Biosample metadata template for water samples as defined by the Index of Terms

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Field	Description	Guidance	Examples	Data Status
required where applicable				
sample identification				
default				
ID	A globally unique identifier assigned to the biological sample to link all analytes and subsamples derived from it.			None

Field	Description	Guidance	Examples	Data Status
samp_name	A local identifier or name that for the material sample used for extracting nucleic acids, and subsequent sequencing. It can refer either to the original material collected or to any derived sub-samples. It can have any format, but we suggest that you make it concise, unique and consistent within your lab, and as informative as possible. INSDC requires every sample name from a single Submitter to be unique. Use of a globally unique identifier for the field source_mat_id is recommended in addition to sample_name.	ID that is present on the shipped sample. Human readable.	ISDsoil1	None
project_ID	5 digit EMSL user project ID			None

Field	Description	Guidance	Examples	Data Status
investigation_type	Nucleic Acid Sequence Report is the root element of all MIGS/MIMS compliant reports as standardized by Genomic Standards Consortium. This field is either eukaryote,bacteria,virus,plasmid,organelle, metagenome,mimarks-survey, mimarks-specimen, metatranscriptome, single amplified genome, metagenome-assembled genome, or uncultivated viral genome	This field is constrained to contain only a set of limited terms (listed under Expected value) that indicate the types of data that were generated. Include all the data types, this field can have multiple values separated by a ;	metagenome	None
package				None
source_mat_id	A unique identifier assigned to a material sample (as defined by http://rs.tdwg.org/dwc/terms/materialSampleID, and as opposed to a particular digital record of a material sample) used for extracting nucleic acids, and subsequent sequencing. The identifier can refer either to the original material collected or to any derived sub-samples. The INSDC qualifiers /specimen_voucher, /bio_material, or /culture_collection may or may not share the same value as the	A unique identifier assigned to an original material sample collected or to any derived sub-samples. The source material sampled should be listed as a sample to inform details about parent material relationship.	MPI012345	None

Field	Description	Guidance	Examples	Data Status
	source_mat_id field. For instance, the /specimen_voucher qualifier and source_mat_id may both contain 'UAM:Herps:14' , referring to both the specimen voucher and sampled tissue with the same identifier. However, the /culture_collection qualifier may refer to a value from an initial culture (e.g. ATCC:11775) while source_mat_id would refer to an identifier from some derived culture from which the nucleic acids were extracted (e.g. xatc123 or ark:/2154/R2).			
replicate_number	If sending biological replicates, indicate the rep number here.			None
technical_reps	If sending multiple technical replicates of the same sample, indicate how many replicates are being sent			None

Field	Description	Guidance	Examples	Data Status
growth_facil	Type of facility where the sampled plant was grown; controlled vocabulary: growth chamber, open top chamber, glasshouse, experimental garden, field. Alternatively use Crop Ontology (CO) terms, see http://www.cropontology.org/ontology/CO_715/Crop%20Research	Type of facility or location form where the sample was harvested	Growth chamber [CO_715:0000189]	None
collection_date	The time of sampling, either as an instance (single point in time) or interval. In case no exact time is available, the date/time can be right truncated i.e. all of these are valid times: 2008-01-23T19:23:10+00:00; 2008-01-23T19:23:10; 2008-01-23; 2008-01; 2008; Except: 2008-01; 2008 all are ISO8601 compliant	Expected value: date and time	2018-05-11T10:00:00+01:00; 2018-05-11	None
samp_mat_process	A brief description of any processing applied to the sample during or after retrieving the sample from environment, or a link to the relevant protocol(s) performed.	Expected value: text	filtering of seawater, storing samples in ethanol	None
store_cond	Explain how and for how long the soil sample was stored before DNA extraction (fresh/frozen/other).	Informs how your sample was stored	-20 degree Celsius freezer;P2Y10D	None

