

GSV Drill Core Library core, Sampling Agreement (Energy)

Introduction

The Department of Energy, Environment and Climate Action (the 'Department') is responsible for managing data and information collected from drilling activities conducted for petroleum, carbon capture and storage and geothermal programs in Victoria. The Department maintains an extensive selection of physical samples collected from drilling programs, such as drill core, cuttings and side wall core (SWC), at the Drill Core Library (DCL), which is managed by the Geological Survey of Victoria (GSV). Some more volatile samples, such as gas samples, are managed by Geoscience Australia (GA) at an alternative facility.

Typically, the GSV permits interested parties (the 'individual'), including industry representatives, academic researchers, government entities and members of the public to visit the DCL and examine drill core, cuttings or other materials (by prior arrangement only). In certain instances, sampling of materials stored at the DCL or GA facilities may be undertaken, but only when permission is granted by the GSV. Individuals may request to sample materials by completing, signing and submitting this agreement to the DCL via email at gsv.drillcorelibrary@deeca.vic.gov.au. Permission to sample is not automatically guaranteed.

Purpose

The basis of this agreement is to ensure that all work done by the 'individuals' on physical material taken for analysis is documented properly and reported to the Department's Geoscientist, Drilling Information to be made publicly available for future reference.

Prior to visiting the DCL, this agreement must be completed, signed, and emailed to gsv.drillcorelibrary@deeca.vic.gov.au. This agreement must be accompanied by a **DCL Visit Information Request Form**, outlining the samples to be analysed and details of the requested analysis.

Significance of Agreement

By entering into this agreement between the 'individual' and the 'Department' – the 'individual' named below agrees to provide the Department with all details and results of all analytical work undertaken on the physical sample material – this may include work undertaken at the DCL (for example, analytical techniques including portable X-Ray fluorescence, short wave infrared, magnetic susceptibility, specific gravity measurements) as well as additional analytical work (which may include, but not necessarily restricted to, geochemical, geochronological, petrological, petrophysical, paleontological analyses).

By sampling or making use of the DCL, you implicitly agree to a standard agreement of reportage and disclosure (with no confidentiality restrictions), irrespective of whether any agreement has been signed.

Failure to comply with this Agreement will result in the 'Department' denying future access to the DCL for individuals and/or organisations.

Conditions

- No sampling can be undertaken without prior permission and knowledge of the Drill Core Library staff.
- No sampling can be done on material that has previously been sampled for similar analyses in the section/interval of drill core or cuttings or on the same hand specimen.
- Any borrowed materials, or samples taken for non-destructive analyses are to be returned properly labelled with well name, site ID, sample interval and GSV sample ID within six months of sampling.
- Any residual material or products (e.g., pulps, coarse rejects, thin/thick sections, thin section offcuts, grain mounts, or any other unused sample material) must be submitted back to Drill Core Library properly packaged and labelled with drillhole name, site ID, sample interval and GSV sample ID within six months of sampling.
- Sampling of material must be conducted in accordance with Appendix 1. Compliance with Material Sampling Methods.
- A complete list of all samples taken must be provided to DCL staff prior to your departure from the DCL. A template will be provided by DCL staff upon arrival.
- All data collected from analysis must be reported to the Drill Core Library's Geoscientist, Drilling Information within six months of the final sampling date in accordance with Appendix 2. GSV Drill Core Library Data Reporting Guidelines.
- A brief report must be submitted to the Drill Core Library alongside digital data to the Geoscientist, Drilling Information, within six months of the final sampling date, in accordance with Appendix 2. GSV Drill Core Library Data Reporting Guidelines.
- **If planning to use a portable X-Ray fluorescence instrument, it must be appropriately licenced. Safety documentation must be provided to DCL staff prior to visit.**

Acknowledgments

I, the undersigned individual, as a representative of the named organisation, agree to comply with all conditions stated within this agreement. I acknowledge that after being received by the 'Department' and undergoing an audit process, the data and reports submitted will be made available to the public.

