



The Snake River Geothermal Consortium

is a research partnership focused on

advancing geothermal energy, hosted

by Idaho National Laboratory.

Sample and Core Curation Plan

April 2016



DISCLAIMER

This information was prepared as an account of work sponsored by an agency of the U.S. Government. Neither the U.S. Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness, of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. References herein to any specific commercial product, process, or service by trade name, trade mark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the U.S. Government or any agency thereof.

INL/LTD-16-38122 R1

Sample and Core Curation Plan

**Neil Snyder, National Renewable Energy Laboratory
Roy Bartholomay, United States Geological Survey
Mary Hodges, United States Geological Survey
Travis McLing, Idaho National Laboratory**

April 2016

**Snake River Geothermal Consortium
Hosted by Idaho National Laboratory
Idaho Falls, Idaho**

www.snakerivergeothermal.org

**Prepared for the
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Under DOE Idaho Operations Office
Contract DE-AC07-05ID14517**

EXECUTIVE SUMMARY

The physical samples—including lithologic cores, cuttings, and water samples—generated during the Frontier Observatory for Research in Geothermal Energy (FORGE) project will provide a wealth of scientific knowledge about the Eastern Snake River Plain’s deep geothermal system and contribute to areas of science and engineering through researcher studies. The United States Geological Survey Lithologic Core Storage Library and Water Archive Library, located at the Idaho National Laboratory’s Central Facilities Area, are the long-term storage facilities for physical samples generated during the FORGE project. The Water Archive Laboratory has been in place since 1966, and the Lithologic Core Storage Library has been continuously supporting geological studies on the Idaho National Laboratory Site since 1990.

This plan specifies organizational responsibilities, the FORGE Phase 2 and 3 well-drilling parameters for physical sample generation, the facilities that will be used to handle and store physical samples generated, and an overview of the processes that will be used to manage these physical samples from their point of origin through long-term storage. These processes address drilling, collecting cores, processing the cores, and storing and final disposition of the cores. Finally, this plan provides for easy access to data, records, and stored physical samples by internal and external researchers for scientific and engineering studies.

CONTENTS

EXECUTIVE SUMMARY	iii
ACRONYMS	vii
1. INTRODUCTION	1
2. RESPONSIBILITIES FOR MANAGING SAMPLES AND HANDLING AND STORAGE FACILITIES AND EQUIPMENT	2
3. PHASE 2 AND 3 WELL DRILLING PARAMETERS FOR SAMPLE OR CORE GENERATION	2
3.1 PHASE 2 WELL DRILLING	2
3.2 PHASE 3 WELL DRILLING	3
4. HANDLING AND STORAGE FACILITIES	3
4.1 OPERATIONAL SITE TEMPORARY HANDLING AND STORAGE FACILITIES	3
4.2 USGS LITHOLOGIC CORE STORAGE LIBRARY	3
4.3 USGS WATER ARCHIVE LIBRARY	9
5. PROCESSES	9
5.1 DRILLING AND CORE COLLECTION	9
5.2 CORE PROCESSING.....	10
5.3 CORE STORAGE.....	11
5.4 ACCESS TO PHYSICAL SAMPLES IN STORAGE FOR RESEARCH.....	11
6. LONG-TERM HOUSING OF PHYSICAL SAMPLES	12
7. INTERFACE WITH DATA DISSEMINATION AND INTELLECTUAL PROPERTY PLAN.....	12
REFERENCES	13
Appendix A INL Lithologic CSL Core Delivery and COC Instructions and Form	15
Appendix B INL Lithologic CSL Operating Policy	19

FIGURES

Figure 1. CFA/CSL located about 11.3 km (7 mi) from the FORGE site.	4
Figure 2. CSL exterior view.....	4
Figure 3. Typical core storage area.....	5
Figure 4. Core examination area.	5

Figure 5. Typical core box..... 6

Figure 6. Core display..... 6

Figure 7. Examination of cores..... 7

Figure 8. Drying ovens in the CSL laboratory..... 8

Figure 9. Rock saws in the CSL laboratory..... 8

Figure 10. Drill press in the CSL laboratory..... 9

Figure 11. Example of boxed core (from a previous project) that is ready for transport to the CSL.
Core has been fully processed by the characterization team associated with that
project..... 11

ACRONYMS

CFA	Central Facilities Area
COC	chain of custody
CSL	Core Storage Library
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
FORGE	Frontier Observatory for Research in Geothermal Energy
INL	Idaho National Laboratory
R&D	research and development
SRGC	Snake River Geothermal Consortium
TOT	Technical Opportunity Team
USGS	United States Geological Survey

