Guidance on Updating of Priority Data Flows through EUROWATERNET and the Population of Waterbase

version 1.0

1. Introduction

This paper contains guidance on the updating of priority data flows obtained through EUROWATERNET, and the subsequent inclusion of data and information on rivers, lakes (reservoirs) and groundwaters into WATERBASE.

The data and information obtained through EUROWATERNET is required for the formulation of indicators that will be used in a number of EEA reports including:

- Environmental Signals 2002;

- An indicator based report on Europe's water resources being produced by the ETC/WTR during 2002; and,

The Kiev report due in 2003.

Guidelines for the implementation of EUROWATERNET have been published by the EEA in Technical Report No. 7 (1998).

There is now a need to include other determinands within the data collection process. This will be accompanied by the first steps in developing and implementing the EUROWATERNET-impact network.

The schedule for the update of EUROWATERNET for the collection of information for the above reports is outlined below. It should be noted that the deadline for exchange of information for inclusion in the reports is **19 November 2001**.

	Sep 01	Oct	Nov	Dec	Jan 02	Feb	Mar	Apr.	May	Jun
Letter requesting data sent to NFPs	◆									
Collection of non- EUROWATERNET data for indicator report, and Kiev report	▓	▓	▓	▓						
EUROWATERNET update	‖‖‖	‖‖‖‖‖	‖‖‖							
Deadline for updated data from countries				◆						
Draft fact sheets for ESR 2002 report		◆								
Production of fact sheets	▓	▓	▓	▓	▓	▓	▓			
Draft fact sheets for Kiev report						◆				
Draft fact sheets for indicator based report on Europe's waters							◆			
Analysis of factsheets/writing of indicator report								▓	▓	
Topic Centre draft of indicator based report									◆	
First draft of indicator based report on water										◆

2. Data required

The data required at present for EUROWATERNET-Basic is summarised below.

Rivers: Nutrients (all those available from: nitrate, total oxidised nitrogen, total inorganic nitrogen, ammonium, total nitrogen, soluble reactive phosphorus or orthophosphate, total phosphorus)
Chlorophyll a
Organic pollution indicators (all those available from biochemical oxygen demand, chemical oxygen demand, dissolved oxygen, total organic carbon)
Water flow

Lakes: Nutrients (all those available from: nitrate, total oxidised nitrogen, total inorganic nitrogen, ammonium, total nitrogen, soluble reactive phosphorus or orthophosphate, total phosphorus)
Chlorophyll a
Organic pollution indicators (all those available from biochemical oxygen demand, chemical oxygen demand, dissolved oxygen, total organic carbon)
Secchi disc depth
Alkalinity, Conductivity

Groundwater: Nitrate
Supportive information
General characteristics,
Ammonium,
nitrite, and,
dissolved oxygen.

The data required at present for EUROWATERNET-Impact is summarised below.

Rivers and Lakes: Water Framework Directive Priority Substances and some other List I/II substances from the Dangerous Substances Directive

Groundwater: Pesticides that are Water Framework Directive Priority Substances

3. Update of EUROWATERNET-Basic for <u>RIVERS</u> in your country

Most countries have started the implementation of EUROWATERNET-Basic in their countries, and submitted aggregated data to the ETC/IW for inclusion in WATERBASE. An Excel-workbook with a summary of the information held on **rivers** in your country is provided in the Interest Group EIONET Water under EUROWATERNET Update 2001 in the [section on rivers](#). The summary indicates where there are gaps in terms of EUROWATERNET requirements in the information already submitted. We would urge you to fill in these gaps with the requested information. In particular we wish to focus your attention on:

1. Updating your national data with the most recent data (for most countries this would be for the year 2000);

2. Provision of as long a time series as possible for as many stations as possible;

3. Submission of river discharge data for all stations either based on gauged flows at the monitoring station, or based on estimates or calculation derived from the nearest gauging station to the monitoring station;

4. Submission of the requested data (above) for all flux stations: these would include those stations used for the calculation of riverine loads required for national purposes and also Marine and International River Conventions; and,

5. Provision of catchment pressure information for each station based on Corine Land Cover data or its equivalent.

The EEA indicated at the Bridging the Gap conference in Paris in February 2001 that the ETC/WTR was going to further examine the statistical robustness of the data provided by EUROWATERNET. To that end we are asking (on a completely voluntary basis) countries to also provide us with the disaggregated data for their EUROWATERNET-Basic river stations. This means that for all the determinands listed above you would provide all sample data for all of the years you have data. The structure for such a data submission is given in Annex 1.

The implementation of EUROWATERNET for **rivers** is the responsibility of Steve Nixon who is in the **ETC/WTR Core Team** at Water Research Centre, Medmenham UK, at the e-mail addresses given below.

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4. Update of EUROWATERNET-Basic for <u>LAKES</u> in your country

The information held on **lakes and reservoirs** in your country is provided in the Interest Group EIONET Water under EUROWATERNET Update 2001 in the section on lakes. The zipped files contain ASCII tab-separated files using dots as decimal separators - the preferred format for data transfer. They can be viewed and handled using spreadsheets such as Excel.

There are also summary reports for basic data and for determinands, which indicate where there are gaps in terms of EUROWATERNET requirements in the information already submitted. We would urge you to fill in these gaps with the requested information. In particular we wish to focus your attention on:

1. Updating your national data with the most recent data (for most countries this would be for the year 2000);

2. Provision of as long a time series as possible for as many stations as possible;

3. Provision of basic information on each lake such as surface area and geographical location co-ordinates;

You may provide either annual average values or individual sample data. We would prefer a data submission format to be a simple columnar format, for example similar to Annex 4. Alternatively, you can use the data submission formats of Technical Report No. 7, 1998.

The implementation of EUROWATERNET for **lakes** is the responsibility of Jens Bøgestrand of the National Environmental Research Institute, Denmark at the e-mail address given below.

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5. Update of EUROWATERNET-Basic for <u>GROUNDWATER</u> in your country

Most countries have started the implementation of EUROWATERNET in their countries, and have submitted aggregated data to the ETC/IW for inclusion in WATERBASE. A summary of the information on **groundwaters** in your country held in WATERBASE is provided in the Interest Group EIONET Water under EUROWATERNET Update 2001 in the [section on groundwater](#). The summary will help to identify gaps between already available information in the country and submitted information on important groundwater bodies in terms of the EUROWATERNET guidelines. As EUROWATERNET-Groundwater is implemented step by step we would urge you to fill in these gaps with the requested information.

The present step in the implementation of EUROWATERNET-Groundwater aims to improve the knowledge of nitrogen compounds in groundwater (quality data) and of the characteristics of groundwater bodies (general characterisation). Additional information on **pesticides** (quality data) is required. Available information on as many groundwater bodies as possible (fulfilling the EUROWATERNET-Groundwater criteria) should be included.

In particular we wish to focus your attention on:

1. Updating your national data with the most recent data (for most countries this would be for the year 2000);

2. Provision of as long a time series as possible for as many groundwater bodies as possible;

3. Filling of gaps in already submitted information (list of all important groundwater bodies within your country, general characterisations of important groundwater bodies, GIS maps, groundwater quality data);

4. Submission of general characterisations and quality data for additional groundwater bodies

The EEA indicated at the Bridging the Gap conference in Paris in February 2001 that the ETC/WTR was going to further examine the statistical robustness of the data provided by EUROWATERNET. Furthermore, during the update 2000 process several countries asked for assistance in aggregating their quality data. As a reply on that and in order to keep your effort and amount of time for delivering data as small as possible, we offer to undertake the aggregation of delivered data and suggest that you submit disaggregated (raw) data on the level of monitoring sites. This means that for all the determinands listed above you would provide all monitoring data for all of the years you have data.

