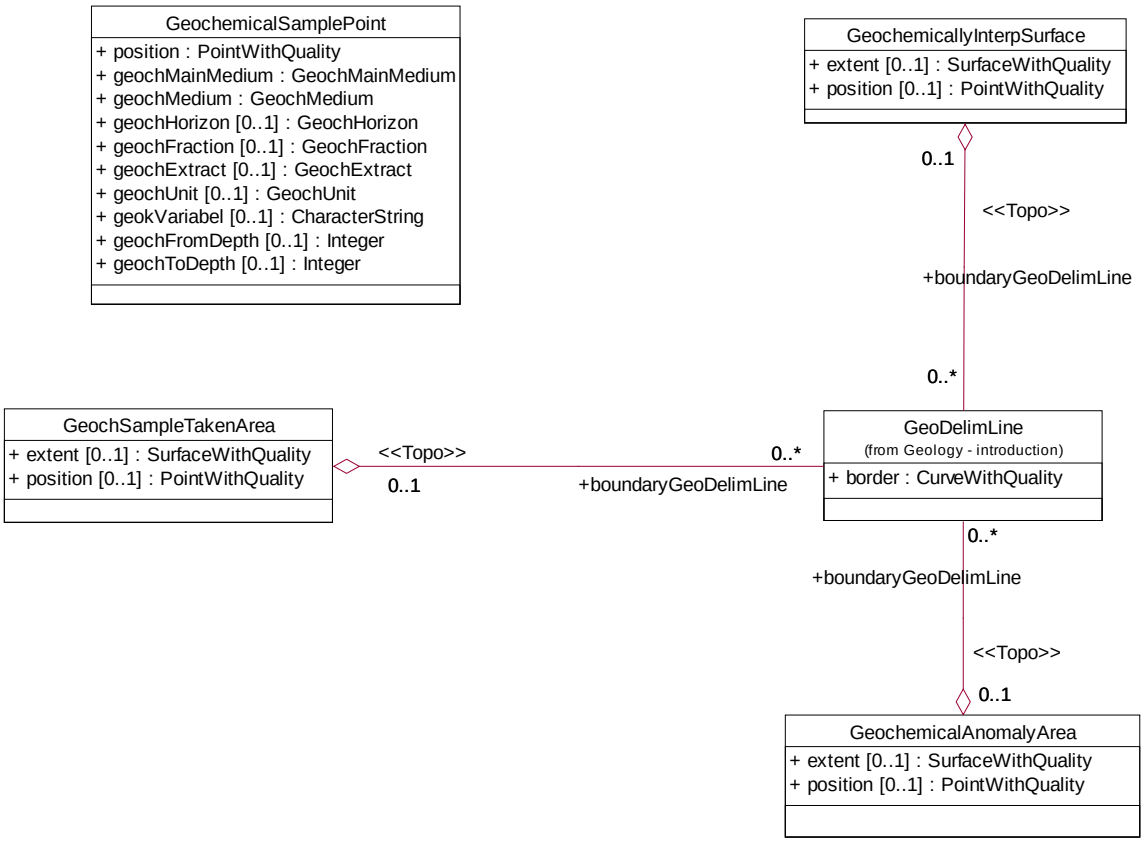
Geochemistry

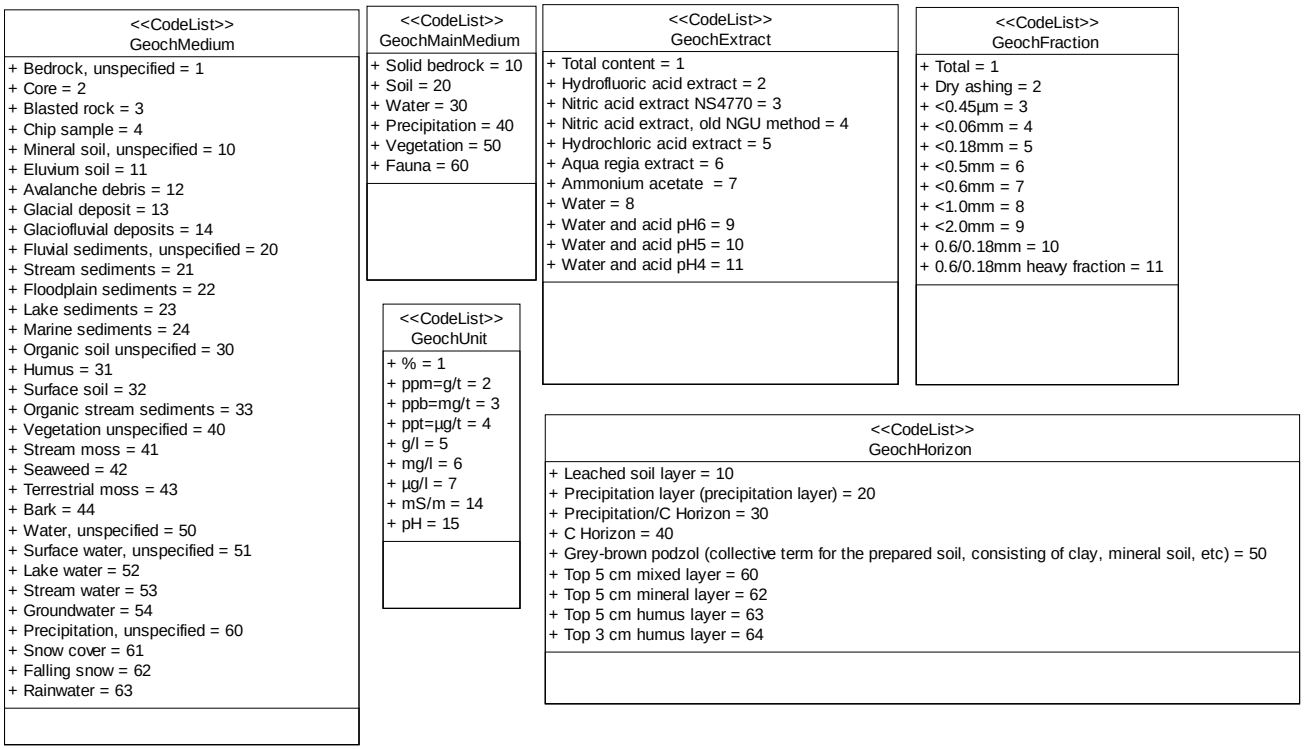
Norwegian Mapping Authority
gerd.mardal@statkart.no

Table of contents

1.1 Application schema



Codelists


<<CodeList>>
GeochMedium
+ Bedrock, unspecified = 1
+ Core = 2
+ Blasted rock = 3
+ Chip sample = 4
+ Mineral soil, unspecified = 10
+ Eluvium soil = 11
+ Avalanche debris = 12
+ Glacial deposit = 13
+ Glaciofluvial deposits = 14
+ Fluvial sediments, unspecified = 20
+ Stream sediments = 21
+ Floodplain sediments = 22
+ Lake sediments = 23
+ Marine sediments = 24
+ Organic soil unspecified = 30
+ Humus = 31
+ Surface soil = 32
+ Organic stream sediments = 33
+ Vegetation unspecified = 40
+ Stream moss = 41
+ Seaweed = 42
+ Terrestrial moss = 43
+ Bark = 44
+ Water, unspecified = 50
+ Surface water, unspecified = 51
+ Lake water = 52
+ Stream water = 53
+ Groundwater = 54
+ Precipitation, unspecified = 60
+ Snow cover = 61
+ Falling snow = 62
+ Rainwater = 63
<<CodeList>>
GeochMainMedium
+ Solid bedrock = 10
+ Soil = 20
+ Water = 30
+ Precipitation = 40