Signed:

Organisation Name:

Organisation Representative:

Date:

Position:

Contact Phone Number:

Contact Email:

Supervisor Name:

Supervisor Email:

***Please note: university students must also have this agreement signed by their supervisor, additional time limits may apply for students based on the nature of their project.**

The 'Department' reserves the right to deny future access to the Drill Core Library for individuals and/or organisations on the basis of, but not limited to:

- **non-compliance** with the conditions stated above, perceived inappropriate sampling
- **unsafe** behaviour,
- return of samples in **poor condition**,
- **non-return** of samples,
- or **non-supply** of results.

Appendix 1.

Compliance with

Material Sampling Methods

The sampling of core or chips for analyses must comply with the standards specified below. Failure to comply may result in any person or persons representing the company, its subsidiaries or contracting company, being banned from future sampling activities.

Because of the inherent value of this State asset and limited quantity of some material, the 'Department' reserves the right to refuse sampling of material which has previously been sampled for the same analysis. The client must then use the data collected from previous analyses.

Non-destructive analysis

Non-destructive analysis is defined as any analysis where a sample is not destroyed, either partially or completely, during the testing process. Sampling methods and guidelines for the reporting of data are provided below.

1. pXRF

Method of Sampling

A GSV Sample Data Sheet will be provided to capture details of samples analysed. All samples must be assigned a GSV Sample ID. A list of unique GSV Sample IDs will be provided in the spreadsheet, which are free to be assigned to each of the samples (a company/organisation specific ID number may also be assigned).

Prior to taking the reading the operator should enter, for each sample, the following information into the label screen. This will allow data exported from the instrument to be easily paired to data collected in the Sample Data Sheet.

- GSV Sample_ID
- Hole_ID
- Depth
- Std (eg standard ID, Duplicate or Blank)
- Any relevant comments

Also prior to taking the reading, the operator should draw a yellow circle around the spot they intend to analyse and write "XRF [sample number]" beside or underneath it. An example is provided below:



QA / QC

The following QA/QC protocol should be followed while using pXRF:

- A calibration check must be made at instrument start-up and at least twice daily.
- An instrument blank analysis must be conducted to check for contamination on the instrument's analyser window. Either the pure SiO₂ blank provided with the instrument or a blank standard can be used for this analysis. One analysis at the start and end of session and then at a rate of one in every 50 samples.
- Analysis of certified reference material (CRM) must occur at the start and end of session and then at a rate of one in every 50 samples.
- A duplicate analysis of a sample should be conducted once every 50 samples. The sample should be removed from the instrument window and replaced again before the duplicate analysis is made.

Return of borrowed samples to the 'Department'

Return of samples to the 'Department' must be arranged as soon as possible after completion of non-destructive analyses. The samples should be returned directly to the Drill Core Library using an appropriate transportation method (at the 'individuals' cost – contact the Drill Core Library to arrange this).

Destructive analysis

Destructive analysis is defined as any analysis that results in the complete or partial destruction of a sample. This may include, but is not limited to; assays, whole rock geochemistry, petrophysical analysis, geochronology, and creation of thin sections. Due to the limited quantity of available material, limits have been placed on the amount of sample that may be taken. Quantity limits and method of sampling are outlined below.

1. Core

Amount of core to be taken

It is understood the amount and size of core pieces needed for the different types of analyses may vary, but wherever possible it is preferred that thin offcuts, small chips or broken pieces are taken from a length of core at the intervals required, relevant to the analyses to be done.

If larger core pieces are required (e.g. for thermal conductivity), the minimum possible thickness and length of a sliver of core should be taken. The 'Department' requires a representative total length of core is always left, so sliver thickness depends on the proportion of core slab present (i.e. whether whole, or a two-thirds, half, or one third slab), its level of induration, whether it is wanted for a destructive analysis, or if it has previously been sampled.

For destructive analyses, no more than a one-third sliver of the core present (which may itself be a one-third slab) can be taken. For non-destructive analyses, whole core pieces of a minimum size needed can be taken. Sampling core for a particular analysis which has previously been conducted on that same core interval will not be allowed. Shipment abroad for analyses is subject to the appropriate legislation.

Method of Sampling

A GSV Sample Data Sheet will be provided to capture details of samples taken. All samples must be assigned a GSV Sample ID. A list of unique GSV Sample IDs will be provided in the spreadsheet, which are free to be assigned to each of the samples (a company/organisation specific ID number may also be assigned).