If you prefer to provide aggregated data these are of course also welcome. Details on the required information and the structure for the submission of data are given in Annex 5.

Submission and validation of data is partly possible via the internet (password-protected access). Please announce a contact person for password delivery.

The implementation of EUROWATERNET for **groundwater** is the responsibility of Johannes Grath of the Austrian Working Group on Water, Federal Environment Agency (Vienna), Austria at the e-mail address given below.

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6. Development and implementation of EUROWATERNET-Quantity in your country

The development and implementation of EUROWATERNET includes a specific task oriented to obtain comparable information on the water resources status of inland waters. One clear understanding is that water resources monitoring has to be based on existing national networks but for practical purposes, experience shows that data on the totality of rain gauge and gauging stations in each country is not available.

Moreover, in some cases, it is not possible to measure directly the determinant under consideration, and it has to be estimated with the aid of different tools. This is the case when estimating internal renewable resources, which have to be calculated assuming that a non-altered regime is being dealt with, i.e. reconstructing the hydrological regime that would exist in the absence of hydraulic works and water abstraction or using mathematical modeling.

As part of its work programme, the ETC/WTR has already developed station selection procedures and a methodology for water resources assessment using only data from the stations selected. This methodology has been agreed with Eurostat and has been described in `EUROWATERNET: Water quantity aspects. Technical guidelines for implementation. The methodology has been applied in Spain, UK and Hungary, and is being tested in other countries: Greece and Denmark.

If tests show that methodology is really suitable, countries will be asked to select the stations that will constitute the network and also to provide the following data for each station selected:

Precipitation data:

- ID (number and/or name to identify the station)

- Longitude , latitude and elevation

- Mean annual precipitation in the last ten years.

River discharge data:

- ID (number and/or name to identify the station)

- Longitude , latitude and elevation

- Surface area of the basin monitored by the gauging station

- Mean annual discharge for the last ten years

Data would then be updated annually to obtain the main water resources components in each country.

We are now seeking further volunteer countries to pilot EUROWATERNET-quantity.

The draft technical guidelines are available in the interest group EIONET Water in the library section on water quantity aspects of EUROWATERNET.

The implementation of EUROWATERNET – Water resources is the responsibility of Manuel Menéndez of the Centro de Estudios y Experimentación de Obras Públicas (CEDEX), Madrid, Spain and can be contacted on:

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Please contact Dr Menéndez if your country wishes to participate in piloting EUROWATERNET-Quantity, and from whom further technical guidance and assistance can be obtained.

7. EUROWATERNET-Impact network

As mentioned above, the EEA has also indicated that it now wishes to start implementing the "**Impact**" part of EUROWATERNET. For the moment this will be used to obtain comparable and harmonised information on the concentrations and distribution of the Water Framework Directive Priority Substances and some List I/II substances from the Dangerous Substances Directive in rivers and lakes, and for groundwater the pesticides included as Priority Substances. The list of Priority Substances or groups of substances with the other requested substances is given in Annex 2. For groups of substances, examples of specific substances are given.

New criteria are proposed for the selection of monitoring stations and for the supportive information required for interpretation of the information: these are given in Annex 3. These criteria are considered as proposals and will be reconsidered in the light of experience when the EUROWATERNET guidelines are updated during 2002.

A structure for the submission of the data is also given in Annex 3.

8. Summary

In summary, this is what is now requested from you:

1. The application of the EUROWATERNET criteria to your national monitoring networks for the identification and selection of rivers, lakes and groundwater bodies for inclusion in WATERBASE;

2. If you have started implementing EUROWATERNET in your country, then could you please validate existing information in WATERBASE provided in the Interest Group EIONET Water under EUROWATERNET Update 2001, and fill in the identified GAPS in terms of numbers and types of water bodies, types of station (especially flux stations), physical characteristics and pressure information, and the required water quality and water flow indicators.

3. The submission of your national information on rivers, lakes and groundwaters. Ideally we would like you use the data exchange formats recommended in Technical Report No. 7, 1998 and for groundwater the format described in Annex 5 and 6 of this document.

4. If you are able to, the transmission of your data in its disaggregated form as well as in the usual aggregated format.

5. The most recent water quality data available, ideally from **2000**. In addition, for each selected river and lake station, and groundwater well we need data from as many previous years as are available and/or comparable in order to produce as **long a time series** as possible.

6. Receipt of your national EUROWATERNET information by **19 November 2001**.

7. Consideration as to whether your country could contribute (on a voluntary basis) to the piloting and development of EUROWATERNET-Quantity.

For any **further information**, please contact Steve Nixon or Tim Lack at the **ETC/WTR Core Team** at Water Research Centre, Medmenham UK, at the e-mail addresses given below.

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Annex 1 Structure required for the submission of disaggregated data for EUROWATERNET- Basic network for <u>rivers</u>

STN_ID	DETER.	DAY	MONTH	YEAR	MATRIX	CONC.	UNIT	<LoD	LoD	DTR_ LMT	REMARKS

STD_ID   <u>National Station ID</u>: (Indexed field) Text. ID provided by the participating countries. This will be kept to enable linkage with the data provided by the participating countries and Waterbase. This should be the same number for each of the stations you have submitted before.

DETER.   Determinand name. Text.

DAY   Day the sample was taken. Number, integer

MONTH   Month the sample was taken. Number, integer

YEAR   Number, Long Integer

MATRIX   F = Analysis undertaken on filtered water sample, T = Analysis undertaken on unfiltered water sample.

CONC.   Concentration of determinand. Number. Single. Format: fixed, 3 decimal points.

UNIT   Text in the format give below.

<LoD   Flag for when sample is below analytical limit of detection. -999.

LoD   Limit of detection. Number. Single. Format: free. In same units as CONC.

DTR_ LMT   Limit of determination. Number. Single. Format: free. In same units as CONC.

REMARKS   Sample Remarks: Free Text. Size: 50 characters

DETERMINAND	UNIT
Chlorophyll a	µg/l
BOD5	mg/l O_2
BOD7	mg/l O_2
COD	mg/l O_2
Total Organic Carbon	mg/l C
Dissolved Oxygen	mg/l O_2
Oxygen Saturation	%
Non-ionised Ammonia	mg/l N
Total Ammonium	mg/l N
Kjeldahl Nitrogen	mg/l N
Nitrate	mg/l N
Nitrite	mg/l N
Total Oxidised Nitrogen	mg/l N
Total Inorganic nitrogen	mg/l N
Organic Nitrogen	mg/l N
Total Nitrogen	mg/l N
Orthophosphate	mg/l P
Total Phosphorus	mg/l P