SAMPLE AND CORE CURATION PLAN

1. INTRODUCTION

This plan describes how physical samples generated as part of the Frontier Observatory for Research in Geothermal Energy (FORGE) project will be housed, preserved, and distributed fairly to interested entities throughout the project and beyond. FORGE marks the U.S. Department of Energy's (DOE's) largest effort to advance the deployment of enhanced geothermal systems. These systems have the potential to tap into a conservatively estimated 100 GW of baseload power-generating capacity by harnessing the earth's heat through engineered geothermal reservoirs. The FORGE initiative aims to develop methodologies and technologies that will bring this resource into the nation's energy portfolio (Metcalf, 2015). This project is being conducted by the Snake River Geothermal Consortium (SRGC) at the 110-km² (42.6-mi²) Geothermal Resource Research Area on the Idaho National Laboratory (INL) Site.

We will use the United States Geological Survey (USGS) Lithologic Core Storage Library (CSL) and the Water Archive Library as the long-term storage facilities for physical samples—which include cuttings, cores, and water samples—generated by the FORGE project. The mission of the CSL is to consolidate, catalog, and permanently store nonradioactive cores and cuttings from subsurface investigations at the INL Site and to provide a location for researchers to examine, sample, and test these materials. The CSL is located at the INL Central Facilities Area (CFA), which is approximately 11.3 km (7 mi) from the FORGE operations area. The CSL has been in operation on the INL Site as a cooperative USGS/DOE effort since 1990. Water samples collected from wells as part of the FORGE study will be archived at the USGS Water Archive Library at a separate CFA facility (<http://id.water.usgs.gov/INL/Facility/W-A-L/index.html>). The Water Archive Laboratory has been in place since 1966.

Physical samples generated during the FORGE project will provide a wealth of scientific knowledge about the Eastern Snake River Plain's deep geothermal system and contribute to various areas of science and engineering through researcher studies. Curation and preservation of physical samples will allow researchers to access these materials when new questions arise or when new techniques enable additional knowledge to be drawn from the materials. These materials will also be available for educational purposes. Knowledge gained as a result of the project will be widely disseminated via the real-time data system, as described in the FORGE *Communications and Outreach Plan* (Ulrich and Podgorney, 2016) and the *Data Dissemination and Intellectual Property Plan* (Weers and Podgorney, 2016).

This plan specifies organizational responsibilities with regard to physical samples, the FORGE Phase 2 and 3 well-drilling parameters for physical-sample or core generation, the facilities that will be used to handle and store the physical samples generated, and an overview of the processes that will be used to manage the samples from their point of origin through long-term storage. These processes address drilling, collection of cores, processing of the cores, and storing and final disposition of the cores. Finally, data and records will be generated under this plan in order to enable easy access to information on the stored sample material by internal and external researchers for scientific and engineering studies.

This plan does not apply to FORGE user samples resulting from research and development (R&D) awards. Some of these R&D activities may require existing samples or generate new sample material for scientific and engineering studies. The overarching expectation is that the results of user R&D activities will be made available publically to the greatest extent possible, but provisions also exist to protect intellectual property of the users.

Management of water samples follows the same processes and procedures as physical samples, with a few exceptions. Long-term storage of water samples is in a separate facility that is also operated by the USGS, but analysis of water samples is not performed at that facility. Water sample analysis can be performed at

other facilities at INL, other national laboratories, universities, or private institutions; the location for analysis will be determined by SRGC or the user, as appropriate.

2. RESPONSIBILITIES FOR MANAGING SAMPLES AND HANDLING AND STORAGE FACILITIES AND EQUIPMENT

The following describes the responsibilities of the various organizations involved in managing physical samples, handling and storage facilities, and equipment for INL, the CSL and Water Archive Library, and FORGE:

- The DOE Idaho Operations Office (DOE-ID) administers the interagency agreement with USGS for long-term storage of physical samples in the CSL and Water Archive Library
- Battelle Energy Alliance, LLC, the prime contractor for INL, oversees physical sample management activities and ensures SRGC operational activities comply with INL requirements
- The SRGC:
 - Establishes and maintains FORGE physical sample management
 - Oversees or directly performs FORGE field activities
 - Ensures physical samples generated by FORGE activities are appropriately managed from their point of origin to storage in the CSL
- The USGS:
 - Provides long-term storage of physical samples in the CSL and Water Archive Library
 - Manages, operates, and maintains the CSL, Water Archive Library, and their equipment
 - Provides internal and external researchers access to physical samples in the CSL and Water Archive Library
 - Ensures CSL and Water Archive Library inventory records are maintained
 - Operates with no long-term financial obligation from FORGE.