Field	Description	Guidance	Examples	Data Status
samp_store_temp	Temperature at which sample was stored, e.g. -80 degree Celsius	Expected value: measurement value|Preferred unit: degree Celsius|Occurrence: 1|This field is used in: 15 packages: air, host-associated, human-associated, human-gut, human-oral, human-skin, human-vaginal, hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, plant-associated, sediment, wastewater_sludge, water	-80 degree Celsius	None
samp_size	The total amount or size (volume (ml), mass (g) or area (m2)) of sample collected.	Expected value: measurement value|Preferred unit: millliter, gram, milligram, liter	5 liter	None
geo_loc_name	The geographical origin of the sample as defined by the country or sea name followed by specific region name. Country or sea names should be chosen from the INSDC country list (http://insdc.org/country.html), or the GAZ ontology (http://purl.bioontology.org/ontology/GAZ)	Expected value: country or sea name (INSDC or GAZ): region(GAZ), specific location name	USA: Maryland, Bethesda	None
lat_lon	The geographical origin of the sample as defined by latitude and longitude. The values should be reported in decimal degrees and in WGS84 system	Expected value: decimal degrees, limit to 8 decimal points	50.586825 6.408977	None

Field	Description	Guidance	Examples	Data Status
elev	Elevation of the sampling site is its height above a fixed reference point, most commonly the mean sea level. Elevation is mainly used when referring to points on the earth's surface, while altitude is used for points above the surface, such as an aircraft in flight or a spacecraft in orbit.	Expected value: measurement value|This field is used in: 9 packages: air, host-associated, hydrocarbon resources-cores, microbial mat_biofilm, miscellaneous natural or artificial environment, plant-associated, sediment, soil, water	100 meter	None
depth	The vertical distance below local surface, e.g. for sediment or soil samples depth is measured from sediment or soil surface, respectively. Depth can be reported as an interval for subsurface samples.	When sample is collected with a ___ depth and homogenized, please report depth as a ____. (example, 0-10cm for soil collected from the surface to 10cm below and homogenized, or 10-20 for soil collected and homogenized from 10cm below the surface to 20cm).	10 meter	None
watering_regm	Information about treatment involving an exposure to watering frequencies, treatment regimen including how many times the treatment was repeated, how long each treatment lasted, and the start and end time of the entire treatment; can include multiple regimens	Expected value: measurement value;treatment interval and duration|Preferred unit: milliliter, liter|Occurrence: m|This field is used uniquely in: plant-associated	1 liter;R2/2018-05-11T14:30/2018-05-11T19:30/P1H30M	None

Field	Description	Guidance	Examples	Data Status
air_temp_regm	Information about treatment involving an exposure to varying temperatures; should include the temperature, treatment regimen including how many times the treatment was repeated, how long each treatment lasted, and the start and end time of the entire treatment; can include different temperature regimens	Expected value: temperature value;treatment interval and duration|Preferred unit: meter|Occurrence: m|This field is used uniquely in: plant-associated	25 degree Celsius;R2/2018-05-11T14:30/2018-05-11T19:30/P1H30M	None
gaseous_environment	Use of conditions with differing gaseous environments; should include the name of gaseous compound, amount administered, treatment duration, interval and total experimental duration; can include multiple gaseous environment regimens	Expected value: gaseous compound name;gaseous compound amount;treatment interval and duration|Preferred unit: micromole per liter|Occurrence: m|This field is used uniquely in: plant-associated	nitric oxide;0.5 micromole per liter;R2/2018-05-11T14:30/2018-05-11T19:30/P1H30M	None
isotope_exposure				None

Field	Description	Guidance	Examples	Data Status
climate_environment	Treatment involving an exposure to a particular climate; treatment regimen including how many times the treatment was repeated, how long each treatment lasted, and the start and end time of the entire treatment; can include multiple climates	Expected value: climate name;treatment interval and duration|Occurrence: m|This field is used uniquely in: plant-associated	tropical climate;R2/2018-05-11T14:30/2018-05-11T19:30/P1H30M	None
humidity_regm	Information about treatment involving an exposure to varying degree of humidity; information about treatment involving use of growth hormones; should include amount of humidity administered, treatment regimen including how many times the treatment was repeated, how long each treatment lasted, and the start and end time of the entire treatment; can include multiple regimens	Expected value: humidity value;treatment interval and duration|Preferred unit: gram per cubic meter|Occurrence: m|This field is used uniquely in: plant-associated	25 gram per cubic meter;R2/2018-05-11T14:30/2018-05-11T19:30/P1H30M	None
light_regm	Information about treatment(s) involving exposure to light, including both light intensity and quality.	Expected value: exposure type;light intensity;light quality|Preferred unit: lux; micrometer, nanometer, angstrom|Occurrence: 1|This field is used uniquely in: plant-associated	incandescant light;10 lux;450 nanometer	None

