

GENERIC OPERATOR RETURNS (GOR)

Water discharge returns file format

v1.9 10/10/14

The Generic Operator Returns (GOR) system enables Environment Agency customers to submit monitoring data via the internet. The Water Discharge Returns component was originally introduced to support Operator Self Monitoring (OSM) activity by the water utility companies, but it can be used to submit a wide variety of environmental monitoring and compliance sampling data to the Environment Agency.

When monitoring data are sent via GOR the system requires that they are provided in a single consistent format. Each file containing sample data must have the same data structure so that GOR can apply a single validation and capture process to all files received.

This document details the structure and data content of the Extensible Markup Language (XML) file format required by GOR.

The File Format

The file format is defined by the XML schema definition file which is available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/375382/LIT10054_WaterQualityMultiReturn.xsd

These notes relate to version 1.0 of the Water Quality Returns XML schema file.

The schema file contains annotations for each element where appropriate. A brief description of the key elements is outlined below;

Element Name	Notes
FileUpload	The root of the document. The document root must contain one or more sample elements.
Sample	Represents a single water quality sample point with sub elements pertaining to that sample point. A 'sample' element must contain one or more 'measurement' elements.
Measurement	Represents a single water quality measurement with sub elements pertaining to that measurement.

The file format allows multiple samples across multiple sampling points, with information on each held at the appropriate level in the file structure. For example, against a file you must specify the customer information and against a sample you must specify sample point information.

Lists of allowed values that give information about the data you are reporting are included in the schema (e.g. SampleType may be U, C or D meaning: update, create or delete).

Lists of allowed values for the data you are reporting (e.g. Units, DeterminandName) are available in an excel spreadsheet:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/375374/LIT10051_WQ_GOR_sample_picklist_values.xls

Customer sample point names have to be agreed and set up in GOR by Environment Agency staff before they can be used.

File level rules

(Validation rules per data item, i.e. field level validation, are detailed in the Data Content and Validation section below)

- Sample data file format must be XML and comply with the XML schema.
- Files that fail GOR validation with one or more errors will be rejected.
- All GOR validation errors will be identified and reported to the originator so that the file can be corrected and resubmitted.
- Results must only be sent once the analysis on the sample is complete.
- The file must contain only characters allowed under UTF-8.
- Date formats will be in YYYY-MM-DD as defined in the XML schema
- Duplicate records check: No two lines in a single file can relate to the same result, i.e. cannot have the same combination of:
 - sampling point name
 - date time (to the nearest minute)
 - Material
 - determinand name

Where a single sample is used for multiple purpose codes, this must be recorded in the file as separate samples for each purpose code (and each 'new' sample should have the sample date time incremented by one minute)

Authorisation

The individual making a submission must agree with a declaration section before being allowed to submit the file.

Nil returns

Nil returns (e.g. where a particular sample was not taken because there was no discharge) will be reported by a sample point determinand result record (e.g. with a determinand of “no flow”).

File Structure

1	FILE
1	HEADER
1-many	SAMPLE HEADER
1	[sample level data – see table below]
1	Customer's Lab Sample Reference
0-many	Customer's Lab Sample Reference (secondary)
1-many	Determinand result level data – see table below

File Content and Field Level Validation

customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
0345 988 1188
0845 988 1188

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Key:

1. Header/Sample/Det - indicates whether this is Header level data, Sample level data or Determinand (i.e. result) level data.
2. Attribute – the name of the data.
3. Closed List - means that the value provided must be one of a prescribed set of values (as in a dropdown or picklist).
4. Optionality - M(andatory); O(ptional); DM Dependent mandatory i.e. if another data item is present this is mandatory e.g. if Purged Volume is present, Purged Volume Unit is mandatory.
5. Validation – what tests the Agency will apply to the data.

Header Sample Det	Attribute	Closed List	Optionalit y	Validation
H	File Type		M	Must be "CUSTOM". This tells GOR that the file was created using customer's own mechanism (rather than an Environment Agency spreadsheet)
H	IR Customer Identifier Regulated Customer ID (RCID)		M	The Environment Agency will provide customers with an ID. The ID may change when GOR Login is via the Government Gateway
H	Customer Reference		O	Any alpha numeric field This is not processed by the Environment Agency.
1-many	Sample			
S	Sampler		O	Alphanumeric string
S	Sample Type	✓	M	"U" – Means update with new value or values for sample "D" - Means delete this sample and any associated results "C" for create
S	Customer Sample Point Name (How customer refers to it)	✓	M	Must match a closed set of values i.e one that exists on the Agency customer-to-Agency-code translation table for that specific customer
S	Sample Date Time		M	Must be a valid date time (to the nearest minute)
S	Purpose Type Name	✓	M	Must match a closed set of Agency-declared values
S	Material name	✓	M	Must match a closed set of Agency-declared values
S	Mechanism	✓	M	Must be a valid mechanism for the purpose type (e.g. spot for OSM), matching a closed set of Agency-declared values
S	Customers Lab Sample Reference		M	Any alphanumeric Must be unique within customer
S	Customers Lab Sample Reference (Secondary)		O	Any alphanumeric