3. PHASE 2 AND 3 WELL DRILLING PARAMETERS FOR SAMPLE OR CORE GENERATION

3.1 Phase 2 Well Drilling

Specific data-collection and analysis requirements may apply during drilling of geothermal gradient wells; such activities, if authorized, will enhance characterization activities at the Geothermal Resource Research Area. Drilling activities will be managed and executed by the SRGC; during this phase there will be no external user, and DOE participation will be limited. These activities will be related to characterization of the FORGE site. Goals and objectives for these activities are described in the FORGE *Geologic Conceptual Model* (St. Clair et al., 2016). Specific information regarding expected testing and analysis activities on physical samples is also described in the FORGE *Geologic Conceptual Model* (St. Clair et al., 2016). Onsite operational procedures are described in the FORGE *Environmental, Safety, and Health Plan* (Smith et al., 2016).

Core drilling will be conducted at preselected intervals in deep characterization holes, as determined by the SRGC Technical Opportunity Team (TOT), which is described in the FORGE *Project Management Plan* (Podgorney, 2016). Selection of these target zones (intervals) will be based on scientific and engineering needs, including:

- Geologic stratigraphy
- Mechanical integrity of the reservoir rock
- Geochemistry of the reservoir rock

- Permeability and porosity
- Thermal conductivity
- Porewater chemistry.

The USGS recovers core samples from aquifer characterization holes annually and is scoped to drill at least one of these holes in the vicinity of the FORGE laboratory. While this work is not directly a part of FORGE, SRGC will work with USGS to determine if the hole could be drilled and continuously cored as a geothermal gradient hole.

3.2 Phase 3 Well Drilling

FORGE Phase 3 requires the drilling of two or more wells for injection and production. These wells will be key elements in the development of the FORGE site; as such, specific data-collection and analysis requirements will apply during drilling activities.

Drilling activities will be designed prior to Phase 3 and will be under the control of the SRGC. The goals of these activities will be a combination of developing the subsurface infrastructure of the FORGE site and conducting research. Goals and objectives for these activities are described in the FORGE *Geologic Conceptual Model* (St. Clair et al., 2016). Onsite operational procedures are described in the FORGE *Environmental, Safety, and Health Plan* (Smith et al., 2016).

4. HANDLING AND STORAGE FACILITIES

4.1 Operational Site Temporary Handling and Storage Facilities

The SRGC will develop, operate, and maintain all operational FORGE site facilities and infrastructure, including the necessary facilities and equipment for temporary handling and storage of physical samples at the drill site (USGS manages the CSL and the Water Archive Library; see Sections 4.2 and 4.3). Additional temporary management details will be developed during the Phase 2A infrastructure assessment of the FORGE project.

4.2 USGS Lithologic Core Storage Library

The USGS manages, operates, and maintains the CSL under a continuing interagency agreement with DOE-ID; this relationship has been in place since 1990. The cuttings and cores generated by the FORGE project will be housed in the CSL as part of the USGS contract at no cost to DOE. Also, existing cores collected over the history of the CSL will be made available to researchers if desired. Most of the information in this section has been extracted from the USGS procedure document for the CSL (Davis et al., 1997).

The CSL is located at INL's CFA, about 11.3 km (7 mi) from the FORGE site. The CSL is a 573-m² (6,163-ft²) building consisting of a 381-m² (4,110-ft²) core storage area; an examination/sampling area; 124.5 m² (1,340 ft²) of laboratory space, which includes a rock room for sample preparation; and 40 m² (420 ft²) of office space (Figures 1 and 2).

The core storage area is equipped with metal racks on which pallets of boxed cores and cuttings are stored (Figure 3). Most cores are packaged in waxed cardboard core boxes, each holding up to 3 m (10 ft) of core. Some cores are packaged in 1.5-m (5-ft)-long wooden boxes that hold 4.5 to 6 m (15 to 20 ft) of core, depending on core diameter. A small forklift is used to move pallets of core on and off the racks. The core storage area includes an examination/sampling area with several tables on which 91 to 122 m (300 to 400 ft) of core may be laid out at a time (Figures 4 through 7). Equipment available for use in the examination/sampling area includes a hydraulic core splitter, binocular microscope, petrographic microscope, hand lenses, and an assortment of hand tools. Photographic equipment, including a large-format camera, a digital camera, a copy stand, and accessories, are also available for use.