Each sample of core taken for any analysis must have a durable label (e.g. annotated plastic tag to mark where a sample is taken) detailing relevant parameters - **GSV Sample ID, Well or Bore name, Date, Depth (Interval Taken) and Analysis Type** - written in permanent ink and placed in the tray in the exact position that the sample was removed from.

Cutting of drill core samples can be arranged at the DCL by agreement with Drill Core Library staff. Mark the interval to be cut on the core with blue chinagraph pencil (provided by DCL staff), with depths written on the outsides of the interval so that the interval to be cut is clearly visible.

For example:



If analysis type is destructive, a photo must be taken of samples less than 30cm in length. Photos must be labelled as **S[SiteID]_GSVSID[GSV Sample ID]**, and provided to the Drill Core Library alongside submission of digital data and reports.

Samples are placed in sample bags, labelled with the following details in permanent ink: **GSV Sample ID, Well or Bore name, Date, Depth (Interval Taken) and Analysis Type**. Labelling of the bag is negotiable, however GSV Sample ID is compulsory.

If whole core pieces or large slivers are taken, way up must be clearly marked on the surfaces with a permanent marker. In addition, a downhole arrow should be included to allow the core to be inserted back into the tray in the correct orientation on return.

2. Drill cuttings / chips

Amount of drill cuttings / chips to be taken

No more than 10 grams of sample can be removed for analyses from a cuttings bag of 100 grams or over, or no more than 10% by mass of any cuttings bag weighing between 50g and 100g. However, if bags are under 100 grams in weight, then a 10-gram sample can be compiled by combining one <10g sample from one cuttings bag with another <10g sample from another cuttings bag. No samples can be taken from any bag of cuttings weighing less than 50 grams.

In certain cases where there are vast amounts of cuttings in a bag (e.g. over 200g), larger samples can be taken for analyses such as AFT or ZFT.

Very few wells only have unwashed cuttings available. They are most frequently bagged inside calico bags which generally contain much larger amounts of material, mostly comprising drilling mud. In this case, a sampler can remove up to 30 grams of material. The proportion of material taken for sampling, though, is the same as for washed cuttings as described above.

Method of Sampling

A GSV Sample Data Sheet will be provided to capture details of samples taken. All samples must be assigned a GSV Sample ID. A list of unique GSV Sample IDs will be provided in the spreadsheet, which are free to be assigned to each of the samples (a company/organisation specific ID number may also be assigned). The pre-sampling and post sampling weights of each cuttings bag that is sampled must be recorded in the Sample Data Sheet.

Each sample taken for analysis must have a durable label (e.g. annotated plastic tag to mark where a sample is taken) detailing relevant parameters - **GSV Sample ID, Well or Bore name, Date, Depth (Interval Taken) and Analysis Type** - written in permanent ink and taped to the receptacle the sample was removed from.

Samples are placed in sample bags, labelled with the following details in permanent ink: **GSV Sample ID, Well or Bore name, Date, Depth (Interval Taken) and Analysis Type**. The sampler should also add their own unique sample identifier if applicable.

3. Side Wall Core (SWC) and core plugs

Amount of material to be taken

In the absence of core it is sometimes acceptable to sample SWC or core plugs. If analysis type is destructive, a number of small broken chips or offcuts, or an approximate 1 cm cube, is allowed to be removed. For non-destructive analyses whole SWC or core plugs can be taken.

In some circumstances whole SWC or core plugs could be needed for a destructive analysis. For this to be allowed, other factors would need to be considered such as proximity to other wells which have core or SWCs/plugs taken at similar horizons; gaining permission from the current titleholder, or original operator; or whether there is a descriptive photographic record or not. Sampling for destructive analyses would have to be considered on a case-by-case basis.

If any SWC or core plug weighs less than 20g, no sample can be taken. If over 20g, one quarter can be taken.

Method of Sampling

A GSV Sample Data Sheet will be provided to capture details of samples taken. All samples must be assigned a GSV Sample ID. A list of unique GSV Sample IDs will be provided in the spreadsheet, which are free to be assigned to each of the samples (a company/organisation specific ID number may also be assigned). The pre-sampling and post sampling weights of the SWC/Core Plug must be recorded in the Sample Data Sheet.