Field	Description	Guidance	Examples	Data Status
biotic_regm	Information about treatment(s) involving use of biotic factors, such as bacteria, viruses or fungi.	Expected value: free text|Occurrence: 1|This field is used uniquely in: plant-associated	sample inoculated with Rhizobium spp. Culture	None
other_treatment				None
size_frac	Filtering pore size used in sample preparation	Expected value: filter size value range	0-0.22 micrometer	None
samp_collect_device	The method or device employed for collecting the sample			None
alt	Altitude is a term used to identify heights of objects such as airplanes, space shuttles, rockets, atmospheric balloons and heights of places such as atmospheric layers and clouds. It is used to measure the height of an object which is above the earth's surface. In this context, the altitude measurement is the vertical distance between the earth's surface above sea level and the sampled position in the air	Expected value: measurement value|This field is used in: 3 packages: air, host-associated, miscellaneous natural or artificial environment	100 meter	None
other				None

Field	Description	Guidance	Examples	Data Status
practice_method-dev	If your sample is being sent as a test or practice sample, indicate the target test or what this test sample is meant to resolve.			None
alkalinity	Alkalinity, the ability of a solution to neutralize acids to the equivalence point of carbonate or bicarbonate	Expected value: measurement value|Preferred unit: milliequivalent per liter, milligram per liter|Occurrence: 1|This field is used in: 7 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, wastewater_sludge, water	50 milligram per liter	None
alkalinity_method	Method used for alkalinity measurement	Expected value: description of method|Occurrence: 1|This field is used in: 3 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, water	titration	None
alkyl_diethers	Concentration of alkyl diethers	Expected value: measurement value|Preferred unit: mole per liter|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	0.005 mole per liter	None
aminopept_act	Measurement of aminopeptidase activity	Expected value: measurement value|Preferred unit: mole per liter per hour|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	0.269 mole per liter per hour	None

Field	Description	Guidance	Examples	Data Status
ammonium	Concentration of ammonium in the sample	Expected value: measurement value|Preferred unit: micromole per liter, milligram per liter, parts per million|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	1.5 milligram per liter	None
atmospheric_data	Measurement of atmospheric data; can include multiple data	Expected value: atmospheric data name;measurement value|Occurrence: m|This field is used uniquely in: water	wind speed;9 knots	None
bac_prod	Bacterial production in the water column measured by isotope uptake	Expected value: measurement value|Preferred unit: milligram per cubic meter per day|Occurrence: 1|This field is used uniquely in: water	5 milligram per cubic meter per day	None
bac_resp	Measurement of bacterial respiration in the water column	Expected value: measurement value|Preferred unit: milligram per cubic meter per day, micromole oxygen per liter per hour|Occurrence: 1|This field is used uniquely in: water	300 micromole oxygen per liter per hour	None
bacteria_carb_prod	Measurement of bacterial carbon production	Expected value: measurement value|Preferred unit: nanogram per hour|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	2.53 microgram per liter per hour	None
biomass	Amount of biomass; should include the name for the part of biomass measured, e.g. Microbial, total. Can include multiple measurements	Expected value: biomass type;measurement value|Preferred unit: ton, kilogram, gram|Occurrence: m|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	total;20 gram	None

Field	Description	Guidance	Examples	Data Status
bishomohopanol	Concentration of bishomohopanol	Expected value: measurement value|Preferred unit: microgram per liter, microgram per gram|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	14 microgram per liter	None
bromide	Concentration of bromide	Expected value: measurement value|Preferred unit: parts per million|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	0.05 parts per million	None
calcium	Concentration of calcium in the sample	Expected value: measurement value|Preferred unit: milligram per liter, micromole per liter, parts per million|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	0.2 micromole per liter	None
carb_nitro_ratio	Ratio of amount or concentrations of carbon to nitrogen	Expected value: measurement value|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	0.417361111	None
chloride	Concentration of chloride in the sample	Expected value: measurement value|Preferred unit: milligram per liter, parts per million|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	5000 milligram per liter	None