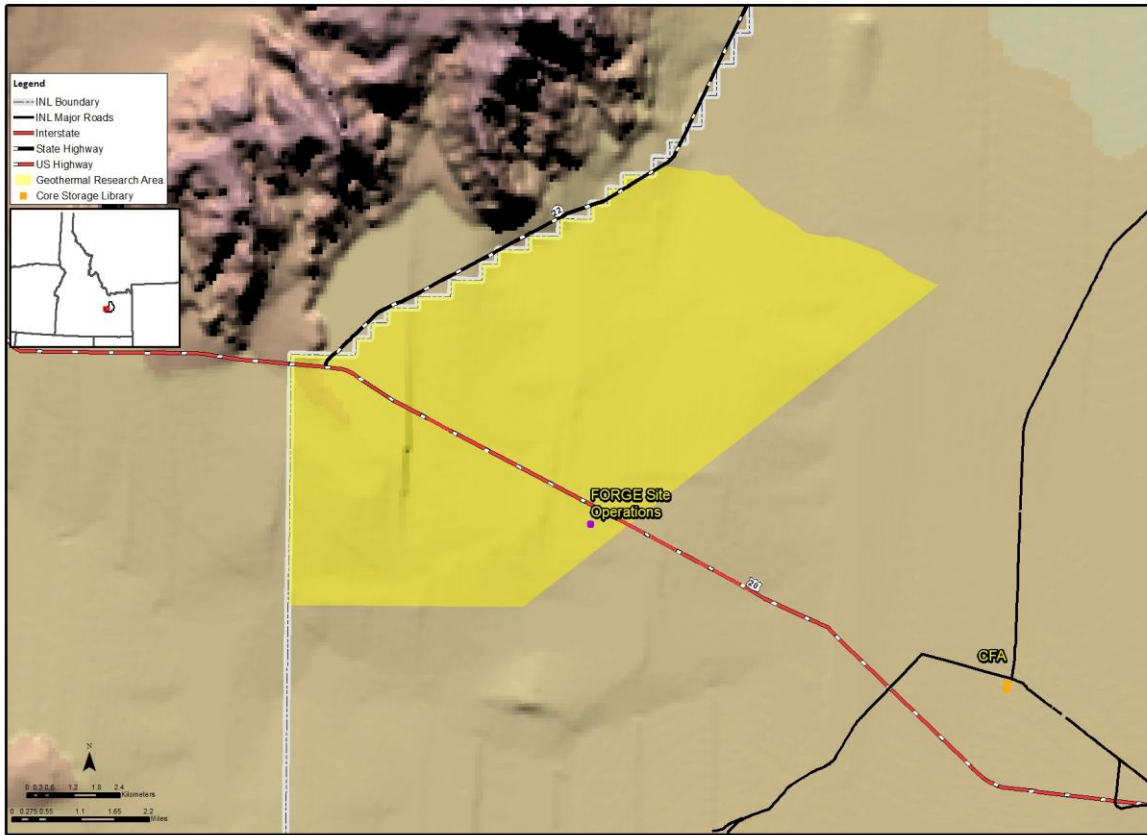


Figure 1. CFA/CSL located about 11.3 km (7 mi) from the FORGE site.



Figure 2. CSL exterior view.



Figure 3. Typical core storage area.