+ Vegetation = 50
+ Fauna = 60
<<CodeList>>
GeochExtract
+ Total content = 1
+ Hydrofluoric acid extract = 2
+ Nitric acid extract NS4770 = 3
+ Nitric acid extract, old NGU method = 4
+ Hydrochloric acid extract = 5
+ Aqua regia extract = 6
+ Ammonium acetate = 7
+ Water = 8
+ Water and acid pH6 = 9
+ Water and acid pH5 = 10
+ Water and acid pH4 = 11
<<CodeList>>
GeochFraction
+ Total = 1
+ Dry ashing = 2
+ <0.45µm = 3
+ <0.06mm = 4
+ <0.18mm = 5
+ <0.5mm = 6
+ <0.6mm = 7
+ <1.0mm = 8
+ <2.0mm = 9
+ 0.6/0.18mm = 10
+ 0.6/0.18mm heavy fraction = 11
<<CodeList>>
GeochUnit
+ % = 1
+ ppm=g/t = 2
+ ppb=mg/t = 3
+ ppt=µg/t = 4
+ g/l = 5
+ mg/l = 6
+ µg/l = 7
+ mS/m = 14
+ pH = 15
<<CodeList>>
GeochHorizon
+ Leached soil layer = 10
+ Precipitation layer (precipitation layer) = 20
+ Precipitation/C Horizon = 30
+ C Horizon = 40
+ Grey-brown podzol (collective term for the prepared soil, consisting of clay, mineral soil, etc) = 50
+ Top 5 cm mixed layer = 60
+ Top 5 cm mineral layer = 62
+ Top 5 cm humus layer = 63
+ Top 3 cm humus layer = 64