Field	Description	Guidance	Examples	Data Status
chlorophyll	Concentration of chlorophyll	Expected value: measurement value|Preferred unit: milligram per cubic meter, microgram per liter|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	5 milligram per cubic meter	None
conduc	Electrical conductivity of water	Expected value: measurement value|Preferred unit: milliSiemens per centimeter|Occurrence: 1|This field is used uniquely in: water	10 milliSiemens per centimeter	None
density	Density of the sample, which is its mass per unit volume (aka volumetric mass density)	Expected value: measurement value|Preferred unit: gram per cubic meter, gram per cubic centimeter|Occurrence: 1|This field is used in: 5 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, miscellaneous natural or artificial environment, sediment, water	1000 kilogram per cubic meter	None
diether_lipids	Concentration of diether lipids; can include multiple types of diether lipids	Expected value: diether lipid name;measurement value|Preferred unit: nanogram per liter|Occurrence: m|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	0.2 nanogram per liter	None
diss_carb_dioxide	Concentration of dissolved carbon dioxide in the sample or liquid portion of the sample	Expected value: measurement value|Preferred unit: micromole per liter, milligram per liter|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	5 milligram per liter	None

Field	Description	Guidance	Examples	Data Status
diss_hydrogen	Concentration of dissolved hydrogen	Expected value: measurement value|Preferred unit: micromole per liter|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	0.3 micromole per liter	None
diss_inorg_carb	Dissolved inorganic carbon concentration in the sample, typically measured after filtering the sample using a 0.45 micrometer filter	Expected value: measurement value|Preferred unit: microgram per liter, milligram per liter, parts per million|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	2059 micromole per kilogram	None
diss_inorg_nitro	Concentration of dissolved inorganic nitrogen	Expected value: measurement value|Preferred unit: microgram per liter, micromole per liter|Occurrence: 1|This field is used uniquely in: water	761 micromole per liter	None
diss_inorg_phosp	Concentration of dissolved inorganic phosphorus in the sample	Expected value: measurement value|Preferred unit: microgram per liter, milligram per liter, parts per million|Occurrence: 1|This field is used in: 3 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, water	56.5 micromole per liter	None
diss_org_carb	Concentration of dissolved organic carbon in the sample, liquid portion of the sample, or aqueous phase of the fluid	Expected value: measurement value|Preferred unit: micromole per liter, milligram per liter|Occurrence: 1|This field is used in: 5 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, sediment, water	197 micromole per liter	None

Field	Description	Guidance	Examples	Data Status
diss_org_nitro	Dissolved organic nitrogen concentration measured as; total dissolved nitrogen - NH4 - NO3 - NO2	Expected value: measurement value|Preferred unit: microgram per liter, milligram per liter|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	0.05 micromole per liter	None
diss_oxygen	Concentration of dissolved oxygen	Expected value: measurement value|Preferred unit: micromole per kilogram, milligram per liter|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	175 micromole per kilogram	None
down_par	Visible waveband radiance and irradiance measurements in the water column	Expected value: measurement value|Preferred unit: microEinstein per square meter per second, microEinstein per square centimeter per second|Occurrence: 1|This field is used uniquely in: water	28.71 microEinstein per square meter per second	None
fluor	Raw or converted fluorescence of water	Expected value: measurement value|Preferred unit: milligram chlorophyll a per cubic meter, volts|Occurrence: 1|This field is used uniquely in: water	2.5 volts	None
glucosidase_act	Measurement of glucosidase activity	Expected value: measurement value|Preferred unit: mol per liter per hour|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	5 mol per liter per hour	None
light_intensity	Measurement of light intensity	Expected value: measurement value|Preferred unit: lux|Occurrence: 1|This field is used uniquely in: water	0.3 lux	None