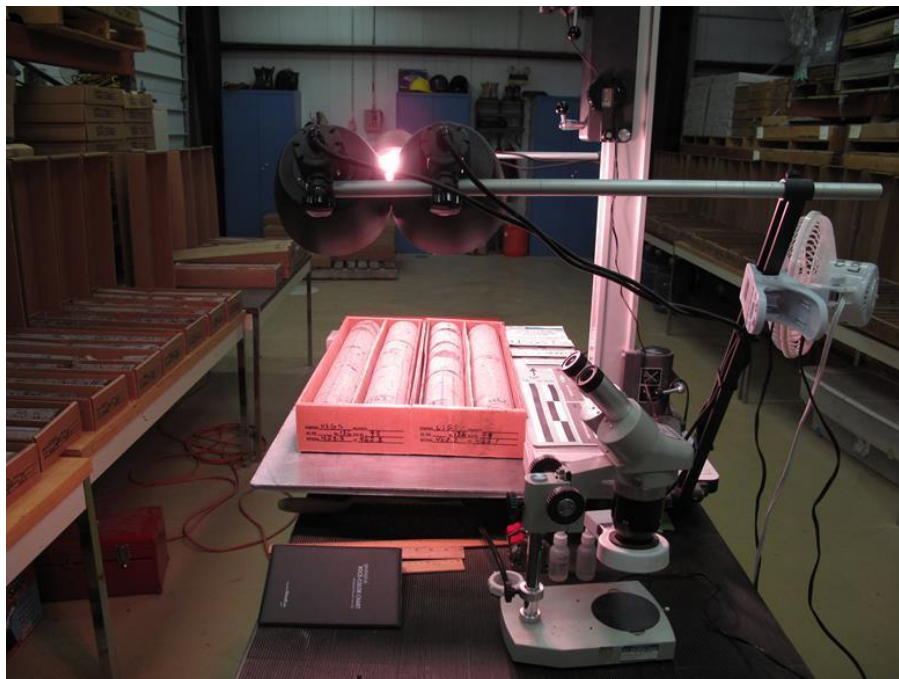


Figure 4. Core examination area.



Figure 5. Typical core box.



Figure 6. Core display.



Figure 7. Examination of cores.

The laboratory area is used for examining, sampling, or testing cores and cuttings stored at the CSL. Laboratory equipment includes soil-drying ovens, two oil-cooled rock saws, a drill press with coring bits 1.27 to 2.54 cm (0.5 to 1 in.) in diameter, petrographic microscopes, a permeameter, balances, constant-temperature water baths, a mechanical sediment shaker and sieves, and an array of standard laboratory glassware and equipment. Users must provide their own chemicals and a material safety data sheet to CSL personnel for each chemical brought into the laboratory; the chemicals must also be cleared through the INL contractor chemical inventory management system (Figures 8 through 10).

The office area is used by USGS CSL personnel who manage the database and core records, which include those related to core availability, cores loaned to researchers for study, previous investigations conducted on cores, and the chain of custody (COC) for cores. CSL personnel manage the facility and COC to preserve drill cores and cuttings for scientific investigations. Selected publications containing results of analyses performed on cores and cuttings are stored in the office area and are available for inspection (Davis et al., 1997, p. 3), and USGS publications are available online at <https://pubs.er.usgs.gov/>.

The CSL is open to researchers who have a legitimate purpose for examining, sampling, or testing cores, as determined by the TOT. Office areas for visiting researchers can be made available, space permitting. The INL Site and CSL are restricted-access areas; permission to visit must be obtained prior to arrival, and visitors must have INL Security-approved escorts at all times. Access to the CSL is by appointment only. While FORGE is an active project, appointments for the CSL must be made through the FORGE operations manager using a form on the SRGC website. Arrangements will then be made through the FORGE field operations manager with INL Security for visitor access to the INL Site and the CSL; however, note that special arrangements will be required for non-U.S. citizens (Davis et al., 1997, p. 5).



Figure 8. Drying ovens in the CSL laboratory.



Figure 9. Rock saws in the CSL laboratory.



Figure 10. Drill press in the CSL laboratory.

4.3 USGS Water Archive Library

Water samples collected during FORGE operations will be controlled following the same processes as the core samples. An onsite temporary storage facility will house samples until they are transferred to long-term storage at the Water Archive Library, which is located in a secure room specifically dedicated for this purpose at CFA. USGS manages this Water Archive Library using protocols similar to those at the CSL. Water samples are archived under COC and tracked using an Access database. Researchers are allowed to access water samples for research purposes by coordinating with the TOT.

5. PROCESSES

The following processes will be followed for all drilling and core collection, processing, and storage activities conducted by SRGC, as defined in Section 3 of this plan.

5.1 Drilling and Core Collection

The process and procedures for core collection at the FORGE site will follow the general procedure used for previous drilling projects (Shervais et al., 2014). Our drilling crews will perform the following steps to drill and collect cores:

1. Drill cuttings (wet and dry) and water samples will be obtained from the mud-loggers at select intervals (e.g., every 5 m [16.4 ft]). The onsite geologist will characterize the cuttings and record the information in the field logbook and then place the cuttings into a cutting box prior to sending them to the CSL.
2. Prior to each core run, the drilling crew will prepare a labeled core tray with the core run number and the top and bottom of the core. This tray will follow the core sections until the core has been processed and placed into USGS core boxes. Core from intervals of interest will be removed from the core barrel by the drilling crew and placed immediately into numbered core trays for the cores to drain and be cleaned of drilling mud. Once the core is sufficiently dried, it will be marked “top” and “bottom.” Once the trays are filled with core, they will be blocked and stacked in sequence for storage

prior to being processed by the core logging team. The core boxes will be labeled with the date, borehole, and interval contained therein and will then be transported to the CSL.