Annex 2 Priority Substances identified by the Water Framework Directive

CAS- No.	Substance	Classification
15972-60-8	Alachlor	WFD_PS
120-12-7	Anthracene	WFD_PSR, DS
1912-24-9	Atrazine	WFD_PSR, DS
71-43-2	Benzene	WFD_PS, DS
na	Brominated diphenylethers	WFD_PHS
1163-19-5	Bis(pentabromophenyl) ether	
32536-52-0	Diphenyl ether, octabromo deviate	
32534-81-9	Diphenyl ether, pentabromo derivative	
85535-84-8	C_{10-13}-Chloralkanes	WFD_PHS
7440-43-9	Cadmium and its compounds	WFD_PHS, DS, DW
470-90-6	Chlorfenvinphos	WFD_PS
2921-88-2	Chlorpyrifos	WFD_PSR
107-06-2	1,2-Dichloroethane	WFD_PS, DS
75-09-2	Dichloromethane	WFD_PS, DS
117-81-7	Di (2-ethylhexyl) phthalate (DEHP)	WFD_PSR
84-66-2	Di-ethyl phthalate	WFD_PSR
84-69-5	Di-iso-butyl phthalate	WFD_PSR
84-74-2	Di-(n-butyl) phthalate (DBP)	WFD_PSR
85-68-7	Butyl benzyl phthalate (BBP)	WFD_PSR
330-54-1	Diuron	WFD_PS
115-29-7	Endosulfan	WFD_PSR
959-98-8	(alpha-Endosulfan)	WFD_PSR, DS
608-73-1	Hexachlorocyclohexane	WFD_PHS
58-89-9	(gamma-isomer, Lindane)	WFD_PHS, DS
118-74-1	Hexachlorobenzene	WFD_PHS, DS
87-68-3	Hexachlorobutadiene	WFD_PHS, DS
34123-59-6	Isoproturon	WFD_PS
7439-92-1	Lead and its compounds	WFD_PSR, DS, DW
7439-97-6	Mercury and its compounds	WFD_PHS, DS, DW
91-20-3	Naphthalene	WFD_PSR, DS
7440-02-0	Nickel and its compounds	WFD_PS, DS, DW
25154-52-3	Nonylphenols	WFD_PHS
104-40-5	(4-(para)-nonylphenol)	
8452-15-3	(4-nonylphenol, branched)	
1806-26-4	Octylphenols	WFD_PSR
140-66-9	(para-tert-octylphenol)	
608-93-5	Pentachlorobenzene	WFD_PHS
87-86-5	Pentachlorophenol	WFD_PSR, DS
n.a.	Polyaromatic Hydro-carbons (PAH)	WFD_PHS
50-32-8	(benzo-a-pyrene)	
205-99-2	(benzo-b-fluoranthene)	
191-24-2	(benzo-g,h,i-perylene)	
207-08-9	(benzo-k-fluoranthene)	
206-44-0	(fluoroanthene)	
193-39-5	(indeno(1,2,3-cd) pyrene)	
122-34-9	Simazine	WFD_PS, DS

CAS- No.	Substance	Classification
688-73-3	Tributyltin compounds	WFD_PHS, DS
36643-28-4	(TBT-ion)	WFD_PHS
12002-48-1	Trichlorobenzenes	WFD_PSR, DS
87-61-6	(1,2,3-trichlorobenzene)	WFD_PSR
120-82-1	(1,2,4-trichlorobenzene)	WFD_PSR
108-70-3	(1,3,5-trichlorobenzene)	WFD_PSR
67-66-3	Trichloromethane	WFD_PS, DS, DW
1582-09-8	Trifluralin	WFD_PSR, DS
7440-50-8	Copper and its compounds	DS
789-02-6 50-29-3	DDT (2,4'-isomer) and (4,4'-isomer) and metabolites (DDD, DDE)	DS
72-55-9	DDE, p, p'	DS
72-54-8	DDD, p, p'	DS
53-19-0	DDD, o, p'	DS
919-86-8	Demeton-S-methyl	DS
62-73-7	Dichlorvos	DS
60-51-5	Dimethoate	DS
309-00-2	Aldrin	DS
60-57-1	Dieldrin	DS
72-20-8	Endrin	DS
465-73-6	Isodrin	DS
330-55-2	Linuron	DS
1336-36-3	Polychlorinated biphenyls	DS
31508-00-6	2,4,5,3,4-PeCB (PCB118)	DS
32598-13-3	3,4,3,4-TeCB (PCB77)	DS
32774-16-6	3,3',4,4',5,5' HexCB (PCB169)	DS
7440-66-6	Zinc and its compounds	DS

WFD_PS Water Framework Directive Priority Substance;

WFD_PHS WFD Priority Hazardous Substance;

WFD_PSR WFD Priority Substance under Review;

DS Dangerous Substances Directive

DW Drinking Water Directive

Annex 3   EUROWATERNET-Impact network for Water Framework Directive Priority Substances

1.   <u>Selection of river stations</u>

The information and data obtained through EUROWATERNET is derived from existing national and/or regional monitoring networks within each Member Country. For the EUROWATERNET-basic network Member Countries have been asked to select rivers and river stations according to criteria described in the technical guidelines (EEA Technical Report No. 7). These stations are expected to be able to provide a **general overview, based on truly comparable data, of the water quality of rivers at a European level**.

For EUROWATERNET-basic 'types' of monitoring station were identified. These included:

Reference river stations would be in catchments with little or no human activity and the percentage of natural landscape would be higher than 90%. In terms of the Priority Substances that occur naturally it might be expected that the concentrations measured at these stations would give an indication of 'background levels'. In addition, for volatile synthetic substances the data from these stations might be used to assess the significance of atmospheric deposition.

Representative river stations would reflect the majority of rivers in a region/area with human activities in the catchment consistent with the region's/areas activities. The water quality at these stations would be influenced by diffuse sources of pollution and/or point sources depending on the human activities upstream. The pollutants from point sources would be expected to have become fully mixed and diluted within the ambient water flow/volume. These stations may be included within National Networks used to obtain an overview of the numbers of hazardous substances present and their concentrations. This type of station is likely to be included in 'surveillance' monitoring programmes as required by the Water Framework Directive. Many of these stations may therefore have a long time series of data.

For EUROWATERNET-impact an additional type of monitoring station is identified.

Impact river stations: monitoring stations within the zone (area or volume of water) where initial mixing of the emissions takes place within the receiving waters. Concentrations of determinands would be expected to be relatively high ('worst-case' concentrations) at these stations. These stations may be used by the regulatory authorities to assess the compliance of discharges with standards or limits. Thus monitoring at these stations may in some cases be limited to those substances present within any particular discharge. This type of station is likely to be included in 'operational' monitoring programmes as required by the Water Framework Directive. Many of these stations may therefore have a relatively long time series of data.

Thus what is requested are data from <u>**ALL**</u> stations at which the Priority Substances are measured for operational or surveillance reasons. Data are not

requested from those monitoring stations which might be established for ad-hoc purposes such as for investigative monitoring and which may therefore be sampled for only a limited time period.

It should be noted that the representative stations selected for EUROWATERNET-Impact might not be the same as those used for EUROWATERNET-Basic.

2.   Determinands required

The determinands requested are those given in the Priority Substance List for the Water Framework Directive (see Annex 2). For each station we also request data from the most recent year (ideally for 2000) with as many previous years as possible.

3.   Level of aggregation of data

For the Priority Substance impact network we also request that disaggregated data are submitted. This is different from EUROWATERNET-Basic where annually statistically aggregated data are requested. This difference is because we expect that many of the analytical determinations will be at or below the limit of detection for the analytical method. The single sample determinations are required to give a more robust assessment of how the data should be statistically treated and presented.

4.   Structure of requested information

The collection of disaggregated data for priority substances will necessitate the definition of more fields within Waterbase. This will include a field for the limit of detection[1], limit of determination[2], a flag field for when samples are below the limit of detection, day and month of sampling.

STN_ ID	CAS-No.	DETER.	DAY	MONTH	YEAR	MATRIX	CONC.	UNIT	<LoD	LoD	DTR_LMT	REMARKS

STD_ID	National Station ID: (Indexed field) Text. ID provided by the participating countries. This will be kept to enable linkage with the data provided by the participating countries and Waterbase.
CAS_No.	The Chemical Abstract Service number for each determinand (see Priority Substance List). Text
DETER.	Determinand name. Text.
DAY	Day the sample was taken. Number, integer
MONTH	Month the sample was taken. Number, integer
YEAR	Number, Long Integer
MATRIX	F = Analysis undertaken on filtered water sample, T = Analysis undertaken on unfiltered water sample.
CONC.	Concentration of determinand. Number. Single. Format: fixed, 3 decimal points.
UNIT	Text mg/l, µg/l or ng/l (Use only one unit for each determinand – that is please don't mix the units)
<LoD	Flag for when sample is below analytical limit of detection. -999.