Field	Description	Guidance	Examples	Data Status
magnesium	Concentration of magnesium in the sample	Expected value: measurement value|Preferred unit: mole per liter, milligram per liter, parts per million, micromole per kilogram|Occurrence: 1|This field is used in: 5 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, sediment, water	52.8 micromole per kilogram	None
mean_frict_vel	Measurement of mean friction velocity	Expected value: measurement value|Preferred unit: meter per second|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	0.5 meter per second	None
mean_peak_frict_vel	Measurement of mean peak friction velocity	Expected value: measurement value|Preferred unit: meter per second|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	1 meter per second	None
misc_param	Any other measurement performed or parameter collected, that is not listed here	Expected value: parameter name;measurement value|Occurrence: m|This field is used in: 16 packages: air, host-associated, human-associated, human-gut, human-oral, human-skin, human-vaginal, hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, plant-associated, sediment, soil, wastewater_sludge, water	Bicarbonate ion concentration;2075 micromole per kilogram	None
n_alkanes	Concentration of n-alkanes; can include multiple n-alkanes	Expected value: n-alkane name;measurement value|Preferred unit: micromole per liter|Occurrence: m|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	n-hexadecane;100 milligram per liter	None

Field	Description	Guidance	Examples	Data Status
nitrate	Concentration of nitrate in the sample	Expected value: measurement value|Preferred unit: micromole per liter, milligram per liter, parts per million|Occurrence: 1|This field is used in: 7 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, wastewater_sludge, water	65 micromole per liter	None
nitrite	Concentration of nitrite in the sample	Expected value: measurement value|Preferred unit: micromole per liter, milligram per liter, parts per million|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	0.5 micromole per liter	None
nitro	Concentration of nitrogen (total)	Expected value: measurement value|Preferred unit: micromole per liter|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	4.2 micromole per liter	None
org_carb	Concentration of organic carbon	Expected value: measurement value|Preferred unit: micromole per liter|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	1.5 microgram per liter	None

Field	Description	Guidance	Examples	Data Status
org_matter	Concentration of organic matter	Expected value: measurement value|Preferred unit: microgram per liter|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	1.75 milligram per cubic meter	None
org_nitro	Concentration of organic nitrogen	Expected value: measurement value|Preferred unit: microgram per liter|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	4 micromole per liter	None
organism_count	Total cell count of any organism (or group of organisms) per gram, volume or area of sample, should include name of organism followed by count. The method that was used for the enumeration (e.g. qPCR, atp, mpn, etc.) Should also be provided. (example: total prokaryotes; 3.5e7 cells per ml; qpcr)	Expected value: organism name;measurement value;enumeration|Preferred unit: number of cells per cubic meter, number of cells per milliliter, number of cells per cubic centimeter|Occurrence: m|This field is used in: 16 packages: air, built environment, host-associated, human-associated, human-gut, human-oral, human-skin, human-vaginal, hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, plant-associated, sediment, wastewater_sludge, water	total prokaryotes;3.5e7 cells per milliliter;qPCR	None

Field	Description	Guidance	Examples	Data Status
oxy_stat_samp	Oxygenation status of sample	Expected value: enumeration|Occurrence: 1|This field is used in: 15 packages: air, host-associated, human-associated, human-gut, human-oral, human-skin, human-vaginal, hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, plant-associated, sediment, wastewater_sludge, water	aerobic	None
part_org_carb	Concentration of particulate organic carbon	Expected value: measurement value|Preferred unit: microgram per liter|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	1.92 micromole per liter	None
part_org_nitro	Concentration of particulate organic nitrogen	Expected value: measurement value|Preferred unit: microgram per liter, micromole per liter|Occurrence: 1|This field is used uniquely in: water	0.3 micromole per liter	None
perturbation	Type of perturbation, e.g. chemical administration, physical disturbance, etc., coupled with perturbation regimen including how many times the perturbation was repeated, how long each perturbation lasted, and the start and end time of the entire perturbation period; can include multiple perturbation types	Expected value: perturbation type name;perturbation interval and duration|Occurrence: m|This field is used in: 13 packages: air, host-associated, human-associated, human-gut, human-oral, human-skin, human-vaginal, microbial mat_biofilm, miscellaneous natural or artificial environment, plant-associated, sediment, wastewater_sludge, water	antibiotic addition;R2/2018-05-11T14:30Z/2018-05-11T19:30Z/P1H30M	None