3. Transport and disposition of the core will follow an established COC. The COC begins at the drill site, and the core/water library custodian will sign off on receipt when cores/water samples arrive at the CSL laboratory, where they will be stored under lock and key. COC procedures for the CSL are provided in Appendix A.

5.2 Core Processing

The core logging team will perform the following steps to process the cores at the CSL:

1. The core run will be placed on the processing table for preliminary logging.
2. The run number, driller's depths, the date, and any notable conditions (e.g., missing core or unusual inclusions) will be entered on the Core Logging Information Data Sheet.
3. Standardized logging forms based on previous drilling projects will be used.
4. Loggers will be provided a hand lens, ruler, references on rock and mineral classification, and dilute hydrochloric acid. The log for each box of core will consist of a written description of the core prepared using the standardized logging forms filled out in hard copy before uploading into the FORGE project database. These data will be uploaded to the SRGC data repository and—via dedicated, real-time connection—will also be made available on the Geothermal Data Repository, the SRGC website, and the National Geothermal Data System.
5. Prior to characterization, the core will be aligned and fitted together, as needed, to make the core description as complete as necessary; characterization will only be performed by a qualified geologist.
6. Using felt-tipped pens with permanent waterproof ink, the core will be marked with orientation lines on opposite sides to ensure that when the core is removed for detailed characterization, it can be returned to the core box in its proper orientation. Sediment interbeds or intercalated sediments will be properly handled and stored to maintain integrity.
7. A digital camera will be used to take photographs of the core with metric scales, a grey scale, and color bars. The photography process will produce a high-resolution, 360-degree image of the core. This image will be made by rotating the core on a set of rollers. Each section of core (nominally 61 cm [2 ft] in length) scanned will result in a flat digital image that will be labeled with the core run, depth, date, and core box number. These digital images will be added to the SRGC data repository and made available for easy access and download from the SRGC website, the Geothermal Data Repository, and the National Geothermal Data System, as described in the *FORGE Data Dissemination and Intellectual Property Plan* (Weers and Podgorney, 2016). The cores will then be placed in the core box (Figure 11).
8. During logging, a detailed description of geologic units will be included. All contacts on the logging forms with the driller's depth and distance relative to the nearest unit boundary will be noted.
9. During logging, a description of all internal boundaries (e.g., flow contacts, alteration, structure, basal vitropheres, fractures, and other pertinent information), including depths and location on the digital photograph for that core interval, will be included.



Figure 11. Example of boxed core (from a previous project) that is ready for transport to the CSL. Core has been fully processed by the characterization team associated with that project.

5.3 Core Storage

Initially, boxed core will be housed on the floor and on storage racks at the CSL until permanently housed on shelves. The core location inventory will be updated in a future USGS online interactive report.

5.4 Access to Physical Samples in Storage for Research

Detailed procedures for obtaining access to the CSL and permission to sample cores and cuttings can be found in the INL Lithologic Core Storage Library Operating Policy (Appendix B; USGS, 2014). COC procedures for removed materials are in Appendix A. Requests for access to water samples in the Water Archive Library will also follow this general process.

General steps for access and handling of physical samples are as follows:

1. Researcher: Provide the TOT chair with a completed sample request form that details the proposed research, including the originating organization; principal investigator; and purpose, including a description of analyses to be performed on the sample and a description of the final core disposition.
2. Researcher: To arrange for access to the CSL, contact the FORGE operations manager using a form on the SRGC website.
3. FORGE operations manager: If necessary, make arrangements with INL Security for the researcher's access to the INL Site. For a non-United States citizen, notify the appropriate personnel to initiate special arrangements. Notify the USGS curator of the proposed visit.
4. Researcher: If additional testing of the sample other than that outlined in the statement of proposed research is required, obtain written permission from the TOT chair prior to testing. Once the TOT chair has granted permission, make arrangements with the CSL to sample the core interval(s) of interest.

5. Researcher: Provide one copy of the published report containing results of the analysis performed on the material furnished by the CSL, interpretations based on the analysis, or unpublished data to the CSL curator for inclusion in the CSL database and to the FORGE operations manager.
6. Researcher: Return the borrowed sample or portions thereof, if applicable, to the CSL. Mark the sample as required.
7. CSL personnel: Update the CSL database.