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[1] The LoD is that concentration for which there is a desirably small probability that the determinand will not be detected (usually with 95% confidence).

[2] The smallest concentration that can be distinguished from the analytical blank at a chosen level of statistical confidence (usually 95%).

LoD   Limit of detection. Number. Single. Format: free. In same units as CONC.
DTR_ LMT   Limit of determination. Number. Single. Format: free. In same units as CONC.
REMARKS   Sample Remarks: Free Text. Size: 50 characters

As for EUROWATERNET-Basic we also request information on the physical characteristics of each of the monitoring stations. This information is used in the interpretation of the data and to ensure that like is compared with like. The requested information and data fields are shown in the Table below.

STN_ ID	STN_ NAME	CRY_ CD	REV_ YEAR	WTR_ TYPE	STN_ TYPE	RIVER _NM	CATCH _NM	REGION	LAT	LONG	ALTITUDE	DISCHARGE	CATCH_ AREA

STD_ID   National Station ID: (Indexed field) Text. ID provided by the participating countries. This will be kept to enable linkage with the data provided by the participating countries and Waterbase.
STN_ NAME   Station Name: Text Format. Name provided by the participating countries.
CRY_CD   Country Code: Text Format. Standard ISO 2 digits code.
REV_YEAR   Year of Revision: Number (Single). Last year of revision or update of EUROWATERNET in each country.
WTR_TYPE   Water Body type: Text. RV = River; CN = Canal; LK = Lake; RS = Reservoir; GW = Groundwater body; TW = Transitional water; CW = Coastal Water; MW = Marine Waters (see definitions below.
STN_TYPE   Station Type: Text. B= Reference, R= Representative, I = Impact
RIVER_NM   River Name: Text. Name provided at national level.
CATCH_NM   Catchment Name: Text. Name provided at national level.
REGION   Region: Text. The region where the station is allocated. Provided at national level.
LAT   Latitude (y): International Geographical Co-ordinates of the monitoring station in decimal format.
LONG   Longitude (x): International Geographical Co-ordinates of the monitoring station in decimal format.
ALTITUDE   Altitude (m): Altitude in metres where the station is allocated.
DISCHARGE   River discharge (m^3/s): Number, single, fixed format 1 decimal point. Long term annual average at the monitoring station (or at the nearest river flow gauging station, in which case should be flagged with "*").
CATCH_AREA   Catchment area (km^2): Number, single, fixed format, 0 decimal points. Catchment area above the river station. Related ONLY to the station location.
REMARKS   Site Remarks: Free Text. Size: 50 characters

Code	Field Water Body type WTR_TYPE	Description/definition
RV	River	A body of inland water flowing for the most part on the surface of the land but which may flow underground for part of its course.
CN	Canal	An artificial surface watercourse or conduit which may have biological and hydrological characteristics of a river and/or a lake depending on the hydrological operational regime. Reaches of canals may be separated by dams or weirs with communicating locks. Canals should be distinguished from natural rivers which may have canalised or physically modified reaches constructed for purposes such as navigation and flood defence.
LK	Lake	A body of standing inland surface water.
RS	Reservoir	Man-made lakes that might be created by flooding river valleys or might have a completely artificial water storage basins.
GW	Groundwater Body	A distinct volume of groundwater within an aquifer or aquifers.
TW	Transitional Water	Bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows.
CW	Coastal Water	Surface water on the landward side of a line every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters.
MW	Marine Water	Surface waters on the seaward side of the boundary of coastal waters.

STN_ID	POPULATION	URBAN	WETLAND	NATURE	FOREST	AGRI_TOT	AGRI_OTHER	ARABLE	PASTURE	OTHER	REMARKS

STD_ID   National Station ID: (Indexed field) Text. ID provided by the participating countries. This will be kept to enable linkage with the data provided by the participating countries and Waterbase.

POPULATION   Population (capita/km^2): Number. Population density in the catchment upstream of the station.

<div align="center">Land use information based on Corine Land cover or equivalent</div>

URBAN   Urban area (%): Number. % Urbanisation in the catchment upstream of the station.

WETLAND   Wetland (%): Number. % Wetland in the catchment upstream of the station.

NATURE   Nature (%): Number. % Nature area in the catchment upstream of the station.

FOREST   Forest (%): Number. % Forested area in the catchment upstream of the station.

AGRI_TOT   Total Agricultural (%): Number. % Total Agricultural area in the catchment upstream of the station.

AGRI_OTHER   Other Agricultural (%): Number. % other Agricultural area in the catchment upstream of the station.

ARABLE   Arable (%): Number. % Arable area in the catchment upstream of the station.

PASTURE   Pasture (%): Number. % Pasture area in the catchment upstream of the station.

OTHER   Other (%): Other land use as % in the catchment upstream of the station.

REMARKS   Catchment remarks (%): Free Text. Size 100.

Annex 4 Structure required for the submission of data for EUROWATERNET-Basic network for <u>lakes</u>

1. Basic information for lakes

Country code	REGION	Lake name	National id-code	Latitude	Longitude	Surface area	Mean depth	Max depth	Residence time	Catchment area	Altitude	Volume	Reference	Representative	Largest/ important	Reservoir	Remarks
Text	Text	Text	Text	Decimal degrees	Decimal degrees	m^2	m	m	years	km^2	m	mio. m^3	1/0	1/0	1/0	1/0	Text
AT	ST	Altausseer See	101			2.1	34.6	52.8	0.5	54.5	712	72	0	1	0	0	
DE	Bavaria	Ammersee	AMM01	48.01	11.12	46.6	37.6	81	0.4	993	532.9	1749.83	0	1	0	0	
ES		Aguilar	2	42.7833	-4.2833	17.7	14.99	48	0.78	546			0	1	0	1	
ES		Aixola	3	43.15	-2.5	0.17	15.59	50.5	0.53	7.6			0	1	0	1	
ES		Alange	4	38.7833	-6.2667	50.403	16.9	67.35	2.9	2500.4			0	1	0	1	
ES		Albarellos	5	42.4	-8.2	3.1402	28.89	90	0.39	214			0	1	0	1	
ES		Albina	6	43	-2.6167	0.5	11.34	29.5	1.89	10.8			0	1	0	1	
ES		Alcorlo	7	41	-3.0167	5.9861	30.07	62	2.22	366			0	1	0	1	
ES		Alfilorios	8	43.2833	-5.9167	0.52	17.58	67	2.77	4.09			0	1	0	1	
ES		Arbon	9	43.4667	-6.7167	2.7	12.1	31.5	6.33	2443			0	1	0	1	
LT		Alnis	LIT_76	55.2722	25.6606	1.05	5.94				153		0	1	0	0	
NO	Finnmark	Andersbyvatn	2003-501	70.117	29.59	0.73					165		1	0	0	0	
PT		Aguieira	5	40.3428	-8.2028	20				3113			0	1	0	0	
PT		Alto Rabagão	2	41.7325	-7.8606	22			3.2	210			0	1	0	0	
PT		Alvito	8	38.275	-7.9214	15			3.3	968			0	1	0	0	
SE		Alsjön	87	58.3156	12.5047	0.07							1	0	0	0	
UK	Bure (Tidal) and Ant	Alderfen Broad	TG355197							0.79	4		0	1	0	0	
UK	Tern	Aqualate Mere	SJ757210							59.01	69		0	1	0	0	