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S	Comment		O	Any alpha numeric string
S	Lab Name		M	Any alphanumeric
S	Depth value		O	Numeric
	Depth value units	✓	DM	Must be present if depth value is present (typically meters) and match a closed list of Environment Agency-declared values.
S	Depth relative to	✓	DM	Must be present if depth value is present and match a closed list of Environment Agency-declared values
S	Purged Volume		O	Numeric
	Purged Volume units	✓	DM	Must be present if purged volume is present and match a closed list of Environment Agency-declared values
S	Analysis Complete Date time		M	Must be a valid date time
D	Determinand Name	✓	M	Must match a closed set of values i.e one that exists on the Environment Agency -declared determinand list. (Determinand values include 'No flow' value)
D	Result Type	✓	M	Only used for the following values: "N" – Meaning no result "E" – meaning a result (in which case make this mandatory)
D	Result value		M	Can be negative, zero or positive number
D	(Result) units	✓	M	Must match a closed set of values and be a valid one for the determinand used valid one for the combination of determinand and material used (typically there will be a group of valid units for a given determinand and material combination e.g. group x is allowed mg/l or mg/kg)
D	Qualifier	✓	M	Must match a closed set of values. (LT or GT or null) Please note this is a change to the schema, which was necessary to avoid clashes with the use of < and > characters in XML
D	Comment		O	Any alpha numeric string
GOR will derive the submission date time (submission time is submission into GOR)				

Data content descriptions

Attribute	Description
'CUSTOM' File Type	Identifies fact that a file is a customer self-generated file as opposed to generated using the Agency spreadsheet offline application
Regulated Customer Identifier (RCID)	Identifies the customer sending the file, e.g. Thames Water. This identifier is at the level of the entire customer organisation, not units within one organisation
Customer Reference	Customer's own reference (not necessarily processed by the Environment Agency). May be made available through GOR application screens
Sampler	Information about the sampler collecting the sample (e.g. name/reference number)
Sample Type	1. Where sample information relating to that sample needs to be updated, use 'U' for update 2. Where a sample and its associated results need to be deleted, use 'D'
Customer Sample Point Name	The customer's name for a sample point, e.g. "New Town STW - Pipe 3". This will be translated to an Agency Code. This is generally a number and/or number +name
Sample Date	Sample date
Sample Time	Sample time
Purpose Type Name	The Agency name for the purpose for which the sample was taken. Examples: compliance Formal (Permit), Instrument Trial
Material name	The Agency name of the material comprising the sample e.g. raw sewage, canal water, soil. Customers use the Agency material name list
Mechanism	The Agency name for the method used to take the sample, e.g. spot, 24 hour composite non-flow related
Customers Unique Lab Sample Reference	Unique within customer reference code for the sample analysis as used by the laboratory that analysed the sample
Customers Unique Lab Sample Reference (Secondary)	Additional customer reference code for the sample analysis as used by the laboratory that analysed the sample – for example, where a sample is split into sub-samples the sub-sample references may be recorded in this field
Lab Name	Name of the laboratory that analysed the sample
Depth	Depth at which the sample was taken
Depth relative to	What the depth is relative to e.g. surface
Depth Units	Units for the depth measurement, e.g. "mAOD" = metres Above Ordnance Datum
Purged Volume	Volume removed from the borehole prior to sampling in litres
Purged Volume units	Units for the purged volume
Analysis Complete Date	Date sample was analysed in the lab

DETERMINAND	
Determinand Name	Name for the determinand
Result type	Where a 'no result' is being submitted use 'N'
Result value	The analysis result amount
(Result) units	Units of measurement for the result
Qualifier	Shows that the determinand result is over or under the given value, rather than a precise measurement
Comment	Customer comment on sample result e.g. "result thought to be atypical" Environment Agency will not be routinely examining the contents of this field so anything likely to require attention should be separately informed to the Environment Agency

Example file

An example of the file content is given below. It is also available as separately at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/375375/LIT10052_WQ_GOR_XML_sample_data.xml

This can be viewed in a web browser and edited in text/XML editing software.