6. LONG-TERM HOUSING OF PHYSICAL SAMPLES

The USGS manages and operates the CSL and Water Archive Library under a continuing interagency agreement with DOE-ID. Due to the long-term nature of INL operations and associated environmental restoration activities, there is no reason to expect this to change. The USGS recently doubled the size of its storage space, as a result, the USGS is prepared to handle the long-term storage of physical samples for FORGE. Liquid samples will be stored in the USGS Water Archive Library, which is located in a secure room specifically dedicated for this purpose at CFA. The samples and cores generated by the FORGE project will become part of the geologic story of INL and, as such, will be housed as part of the USGS contract for managing the CSL. DOE-ID compensates USGS under this continuing interagency agreement; therefore, no costs will be passed on to the FORGE project.

7. INTERFACE WITH DATA DISSEMINATION AND INTELLECTUAL PROPERTY PLAN

All technical information related to physical samples for the FORGE project, including photographs, will be treated as data and managed in accordance with the FORGE *Data Dissemination and Intellectual Property Plan* (Weers and Podgorney, 2016), including the uploading of a submission to the SRGC data repository, which will make the data available on the Geothermal Data Repository and the National Geothermal Data System.

REFERENCES

- Davis, L.C., Hannula, S.R., and Bowers, B., 1997, Procedures for Use of, and Drill Cores and Cuttings Available for Study at, the Lithologic Core Storage Library, Idaho National Engineering Laboratory, Idaho: U.S. Geological Survey Open-File Report 97-124, 34 p.
- Metcalfe, Elisabet, 2015, Road Tripping through the Geothermal Frontier, <http://energy.gov/eere/articles/road-tripping-through-geothermal-frontier>, U.S. Department of Energy, November 18, 2015.
- Podgorney, R.K., 2016, Project Management Plan: Snake River Geothermal Consortium, INL/LTD-16-38129.
- Podgorney, R.K., et al., 2016, Research and Development Implementation Plan: Snake River Geothermal Consortium, INL/LTD-16-38123.
- Shervais, J.W., Liberty, L.M., Dobson, P., and Gasperikova, E., 2014, The Snake River Geothermal Drilling Project: Innovative Approaches to Geothermal Exploration, DOE-USU-0002848-1.
- Smith, P., Visser, C., and Rickard, W., 2016, Environmental, Safety, and Health Plan: Snake River Geothermal Consortium, INL/LTD-16-38125.
- St. Clair, J., et al., 2016, Geologic Conceptual Model: Snake River Geothermal Consortium, INL/LTD-16-38121.
- Ulrich, J., and Podgorney, R.K., 2016, Communications and Outreach Plan: Snake River Geothermal Consortium, INL/LTD-16-38119.
- USGS, 2014, Idaho National Laboratory Lithologic Core Storage Library Operating Policy, Rev.2.
- Weers, J., and Podgorney, R.K., 2016, Data Dissemination and Intellectual Property Plan: Snake River Geothermal Consortium, INL/LTD-16-38120.

Appendix A

INL Lithologic CSL Core Delivery and COC Instructions and Form

Appendix A

INL Lithologic CSL Core Delivery and COC Instructions and Form

NOTE: The information in this appendix was obtained from the USGS and represents an internal procedure that USGS personnel use for all activities under their control at the CSL. The SRGC intends to develop an electronic submittal process tied into a database to track and manage all physical samples generated by FORGE; this process will be accessed via the SRGC website.

Instructions for Delivering Core to the Lithologic CSL

1. Notify the USGS INL Project Office by e-mail of proposed core delivery. Include the following information.
 - (a) The organization that owns the core and whether the organization wishes to retain ownership of the core or surrender ownership to the CSL.
 - (b) The corehole location, preferably in degrees, minutes, and seconds of latitude and longitude, with the horizontal datum, and elevation in feet with the vertical datum. An estimated location (GPS or location on a USGS 7.5 minute topographic map) is adequate for initial acceptance to the CSL.
 - (c) The approximate amount of core, either in feet or number of core boxes.
2. Arrange a date and time to deliver the core when contacted by CSL personnel.

Chain-of-Custody Instructions

You are responsible for samples released under COC. Please use the following guidelines when handling these samples:

1. COC records should remain with the samples.
2. If you entrust the samples to another person or laboratory, have them sign the form. Keep a copy of the signed form for your records.
3. Samples should be kept in a locked cabinet or room that is accessible only to the person to whom custody was granted.
4. If the COC is compromised, please document the circumstances and provide a copy to the CSL.
5. When returning the samples to the CSL, include the original COC form showing all persons who have had custody of the samples.