2. Format for quality data

Country code	National ID-code	Determinand	Unit	Year	Averaging period	Months	Number of samples	Average	Median	Minimum	Maximum
Text	Text	Text	Text	yyyy	Text	Integer	Integer				
DK	300	ptot	mg/l	1997	summer	5		0.184			
IE	10-00171-0040-000	tempw	C	1998	summer			17.1			
IE	25-0155b-0950-000	nh4n	mg/l	1983	annual	12		0.045			
FI	6396	oxsat	%	1986	annual	12	2	50	50	0	100
NO	1004-1-34	ntot	mg/l	1999	annual	12	1	0.395		0.395	0.395
FI	14825	secchi	m	1992	summer		1	3.5	3.5	3.5	3.5
FI	22097	ox	mg/l	1997	annual	12	2	10.35	10.35	10	10.7
FI	6521	oxsat	%	1991	winter		1	35	35	35	35
FI	14694	ox	mg/l	1999	winter		2	5.75	5.75	3.1	8.4
FI	6417	ptot	mg/l	1988	summer		4	0.087	0.092	0.063	0.1005

Annex 5 EUROWATERNET-Groundwater

Selection of groundwater bodies

The information and data obtained through EUROWATERNET is derived from existing national and/or regional monitoring networks within each Member Country. For EUROWATERNET-Groundwater Member Countries have been asked to select **important** groundwater bodies according to criteria described in the technical guidelines (EEA Technical Report No. 7 (1998)). These groundwater bodies are expected to be able to provide a **general overview, based on truly comparable data, of the water quality of groundwaters on the European level**.

Important groundwater bodies as defined in the guidelines meet at least one of the three requirements below:

- > 300 km²;

- of regional, socio-economic or environmental importance in terms of quantity and quality;

- exposed to severe or major impacts.

1   Basic information

- Please provide/complete a **LIST** of all groundwater bodies within your country which fulfil the criteria of the guidelines (EEA Technical Report No. 7 (1998)). Additionally, add some key information on each groundwater body, if available.
  Please use the excel-file attached **(GWLST_*CC*[3].XLS).**

The structure of the requested information is as follows:

EWN-Code	National code (if available)	**Name** of the groundwater body	**Location** (province etc.)	**Area** (in km²)	**Main aquifer type** (porous, fractured or karst)
CC001					

EWN-Code: CC…country code, ###…number
Main aquifer type: Please take care to exclusively select „**porous media**", „**fractured media**" or „**karst**"

data delivery ⟹   Excel-file: **GWLST_*CC*[1].XLS**

- Please provide a (revised) digital **MAP (GIS)** of your country showing the boundaries of all groundwater bodies from the list GWLST_CC.XLS and the co-ordinates of all sampling sites. With these maps it is intended to give an overview of groundwater bodies in Europe.

  - Map preferred as **shape-format** or *.**dxf** or *.**e00** or *.**dgn** or as *.**dwg-file**.

---

[3] CC…please change to your country code e.g. AT, BE,…

- Please give **additional information on the GIS-map** (as an ascii-text-file) on the <u>reference year</u>, the <u>kind of projection</u> and on the <u>precision of the map</u> (ideally between 1:50 000 and 1:200 000), <u>units</u>, <u>sheroid</u>, <u>radius of shere of reference</u>, <u>longitude of centre of projection</u>, <u>latitude of centre of projection</u>, <u>false easting</u>, <u>false northing</u>.
  Furthermore, we would need a confirmation that the GIS-data can be used for the ETC/WTR-work under contract to the EEA.

If a GIS map as described above is not available, a country map indicating the location of the groundwater bodies and a separate map for each groundwater body indicating the monitoring stations would be helpful, too.

data delivery ⟩	**GIS-Map** and **additional information** (or paper version)
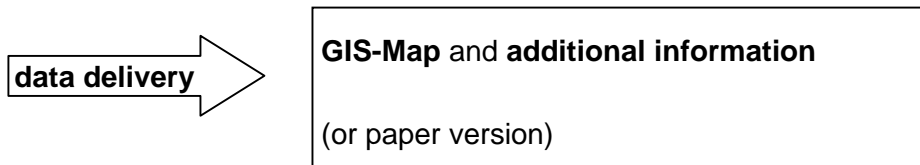
2.   General characterisation

Please provide/complete a general characterisation (in accordance with the guidelines) for those groundwater bodies on which information is available.

- A list of the information required and a help-file including details on definitions is attached (Excel-file **GWLST_*CC*[4].XLS** and **GG_help.DOC**).

- It will be possible to submit the general characterisation via the **Internet** by filling in an **online-form**. The account is password-protected and data provision and update will be possible by direct access to the database. Only authorised partners will have access to their own data. **Please use the on-line form if possible!** The Internet-address will be distributed to the relevant person as soon as the contact person is announced.

- If you prefer to use the Excel-files, use one separate file for each groundwater body.

data delivery ⟩	• via **Internet online-form** (recommended) • or Excel-file: **GG_*CC*[1]*xxx*.XLS** (***CC…***country code, ***xxx…*** number of gw-body)
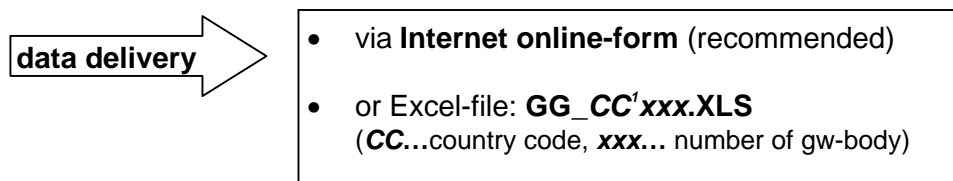
3.   Groundwater quality

The determinands requested are **nitrate** (in mg NO3/l), **ammonium** (in mg NH4/l), **nitrite** (in mg NO2/l), **dissolved oxygen** (in mg/l) and **pesticides** (in µg/l).

---

[4] CC…please change to your country code e.g. AT, BE,…

Pesticides: The pesticide substances requested are those given in the Priority Substances List for the Water Framework Directive (see Table 1). Furthermore, please submit information on pesticide substances which are supposed to be most important in terms of endangering groundwater in your country.

Table 1: Pesticide substances listed in the Priority Substances List for the Water Framework Directive

CAS-No.	Substance	CAS-No.	Substance
15972-60-8	Alachlor	608-73-1	Hexachlorocyclohexane
		58-89-9	(gamma-isomer, Lindane)
1912-24-9	Atrazine	118-74-1	Hexachlorobenzene
470-90-6	Chlorfenvinphos	34123-59-6	Isoproturon
2921-88-2	Chlorpyrifos	122-34-9	Simazine
330-54-1	Diuron	1582-09-8	Trifluralin
115-29-7	Endosulfan		
959-98-8	(alpha-Endosulfan)		

3.1   Disaggregated (raw) data

In order to keep your effort and amount of time for delivering data as small as possible, we offer to undertake the aggregation of delivered data and suggest that you submit **disaggregated (raw) data** on the level of monitoring sites. This would allow for more flexibility (e.g. regarding different concentration classes) when aggregating data and ensure the consistent treatment of values below the limit of quantification and the limit of detection.