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<tns:FileUpload xmlns:tns="http://www.environment-agency.gov.uk/XMLSchemas/GOR/WaterQualityMultiReturn/01"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.environment-agency.gov.uk/XMLSchemas/GOR/WaterQualityMultiReturn/01 C:\temp\WaterQualityMultiReturn.xsd">
```

```
  <tns:Source>CUSTOM</tns:Source>
```

```
  <tns:Sample>
```

```
    <tns:Sampler>Fred</tns:Sampler>
```

```
    <tns:SampleType>C</tns:SampleType>
```

```
    <tns:CustomerSamplePointName>BASS</tns:CustomerSamplePointName>
```

```
    <tns:SampleDateTime>2009-04-01T15:01:00</tns:SampleDateTime>
```

```
    <tns:PurposeTypeName>EM</tns:PurposeTypeName>
```

```
    <tns:MaterialName>Treated Sewage Effluent</tns:MaterialName>
```

```
    <tns:Mechanism>Spot</tns:Mechanism>
```

```
    <tns:CustomersLabSampleRef>A55005</tns:CustomersLabSampleRef>
```

```
    <tns:LabName>the lab</tns:LabName>
```

```
    <tns:AnalysisCompleteDateTime>2009-08-01T15:30:00</tns:AnalysisCompleteDateTime>
```

```
    <tns:PurgedVolumeRecorded>
```

```
      <tns:PurgedVolume>35</tns:PurgedVolume>
```

```
      <tns:PurgedVolumeUnits>l</tns:PurgedVolumeUnits>
```

```
    </tns:PurgedVolumeRecorded>
```

```
    <tns:Measurement>
```

```
      <tns:DeterminandName>pH</tns:DeterminandName>
```

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```

        <tns:ResultType>E</tns:ResultType>
        <tns:ResultValue>7</tns:ResultValue>
        <tns:ResultUnits>pH</tns:ResultUnits>
    </tns:Measurement>
    <tns:Measurement>
        <tns:DeterminandName>BOD 5 Day ATU as O</tns:DeterminandName>
        <tns:ResultType>E</tns:ResultType>
        <tns:ResultValue>2345</tns:ResultValue>
        <tns:ResultUnits>mg/l</tns:ResultUnits>
    </tns:Measurement>
    <tns:Measurement>
        <tns:DeterminandName>Ammoniacal Nitrogen as N</tns:DeterminandName>
        <tns:ResultType>E</tns:ResultType>
        <tns:ResultValue>26.4</tns:ResultValue>
        <tns:ResultUnits>ug/l</tns:ResultUnits>
    </tns:Measurement>
</tns:Sample>
<tns:Sample>
    <tns:SampleType>C</tns:SampleType>
    <tns:CustomerSamplePointName>BLEL</tns:CustomerSamplePointName>
    <tns:SampleDateTime>2009-04-02T12:53:00</tns:SampleDateTime>
    <tns:PurposeTypeName>EM</tns:PurposeTypeName>
    <tns:MaterialName>Trade Effluent</tns:MaterialName>
    <tns:Mechanism>Spot</tns:Mechanism>
    <tns:CustomersLabSampleRef>A55006</tns:CustomersLabSampleRef>
    <tns:LabName>the lab</tns:LabName>
    <tns:AnalysisCompleteDateTime>2009-03-01T15:30:00</tns:AnalysisCompleteDateTime>
    <tns:Measurement>
        <tns:DeterminandName>pH</tns:DeterminandName>
        <tns:ResultType>E</tns:ResultType>
        <tns:ResultValue>9.567</tns:ResultValue>
        <tns:ResultUnits>pH</tns:ResultUnits>
    </tns:Measurement>
    <tns:Measurement>
        <tns:DeterminandName>BOD 5 Day ATU as O</tns:DeterminandName>
        <tns:ResultType>E</tns:ResultType>
        <tns:ResultValue>26.4</tns:ResultValue>
        <tns:ResultUnits>mg/l</tns:ResultUnits>

```

```
</tns:Measurement>
<tns:Measurement>
  <tns:DeterminandName>Aldrin</tns:DeterminandName>
  <tns:ResultType>E</tns:ResultType>
  <tns:ResultValue>2345</tns:ResultValue>
  <tns:ResultUnits>ug/l</tns:ResultUnits>
</tns:Measurement>
</tns:Sample>
<tns:RegulatedCustomerIdentifier>2</tns:RegulatedCustomerIdentifier>
</tns:FileUpload>
```