to protect vegetation.

Wildlife

1. Activities will be restricted to daylight hours, allowing wildlife undisturbed access to the work site from 7:00 PM to 7:00 AM.
2. No protected species are known to reside or frequent the work area during May.

Invasive Plants

1. Weed occurrence as a result of the program will be monitored, recorded and eradicated.

Site Monitoring, Cleanup and Inspection

1. The study site will be inspected and photographed by VCT personnel prior to the activity to document environmental conditions. During and after site cleanup, inspection by VCT personnel will be conducted to ensure all requisite cleanup activities are completed. The study site will be monitored and photographed to document any project impacts and recovery.

Conflicts between Activities

1. Visitors will be informed that the VCT encourages the advancement of science and education, and that this project is consistent with those goals.
2. Interpretive information regarding this research activity will be included as part of the visitor's experience when ever possible.

Public Health and Safety

1. Contractors, scientists and employees will attend employee safety and orientation.
2. Visitors will be provided with safety information.
3. The VCT's policy regarding hazard analysis and mitigation for all activities will be reviewed and adhered to.
4. A portable toilet will be available at the work site.
5. Leave no Trace ethics are encouraged, littering is prohibited.
6. No pets are allowed on the Preserve with the exception of assistance animals.

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7. Visitors will check in/out of the VCNP.
8. Visitors will be located if they have not left the VCNP prior to closing.
9. For this activity, a radio will be provided to site workers.

Laws and Policy

1. This program has been prepared in compliance with the NEPA (National Environmental Policy Act) procedures adopted by the Valles Caldera Trust (Federal Register/Volume 68, No. 137/July 17th 2003).
2. A Biological Evaluation producing a finding of “No Effect” on threatened and endangered species or migratory birds was prepared for this stewardship action.
3. Verbal communication with the New Mexico State Engineer indicated that no drilling permit was required, as the site is outside of wetlands and floodplains, and the core hole will be plugged and abandoned when finished (i.e., not used for well water production).

Prepared by: Dr. Robert R. Parmenter, Preserve Scientist
May 11, 2004

If you would like to comment on this proposed stewardship action you may do so by selecting the feedback option from our web site. Written correspondence should be addressed to the Valles Caldera Trust, 2201 Trinity Drive, Los Alamos, NM 87544. Your thoughts regarding any of our stewardship actions are welcome at any time