Information required is:

- general information on the monitoring site (name, co-ordinates, type of use, well or spring)

- additional information on the co-ordinate system if co-ordinates are provided

- quality data for the determinands (NO_3, HN_4, NO_2, O_2, Pesticides) e.g.:
  - **12.5** or
  - **<12.5** (below the limit of quantification) or
  - **[12.5]** (below the limit of detection)

Structure of requested information

The collection of disaggregated data will necessitate general information on the monitoring site.

mPoint-ID	name	Body_code	well/spring	Type of use	longitude	latitude

mPoint-ID   code of the sampling station. format: country code plus individiual code (e.g.: AT10000562). Char(16). essentiell

name   name of the sampling station. Char(64). essential

Body code	groundwater body code. format: country code plus 3 digits (EWN-code) (e.g.: AT250). Char(5). essentiell
well/spring	W…well, S…spring
Type of use	DRW…drinking water, IND…industrial supply, OTH…other use, SUR…surveillance
longitude	longitude (x): International Geographic Co-ordinates of the monitoring site in decimal form
latitude	latitude (y): International Geographic Co-ordinates of the monitoring site in decimal form

Groundwater quality data

mPoint-ID	date	Param-ID1	Value1	Param-ID2	Value2	→	Param-IDn	Value n

mPoint-ID	code of the sampling station. format: country code plus individiual code (e.g.: AT10000562). Char(16). essentiell
date	Date of sampling. format: YYYY-MM-DD essential
Param-ID	codes see table below. For **additional pesticides** not listed please provide a **separate list of substances + codes assigned + units.**
Value	quality data. units for determinands are defined in the table below.
	notation of values below the limit of quantification: **<***value*
	notation of values below the limit of detection: **[***value***]**

Param-ID	DETERMINAND	UNIT	Param-ID	DETERMINAND	UNIT
500	Nitrate	mg NO_3 /l	508	Diuron	µg/l
501	Ammonium	in mg NH_4 /l	509	Endosulfan (alpha-Endosulfan)	µg/l
502	Nitrite	mg NO_2 /l	510	Hexachlorocyclohexane (gamma-isomer, Lindane)	µg/l
503	Dissolved oxygen	mg O_2 /l	511	Hexachlorobenzene	µg/l
504	Alachlor	µg/l	512	Isoproturon	µg/l
505	Atrazine	µg/l	513	Simazine	µg/l
506	Chlorfenvinphos	µg/l	514	Trifluralin	µg/l
507	Chlorpyrifos	µg/l			

For submission of disaggregated data directly from your national database please see **Annex 6** where the interface for raw data submission is defined. Information in Annex 6 is primarily intended for IT experts who will most probably deal with the data queries and transfer.

3.2   Aggregated data

If you prefer to submit aggregated data on the level of groundwater bodies for each groundwater body the following information is required.
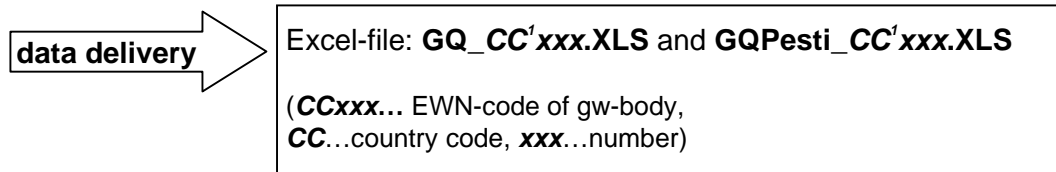
- aggregated data on nitrate, ammonium, nitrite, dissolved oxygen and pesticides according to the attached Excel form **GG_*CC^5xxx*.XLS**.

- aggregated data on pesticides according to the attached Excel form **GQPesti_*CC^1xxx*.XLS.**

- information on the **type of sampling site** and **monitoring frequency**

Quality data should be based on available data and be provided as proposed in the Guidelines – EEA Technical Report No. 7 (1998). The results for one sampling site should be aggregated as annual mean value. The results of individual monitoring points within a groundwater body should be aggregated for the groundwater body as a whole. (see Excel-file enclosed **GQ_*CC^1xxx*.XLS** and **GQPesti_*CC^1xxx*.XLS**)

Fill in data in the Excel-files enclosed (**GQ_*CC^1xxx*.XLS**). There are separate data sheets called: „ammonium", „nitrite", „nitrate" and „dissolved oxygen". With regard to the pesticides please use the Excel-file **GQPesti_*CC^1xxx*.XLS** and use **separate data sheets** for **each pesticide**.

Use one separate file for each groundwater body and add the EWN-code of the groundwater body into the file name.

data delivery ⟩	Excel-file: **GQ_*CC^1xxx*.XLS** and **GQPesti_*CC^1xxx*.XLS** (***CCxxx…*** EWN-code of gw-body, ***CC***…country code, ***xxx***…number)

4.   Data validation

For those countries which have already contributed to EUROWATERNET-Groundwater we offer the possibility to validate already delivered data.

Silence will be taken as validation!

List of groundwater bodies: Please check the list of important groundwater bodies and whether for the aquifer type exclusively one of the types "porous, karstic or fractured media" were selected.

If there had been other entries than "porous, karstic or fractured media" these were moved into a "remark"-column and the GW-body was assigned to one of the selectable aquifer types "porous, karstic or fractured media" if this appeared appropriate. Please check if this attribution is correct.

General characterisation:. For those countries which delivered the general characterisation via the on-line form as well as for those countries which delivered Excel-files, validation can be done via the Internet.

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[5] CC…please change to your country code e.g. AT, BE,…

The internet account is password-protected. Only authorised partners will get access to the data. The Internet-address will be distributed to the relevant person as soon as the contact persons is announced.

Quality data: Already submitted data can be validated via the Internet. In case of corrections please print the respective page, insert the corrected values on the printout and send the corrections to us by mail (snail-mail) or fax.

Address:
> Umweltbundesamt
> Johannes Grath
> Spittelauer Laende 5
> A-1090 Wien
> Austria
> fax: +43-(0)1-31304-3700

Submissions of raw data will substitute already submitted aggregated data.

Please note that all submissions during the current data collection are taken as validated.

Annex 6 Interface structure for the submission of disaggregated data for EUROWATERNET-Groundwater

Information in Annex 6 is primarily intended for IT experts who will most probably deal with the data queries and transfer.

The EEA indicated at the Bridging the Gap conference in Paris in February 2001 that the ETC/WTR was going to further examine the statistical robustness of the data provided by EUROWATERNET. Furthermore, during the update 2000 process several countries asked for assistance in aggregating their quality data. As a reply on that and in order to keep your effort and amount of time for delivering data as small as possible, we offer to undertake the aggregation of delivered data and suggest that you submit disaggregated (raw) data on the level of monitoring sites. This means that for all the determinands listed above you would provide all monitoring data for all of the years you have data.

An interface was developed in order to ensure a well-regulated data transfer from the national groundwater database to the WATERBASE of the Topic Centre. The logical structure of the interface allows for the submission of all kind of groundwater information for EUROWATERNET-Groundwater. For the current data collection the interface is only intended to be used for the submission of **disaggregated data on the level of sampling sites** and for the **description of the sampling sites**. (Please ignore the types of records ("mPoint-Rec" and "Body-Rec") in parenthesis)

For the submission of **general information** on groundwater bodies and for **aggregated quality** data please see Annex 5 and use the Excel-forms attached.
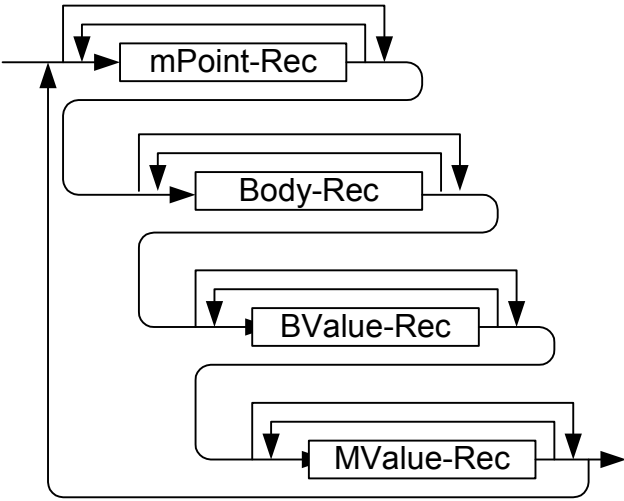
Logical structure of the interface