1.2 Description

1.2.1 GeochemicalAnomalyArea

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
1	Class GeochemicalAnomalyArea	area with extremely high or low chemical concentrations				
1.1	extent	area over which an object extends	0	1	SurfaceWithQuality	
1.2	position	location where the object exists	0	1	PointWithQuality	
1.3	Role boundaryGeoDelimLine		0	N	GeoDelimLine	Aggregration

1.2.2 GeochemicalSamplePoint

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
2	Class GeochemicalSamplePoint	site where (a) geochemical sample(s) has/have been taken				
2.1	position	location where the object exists	1	1	PointWithQuality	
2.2	geochMainMedium	type of geochemical testing medium according to an first level classification	1	1	GeochMainMedium	
2.3	geochMedium	type of geochemical testing medium according to a detailed classification	1	1	GeochMedium	
2.4	geochHorizon	what part (layer) of the soil profile the sample, measurement or description has been taken from	0	1	GeochHorizon	
2.5	geochFraction	division of geochemical samples into sub-samples based on various methods Note: Note: Common methods are grain size, specific	0	1	GeochFraction	
2.6	geochExtract	methods of liquid extraction of geochemical samples Note: The extract is subject to chemical analysis	0	1	GeochExtract	
2.7	geochUnit	unit of the variable for which a geochemical sample has been analysed	0	1	GeochUnit	

2.8	geokVariabel	elements and inorganic compounds (given with their chemical symbols) for which the sample has been analysed	0	1	CharacterString	
2.9	geochFromDepth	depth from the surface of the terrain down to where the sampling starts Note: (measured in cm)	0	1	Integer	
2.10	geochToDepth	depth from the surface of the terrain down to the lowest level of the sampling Note: (measured in cm)	0	1	Integer	

1.2.3 GeochSampleTakenArea

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
3	Class GeochSampleTakenArea	area where (a) geochemical sample(s) has/have been taken				
3.1	extent	area over which an object extends	0	1	SurfaceWithQuality	
3.2	position	location where the object exists	0	1	PointWithQuality	
3.3	Role boundaryGeoDelimLine		0	N	GeoDelimLine	Aggregration

1.2.4 GeochemicallyInterpSurface

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
4	Class GeochemicallyInterpSurface	surface defined by manual geochemical interpretation, mathematic calculations or a combination of these				
4.1	extent	area over which an object extends	0	1	SurfaceWithQuality	
4.2	position	location where the object exists	0	1	PointWithQuality	
4.3	Role boundaryGeoDelimLine		0	N	GeoDelimLine	Aggregration

1.2.5 Association <<Topo>> GeochemicallyInterpSurface-GeoDelimLine

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
5	Association GeochemicallyInterpSurface-					

	GeoDelimLine					
5.1	Role boundaryGeoDelimLine		0	N	GeoDelimLine	Aggregation
5.2	Role (unnamed) GeochemicallyInterpSurface		0	1	GeochemicallyInterpSurface	

1.2.6 Association <<Topo>> GeochSampleTakenArea-GeoDelimLine

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
6	Association GeochSampleTakenArea-GeoDelimLine					
6.1	Role boundaryGeoDelimLine		0	N	GeoDelimLine	Aggregation
6.2	Role (unnamed) GeochSampleTakenArea		0	1	GeochSampleTakenArea	