Each sample taken for analysis must have a durable label (e.g. annotated plastic tag to mark where a sample is taken) detailing relevant parameters - **GSV Sample ID, Well name, Date, Depth (Interval Taken) and Analysis Type** - written in permanent ink and taped to the receptacle the sample was removed from.

Samples are placed in sample bags, labelled with the following details in permanent ink: **GSV Sample ID, Well name, Date, Depth (Interval Taken) and Analysis Type**.

The sampler should also add their own unique sample identifier if applicable.

4. Palynological and paleontological material

Sampling of palynological and paleontological material is assessed on a case-by-case basis. Please contact the DCL to discuss sampling these materials.

5. Hydrocarbons

Hydrocarbon samples are managed by Geoscience Australia and are not stored at the DCL. Sampling of hydrocarbons is granted on a case-by-case basis. Please contact the DCL to discuss the sampling of this material.

Return of sample residue to the 'Department'

Return of samples residue to the 'Department' must be arranged as soon as possible after completion of analyses. The samples should be returned directly to the DCL using an appropriate transportation method (at the 'individuals' cost – contact the Drill Core Library to arrange this).

Appendix 2.

GSV Drill Core

Library Data Reporting Guidelines

These guidelines detail the requirements for reporting data collected on materials stored at the GSV Drill Core Library. This data is to be reported to the GSV Drill Core Library's Geoscientist, Drilling Information within six months of the final sampling date. It is recommended that these guidelines are used in tandem with the "Australian Requirements for the Submission of Digital Exploration Data", which can provide more detailed data reporting information.

Contacts

GSV Drill Core Library

Email: gsv.drillcorelibrary@deeca.vic.gov.au

Phone: 0417 407 256

Shannon Brown

Geoscientist, Drilling Information

Email: shannon.brown@deeca.vic.gov.au

Data for submission to DCL

1. Finalised sample data sheet

An accurately completed Sample Data Sheet (provided on arrival) must be submitted to the DCL team prior to departing the facility.

2. Basic report

The basic report presents a summary of the technical results and a basic geological interpretation from any analysis completed at the facility. It is to be submitted as a pdf or word document and must contain the following information:

Title page, set out as follows:

[Company name]

[Project Name]

GSV Drill Core Library Report

[Analysis type] of [List of drillholes analysed]

Body of report, containing:

- A brief overview of the rationale for analysing the samples.
- Summary of analysis conducted, including a description of your methodology.
- Basic summary of results, highlighting key findings.
- QAQC undertaken.
- Basic interpretation of results.
- Any maps, photos or figures that help illustrate results.

3. Digital data

Data collected during analysis of samples, including, but not limited to geochemical, geochronological, mineralogical and petrological data, as well as any photos of samples, must be submitted to the DCL. Data reporting requirements for each analysis type are provided below.

Geochemistry and geochronology

- Original lab results in .csv format to be submitted.
- Original lab results in pdf format to be submitted.
- All lab preparation and assay details with detection limits must be provided, if not detailed in original lab documents.

pXRF

- Original data export from the device in .csv format, including mode to be submitted.

Magnetic susceptibility

- Original data export from the device in .csv format to be submitted.

Geological logging

- Including lithology, structures, veins, mineralisation, etc.
- Provided in MRT format as per "Guide for exploration retention mining holders for reporting on exploration activities"

All other analysis types

- Discuss with Geoscientist, Drilling Information.

Reporting DCL data in Annual Technical Reports

If you are intending to report data collected from the DCL in an Annual Technical Report, please identify to the Geoscientist, Drilling Information which reporting period the data will be submitted in.

It is essential that a copy of all data obtained at the DCL and a summarised version of your Body – considered a "Basic Report" above - is provided to the DCL separate from your legislative report submission in RRAM.

Your data will only be audited by one team at the time of submission

Contact us

Address 18 South Road, Werribee, VIC 3030

Phone 0417 407 256

Email gsv.drillcorelibrary@deeca.vic.gov.au

Website <https://resources.vic.gov.au/geology-exploration/maps-reports-data/drill-core-library>

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