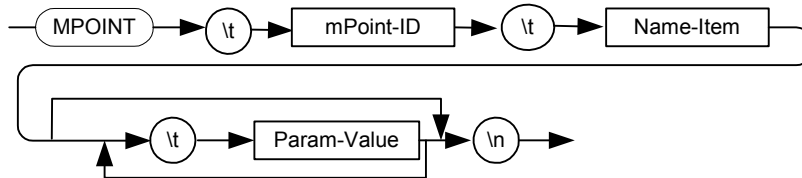The following figures describe the logical structure of the interface

File

```
      ──────────────▶ ┌─────────────────┐ ─────▶ ╭─────╮ ─────▶
                      │     Records     │        │ eof │
                      └─────────────────┘        ╰─────╯
```

Records

```
        ┌───────────────────────────────────┐
        │   ┌───────────────────────────┐   │
        │   ▼                           │   ▼
 ──────▶├─▶┌─────────────────┐          ┌──────┐
        │  │   mPoint-Rec    │          │      │
        │  └─────────────────┘          └──────┘
        │     │   ┌─────────────────────────┐
        │     │   ▼                         │
        │     ├─▶┌─────────────┐            ┌──────┐
        │     │  │  Body-Rec   │            │      │
        │     │  └─────────────┘            └──────┘
        │     │     │   ┌───────────────────────┐
        │     │     │   ▼                       │
        │     │     ├─▶┌──────────────┐         ┌──────┐
        │     │     │  │  BValue-Rec  │         │      │
        │     │     │  └──────────────┘         └──────┘
        │     │     │     │   ┌─────────────────────┐
        │     │     │     │   ▼                     │
        │     │     │     ├─▶┌──────────────┐       ┌──────▶
        │     │     │     │  │  MValue-Rec  │       │
        │     │     │     │  └──────────────┘       │
        └─────┴─────┴─────┴─────────────────────────┘
```
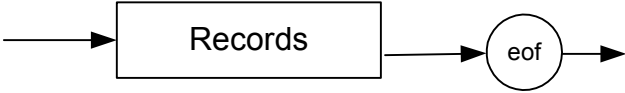
Detailed Description – Types of Records

This section describes the types of records

mPoint-Rec

Data (Param-Value) describing a **measurement point** (sampling site)

mPoint-ID
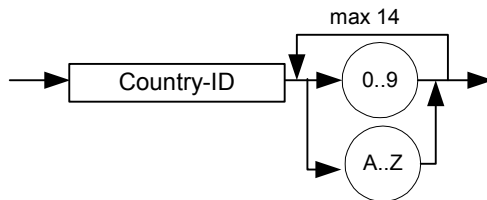
Country-ID

country abbreviations see Table 4
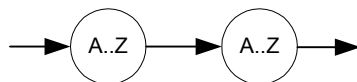
Body-Rec

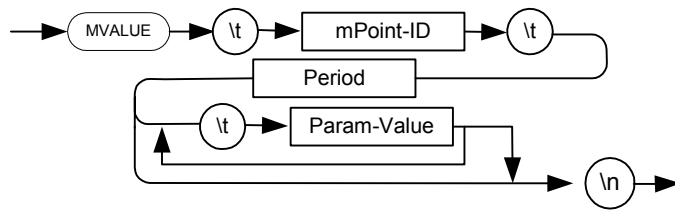Data (Param-Value) describing a **groundwater body**
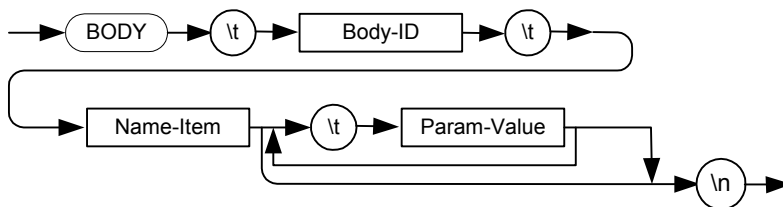
BValue-Rec

Data on the level of a groundwater body
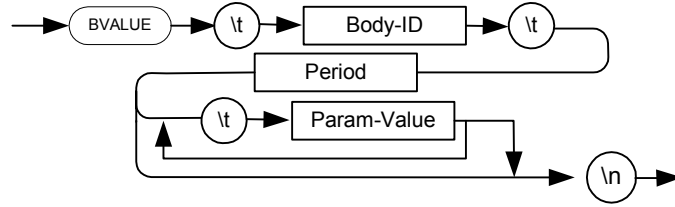
Mvalue-Rec
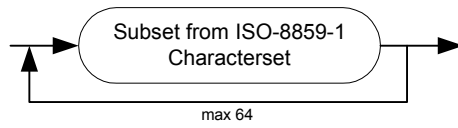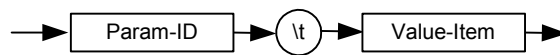
Data on the level of a monitoring site

e.g.:

MVALUE→AT10000562→date 1998-07-15→250→45.45↵

Miscellaneous Phrases

Name-Item

Param-Value

Param-ID

specifications see Table 3
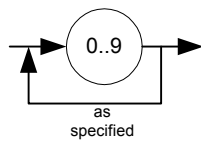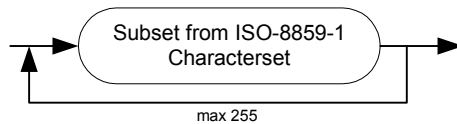

Value-Item
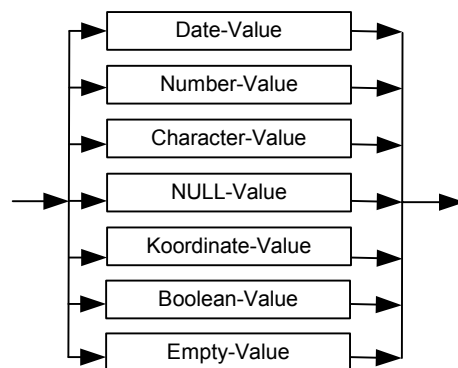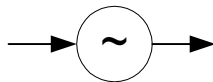

Number-Value
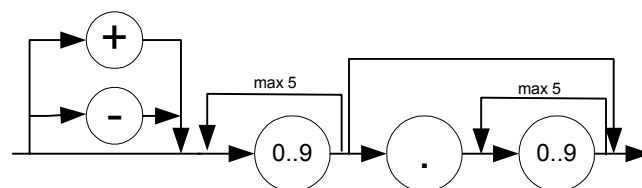
Boolean-Value
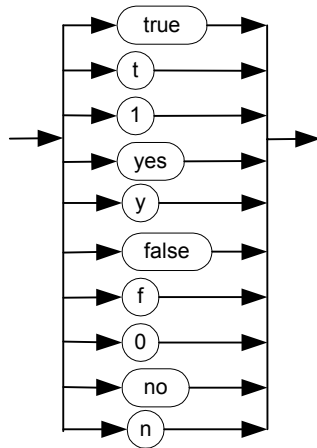
Values interpreted as true: 'true', 't', '1', 'yes' and 'y'
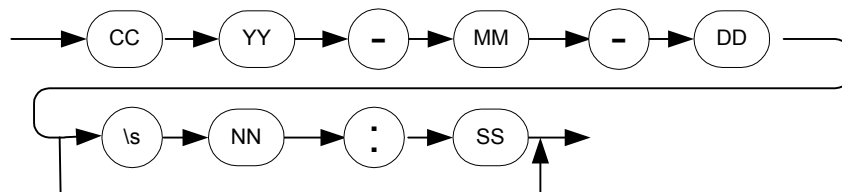Values interpreted as false: 'false', 'f', '0'[6], 'no' and 'n'

Character-Value

NULL-Value

Date-Value

Date-Value is based on the "*best practice*" which is internationally recommended in ISO 8601 and in the "Technical Note" of the W3C.

This is a subset of the recommendations.