Field	Description	Guidance	Examples	Data Status
petroleum_hydrocarb	Concentration of petroleum hydrocarbon	Expected value: measurement value|Preferred unit: micromole per liter|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	0.05 micromole per liter	None
ph	Ph measurement of the sample, or liquid portion of sample, or aqueous phase of the fluid	Expected value: measurement value|Occurrence: 1|This field is used in: 8 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, soil, wastewater_sludge, water	7.2	None
ph_meth	Reference or method used in determining ph	Expected value: PMID,DOI or url|Occurrence: 1|This field is used uniquely in: soil		None
phaeopigments	Concentration of phaeopigments; can include multiple phaeopigments	Expected value: phaeopigment name;measurement value|Preferred unit: milligram per cubic meter|Occurrence: m|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	2.5 milligram per cubic meter	None
phosphate	Concentration of phosphate	Expected value: measurement value|Preferred unit: micromole per liter|Occurrence: 1|This field is used in: 5 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, wastewater_sludge, water	0.7 micromole per liter	None
phosplipid_fatt_acid	Concentration of phospholipid fatty acids; can include multiple values	Expected value: phospholipid fatty acid name;measurement value|Preferred unit: mole per gram, mole per liter|Occurrence: m|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	2.98 milligram per liter	None

Field	Description	Guidance	Examples	Data Status
photon_flux	Measurement of photon flux	Expected value: measurement value|Preferred unit: number of photons per second per unit area|Occurrence: 1|This field is used uniquely in: water	3.926 micromole photons per second per square meter	None
potassium	Concentration of potassium in the sample	Expected value: measurement value|Preferred unit: milligram per liter, parts per million|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	463 milligram per liter	None
pressure	Pressure to which the sample is subject to, in atmospheres	Expected value: measurement value|Preferred unit: atmosphere|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	50 atmosphere	None
primary_prod	Measurement of primary production, generally measured as isotope uptake	Expected value: measurement value|Preferred unit: milligram per cubic meter per day, gram per square meter per day|Occurrence: 1|This field is used uniquely in: water	100 milligram per cubic meter per day	None
redox_potential	Redox potential, measured relative to a hydrogen cell, indicating oxidation or reduction potential	Expected value: measurement value|Preferred unit: millivolt|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	300 millivolt	None

Field	Description	Guidance	Examples	Data Status
salinity	The total concentration of all dissolved salts in a liquid or solid sample. While salinity can be measured by a complete chemical analysis, this method is difficult and time consuming. More often, it is instead derived from the conductivity measurement. This is known as practical salinity. These derivations compare the specific conductance of the sample to a salinity standard such as seawater.	Expected value: measurement value|Preferred unit: practical salinity unit, percentage|Occurrence: 1|This field is used in: 15 packages: air, host-associated, human-associated, human-gut, human-oral, human-skin, human-vaginal, hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, plant-associated, sediment, wastewater_sludge, water	25 practical salinity unit	None
silicate	Concentration of silicate	Expected value: measurement value|Preferred unit: micromole per liter|Occurrence: 1|This field is used in: 4 packages: microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	0.05 micromole per liter	None
sodium	Sodium concentration in the sample	Expected value: measurement value|Preferred unit: milligram per liter, parts per million|Occurrence: 1|This field is used in: 7 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, wastewater_sludge, water	10.5 milligram per liter	None

Field	Description	Guidance	Examples	Data Status
soluble_react_phosp	Concentration of soluble reactive phosphorus	Expected value: measurement value|Preferred unit: micromole per liter, milligram per liter, parts per million|Occurrence: 1|This field is used uniquely in: water	0.1 milligram per liter	None
sulfate	Concentration of sulfate in the sample	Expected value: measurement value|Preferred unit: micromole per liter, milligram per liter, parts per million|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	5 micromole per liter	None
sulfide	Concentration of sulfide in the sample	Expected value: measurement value|Preferred unit: micromole per liter, milligram per liter, parts per million|Occurrence: 1|This field is used in: 6 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, sediment, water	2 micromole per liter	None
suspend_part_matter	Concentration of suspended particulate matter	Expected value: measurement value|Preferred unit: milligram per liter|Occurrence: 1|This field is used uniquely in: water	0.5 milligram per liter	None