1.2.7 Association <<Topo>> GeochemicalAnomalyArea-GeoDelimLine

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
7	Association GeochemicalAnomalyArea-GeoDelimLine					
7.1	Role boundaryGeoDelimLine		0	N	GeoDelimLine	Aggregation
7.2	Role (unnamed) GeochemicalAnomalyArea		0	1	GeochemicalAnomalyArea	

1.2.7.1 <<CodeList>> GeochExtract

Nr	Code name	Definition/Description	Code
1	CodeList GeochExtract	methods of extracting liquids from geochemical samples Note: The extract is subject to chemical analysis	
1.1	Total content		1
1.2	Hydrofluoric acid extract		2
1.3	Nitric acid extract NS4770		3
1.4	Nitric acid extract, old NGU method		4
1.5	Hydrochloric acid extract		5
1.6	Aqua regia extract		6
1.7	Ammonium acetate		7
1.8	Water		8
1.9	Water and acid pH6		9
1.10	Water and acid pH5		10
1.11	Water and acid pH4		11

1.2.7.2 <<CodeList>> GeochUnit

Nr	Code name	Definition/Description	Code
2	CodeList GeochUnit	unit for the variable for which a geochemical sample has been analysed	
2.1	%		1
2.2	ppm=g/t		2
2.3	ppb=mg/t		3
2.4	ppt=µg/t		4
2.5	g/l		5
2.6	mg/l		6
2.7	µg/l		7
2.8	mS/m	milli-Siemens/m; electric conductivity	14
2.9	pH		15

1.2.7.3 <<CodeList>> GeochFraction

Nr	Code name	Definition/Description	Code
3	CodeList	division of geochemical samples into sub-samples based on various methods Note:	

	GeochFraction	Common methods are grain size, specific weight, or magnetic fraction	
3.1	Total		1
3.2	Dry ashing		2
3.3	<0.45µm		3
3.4	<0.06mm		4
3.5	<0.18mm		5
3.6	<0.5mm		6
3.7	<0.6mm		7
3.8	<1.0mm		8
3.9	<2.0mm		9
3.10	0.6/0.18mm		10
3.11	0.6/0.18mm heavy fraction		11

1.2.7.4 <<CodeList>> GeochHorizon

Nr	Code name	Definition/Description	Code
4	CodeList GeochHorizon	what part (layer) of a soil profile the sample, measurement or description is taken from	
4.1	Leached soil layer		10
4.2	Precipitation layer (precipitation layer)		20
4.3	Precipitation/C Horizon		30
4.4	C Horizon		40
4.5	Grey-brown podzol (collective term for the prepared soil, consisting of clay, mineral soil, etc)		50
4.6	Top 5 cm mixed layer		60
4.7	Top 5 cm mineral layer		62
4.8	Top 5 cm humus layer		63
4.9	Top 3 cm humus layer		64

1.2.7.5 <<CodeList>> GeochMedium

Nr	Code name	Definition/Description	Code
5	CodeList GeochMedium	type of geochemical testing medium according to a detailed classification	
5.1	Bedrock, unspecified		1
5.2	Core		2

5.3	Blasted rock		3
5.4	Chip sample		4
5.5	Mineral soil, unspecified		10
5.6	Eluvium soil		11
5.7	Avalanche debris		12
5.8	Glacial deposit		13
5.9	Glaciofluvial deposits		14
5.10	Fluvial sediments, unspecified		20
5.11	Stream sediments		21
5.12	Floodplain sediments		22
5.13	Lake sediments		23
5.14	Marine sediments		24
5.15	Organic soil unspecified		30
5.16	Humus		31
5.17	Surface soil		32
5.18	Organic stream sediments		33
5.19	Vegetation unspecified		40
5.20	Stream moss		41
5.21	Seaweed		42
5.22	Terrestrial moss		43
5.23	Bark		44
5.24	Water, unspecified		50
5.25	Surface water, unspecified		51
5.26	Lake water		52
5.27	Stream water		53
5.28	Groundwater		54
5.29	Precipitation, unspecified		60
5.30	Snow cover		61
5.31	Falling snow		62
5.32	Rainwater		63

1.2.7.6 <<CodeList>> GeochMainMedium

Nr	Code name	Definition/Description	Code
6	CodeList GeochMainMedium	type of geochemical testing medium according to an overall classification	

6.1	Solid bedrock		10
6.2	Soil		20
6.3	Water		30
6.4	Precipitation		40
6.5	Vegetation		50
6.6	Fauna		60