Contact:

Mary K. V. Hodges
(208) 526-2370 (Willow Creek Building Office), (208) 526-2102 (CSL office)
(208) 709-7983 (cell)
mkhodges@usgs.gov

U.S. Geological Survey INL Lithologic Core Storage Library, CFA 663, WCB Grid D3, MS1160 1955 N. Fremont Ave., Idaho Falls, ID 83415

CHAIN OF CUSTODY FOR THE U. S. GEOLOGICAL SURVEY INL LITHOLOGIC CORE STORAGE LIBRARY

PROJECT:					SITE LOCATION:		
SAMPLER(S):					OWNER:		
WELL/STATION NO.	DATE	TIME	SAMPLE TYPE	MEDIA	SAMPLE ID BOX NO./FOOTAGE	NO. OF CONTAINERS	REMARKS
Relinquished by:	Date/Time	Received By:			Relinquished by:	Date/Time	Received By:
Relinquished by:	Date/Time	Received By:			Relinquished by:	Date/Time	Received By:
Relinquished by:	Date/Time	Received By:			Relinquished by:	Date/Time	Received By:
Remarks:					Remarks:		

Appendix B

INL Lithologic CSL Operating Policy

Appendix B

INL Lithologic CSL Operating Policy

NOTE: The information in this appendix was obtained from the USGS and represents an internal policy that USGS personnel use for all activities under their control at the CSL. While FORGE is an active project, the SRGC will track and manage all physical samples generated by FORGE; information on this process will be available on the SRGC website.

Point of Contact for this Document:

Mary K. Hodges, USGS INL Project Office
WCB, Grid D3, MS 1160
Idaho Falls, Idaho 83415
(208) 526-2102 (core library office), (208) 526-2370 (office in town), (208) 709-7983 (cell)
E-mail: mkhodges@usgs.gov

The Idaho National Laboratory Lithologic Core Storage Library (INL-CSL), located at the INL, is operated by the U.S. Geological Survey (USGS) for the U.S. Department of Energy-Idaho Operations Office (DOE-ID). The CSL currently stores drill cores and cuttings available to the scientific community for studies relating to the INL.

USGS (and USGS-CSL) personnel are currently located at the Willow Creek Building, Idaho Falls, ID.

CSL policy has always been that access for examination and sampling of cores and cuttings is by pre-arranged appointments. Unscheduled requests for assistance and drop-ins have been accommodated as allowed by CSL personnel's planned schedules.

Policy:

Because CSL personnel will be making a specific trip to the INL for your benefit, requests for sampling and/or examination of cores and cuttings **MUST** be scheduled in advance; this includes both the **DATE** and **TIME** of arrival. Requests for sampling should be made at least 2 working weeks prior to sampling if permission is required for the investigator to be allowed to sample. Drop-ins will be allowed at the discretion of the CSL personnel present and according to their planned schedule.

The services of the core library will remain as they have been with the following changes:

1. CSL operating hours will be Monday through Friday, 8:30 a.m. to 4:00 p.m., or scheduled appointments. Other times may be available at the discretion of CSL personnel.
 - (a) The CSL will be closed on all Federal Holidays.
 - (b) Sampling will not be allowed without supervision by trained CSL personnel.
 - (c) No unsupervised access to the INL-CSL will be granted to non-USGS personnel.

Every effort will be made to accommodate samplers/examiners. Occasionally, this may not be possible because of prior CSL scheduled commitments and/or CSL personnel meetings, etc.

The following guidelines apply to CSL personnel responsibilities.

2. CSL personnel will arrive at least 15 minutes prior to the sampler/examiner's scheduled time of arrival.

3. CSL personnel will wait 30 minutes after the scheduled party's time of arrival, and may return to their offsite office after that unless:
 - (a) The scheduled party has personally contacted CSL personnel and made other arrangements or left a message on voice mail indicating that they have been delayed and approximately what their time of arrival will be, not to exceed 1 hour after scheduled arrival time.
 - (b) Weather conditions during the winter are such that the scheduled party may reasonably be delayed. CSL personnel will wait up to 1 hour after scheduled arrival time.

The same consideration that we extend to samplers should be extended to us. Every effort should be made on your part to inform CSL personnel of cancellations, delays, or scheduling conflicts. We expend a lot of effort in obtaining permission for scientists to sample and/or examine cores and cuttings, answering information requests, assuring that the cores/cuttings are out and available upon your arrival, and assisting in the actual examination/sampling procedures.