Field	Description	Guidance	Examples	Data Status
temp	Temperature of the sample at the time of sampling.	Expected value: measurement value|Preferred unit: degree Celsius|This field is used in: 15 packages: air, host-associated, human-associated, human-gut, human-oral, human-skin, human-vaginal, hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, microbial mat_biofilm, miscellaneous natural or artificial environment, plant-associated, sediment, wastewater_sludge, water	25 degree Celsius	None
tidal_stage	Stage of tide	Expected value: enumeration|Occurrence: 1|This field is used in: 2 packages: sediment, water	high tide	None
tot_depth_water_col	Measurement of total depth of water column	Expected value: measurement value|Preferred unit: meter|Occurrence: 1|This field is used in: 2 packages: sediment, water	500 meter	None
tot_diss_nitro	Total dissolved nitrogen concentration, reported as nitrogen, measured by: total dissolved nitrogen = NH4 + NO3NO2 + dissolved organic nitrogen	Expected value: measurement value|Preferred unit: microgram per liter|Occurrence: 1|This field is used uniquely in: water	40 microgram per liter	None
tot_inorg_nitro	Total inorganic nitrogen content	Expected value: measurement value|Preferred unit: microgram per liter|Occurrence: 1|This field is used uniquely in: water	40 microgram per liter	None

Field	Description	Guidance	Examples	Data Status
tot_nitro	Total nitrogen concentration of water samples, calculated by: total nitrogen = total dissolved nitrogen + particulate nitrogen. Can also be measured without filtering, reported as nitrogen	Expected value: measurement value|Preferred unit: microgram per liter, micromole per liter, milligram per liter|Occurrence: 1|This field is used in: 4 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, wastewater_sludge, water	50 micromole per liter	None
tot_part_carb	Total particulate carbon content	Expected value: measurement value|Preferred unit: microgram per liter, micromole per liter|Occurrence: 1|This field is used uniquely in: water	35 micromole per liter	None
tot_phosp	Total phosphorus concentration in the sample, calculated by: total phosphorus = total dissolved phosphorus + particulate phosphorus	Expected value: measurement value|Preferred unit: micromole per liter, milligram per liter, parts per million|Occurrence: 1|This field is used in: 3 packages: hydrocarbon resources-cores, hydrocarbon resources-fluids_swabs, water	0.03 milligram per liter	None
turbidity	Measure of the amount of cloudiness or haziness in water caused by individual particles	Expected value: measurement value|Preferred unit: formazin turbidity unit, formazin nephelometric units|Occurrence: 1|This field is used in: 3 packages: microbial mat_biofilm, sediment, water	0.3 nephelometric turbidity units	None
water_current	Measurement of magnitude and direction of flow within a fluid	Expected value: measurement value|Preferred unit: cubic meter per second, knots|Occurrence: 1|This field is used in: 2 packages: miscellaneous natural or artificial environment, water	10 cubic meter per second	None

Field	Description	Guidance	Examples	Data Status
chem_administration	List of chemical compounds administered to the host or site where sampling occurred, and when (e.g. Antibiotics, n fertilizer, air filter); can include multiple compounds. For chemical entities of biological interest ontology (chebi) (v 163), http://purl.bioontology.org/ontology/chebi	Expected value: CHEBI;timestamp|Occurrence: m|This field is used in: 13 packages: air, host-associated, human-associated, human-gut, human-oral, human-skin, human-vaginal, microbial mat_biofilm, miscellaneous natural or artificial environment, plant-associated, sediment, wastewater_sludge, water	agar [CHEBI:2509];2018-05-11T20:00Z	None
size_frac_low	Refers to the mesh/pore size used to pre-filter/pre-sort the sample. Materials larger than the size threshold are excluded from the sample	Expected value: value|Preferred unit: micrometer|Occurrence: 1|This field is used uniquely in: water	0.2 micrometer	None
size_frac_up	Refers to the mesh/pore size used to retain the sample. Materials smaller than the size threshold are excluded from the sample	Expected value: value|Preferred unit: micrometer|Occurrence: 1|This field is used uniquely in: water	20 micrometer	None