CC Century   NN Minute
YY Year   SS Second
MM Month
DD Day   All: two digits (with leading Zero if necessary)
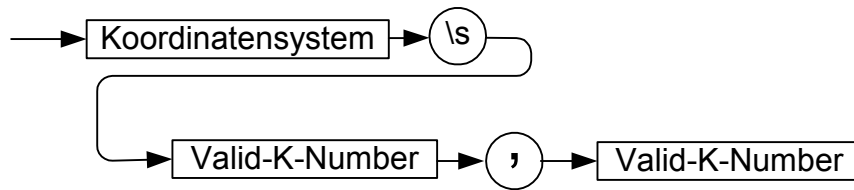
```
e.g.: 2001-01-01 12:30 or 1957-05-07
```
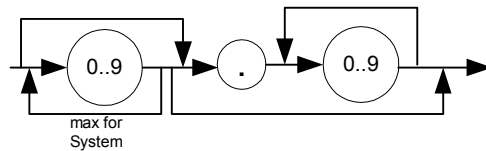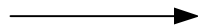
---

[6] Digit Null (Code 48)

Co-ordinates

Co-ordinate System: LBT for Lambert, GKK for Gauss-Krueger...
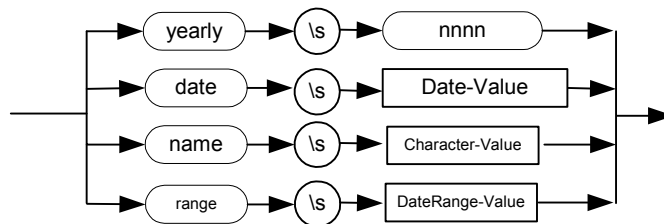
e.g.: LBT 123344.45,343433.34 *or* GKK 98723,343432
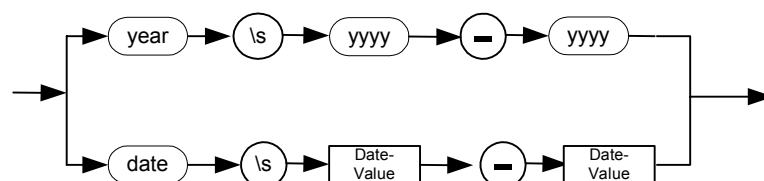
Valid-K-Number

Empty-Value

Period

e.g.: yearly 1998 *or* name summer *or* range year 1987-1989

DateRange-Value

upload of data

The Value-Item is going to be uploaded into the database after a formal checking. If the data set is already existing in the database, the content will be overwritten. → overwriting of data

overwriting of data

A data set is uniquely defined by the Body-ID or the mPoint-ID, by the Period and the Param-ID. If such a data set already exists in the database, its content will be substituted by the most recent version.

deleting of data

When the Value-Item is delivered empty then the data set will be removed from the database.

Values below the limit of quantification (LOQ) and below the limit of detection (LOD)

- Values below the limit of quantification (LOQ) are noted as: **<** Number-Value

- Values below the limit of detection (LOD) are noted as: **[** Number-Value **]**

NULL

Some parameters may have NULL values, i.e. the values for that parameter was not initialized. Note that a NULL value for a string is different from an empty string. You should think about a NULL value as an "unknown" value. In the Interface the NULL value is indicated with the Symbol "~" (tilde).

TABLE 1

Subset from Character ISO-8859-1

Char	Code	Name	Description
	32	-	Normal space
!	33	-	Exclamation
"	34	quot	Double quote
#	35	-	Hash or pound
$	36	-	Dollar
%	37	-	Percent
&	38	-	Ampersand
'	39	-	Apostrophe
(	40	-	Open bracket
)	41	-	Close bracket
*	42	-	Asterisk
+	43	-	Plus sign
,	44	-	Comma
—	45	-	Minus sign
.	46	-	Period
/	47	-	Forward slash

Char	Code	Name	Description
0	48	-	Digit 0
1	49	-	Digit 1
2	50	-	Digit 2
3	51	-	Digit 3
4	52	-	Digit 4
5	53	-	Digit 5
6	54	-	Digit 6
7	55	-	Digit 7
8	56	-	Digit 8
9	57	-	Digit 9
:	58	-	Colon
;	59	-	Semicolon
<	60	lt	Less than
=	61	-	Equals
>	62	gt	Greater than
?	63	-	Question mark

Char	Code	Name	Description
@	64	-	At sign
A	65	-	A
B	66	-	B
C	67	-	C
D	68	-	D
E	69	-	E
F	70	-	F
G	71	-	G
H	72	-	H
I	73	-	I
J	74	-	J
K	75	-	K
L	76	-	L
M	77	-	M
N	78	-	N
O	79	-	O

Char	Code	Name	Description
P	80	-	P
Q	81	-	Q
R	82	-	R
S	83	-	S
T	84	-	T
U	85	-	U
V	86	-	V
W	87	-	W
X	88	-	X
Y	89	-	Y
Z	90	-	Z
[	91	-	Open square bracket
\	92	-	Backslash
]	93	-	Close square bracket
^	94	-	Pointer
_	95	-	Underscore

Char	Code	Name	Description	Char	Code	Name	Description
`	96	–	Grave accent	p	112	–	p
a	97	–	a	q	113	–	q
b	98	–	b	r	114	–	r
c	99	–	c	s	115	–	s
d	100	–	d	t	116	–	t
e	101	–	e	u	117	–	u
f	102	–	f	v	118	–	v
g	103	–	g	w	119	–	w
h	104	–	h	x	120	–	x
i	105	–	i	y	121	–	y
j	106	–	j	z	122	–	z
k	107	–	k	{	123	–	Left brace
l	108	–	l	|	124	–	Vertical bar
m	109	–	m	}	125	–	Right brace
n	110	–	n	~	126	–	Tilde
o	111	–	o	✕	127	–	(Unused)

TABLE 2

Description of special letters

Letter	Description
\n	new line <cr> <lf> \x0D \x0A
\t	tabulator <tab> \x08
\s	normal space
eof	file-end symbol, will be automatically assigned by the system.

TABLE 3

Param-ID

Parameter-mode	Param-ID	Textual Representation	Type	
BODY	1	co-ordinate	co-ordinate	
	2	Size in km2	Number	
	3	Type of Body	Character	PM…porous media KM…karstic media FM…fractured media
MPOINT	400	name	character	
	401	co-ordinate	co-ordinate	
	402	well or spring	character	W…well S…spring
	403	Type of use	character	DRW…drinking water site IND…industrial use OTH…other use SUR…surveillance
	404	GW-body code	character	
MVALUE	500	Nitrate, in mg NO3 /l	number / character	
	501	Ammonium, in mg NH4 /l	number / character	
	502	Nitrite, in mg NO2 /l	number / character	
	503	Dissolved oxygen, in mg O2 /l	number / character	
	504	Alachlor, in µg/l	number / character	
	505	Atrazine, in µg/l	number / character	
	506	Chlorfenvinphos, in µg/l	number / character	
	507	Chlorpyrifos, in µg/l	number / character	
	508	Diuron, in µg/l	number / character	
	509	Endosulfan (alpha-Endosulfan) , in µg/l	number / character	
	510	Hexachlorocyclohexane (gamma-isomer, Lindane), in µg/l	number / character	

	511	Hexachlorobenzene, in µg/l	number / character	
	512	Isoproturon, in µg/l	number / character	
	513	Simazine, in µg/l	number / character	
	514	Trifluralin, in µg/l	number / character	

Examples:

MPOINT→[7]AT10000562→behind the green house↵[8]

MPOINT→AT10000562→behind the green house→401→LAM 122345,46664→402→W→403→IRR→404→AT250↵

MVALUE→AT10000562→date 1998-07-15→500→45.45→501→<0.2→502→[0.01]→503→5.6↵

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[7] →   (\t) TAB

[8] ↵   (\n) NEW-LINE