



**TABLE OF SAMPLING SITES  
PROVIDING DETAILS  
DRAVA RIVER TEST AREA**

**Deliverable 3.2.1**



**PROJECT TITLE**

Sediment-quality Information, Monitoring and Assessment System to support transnational cooperation for joint Danube Basin water management

**ACRONYM**

SIMONA

**PROJECT DURATION**

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**AUTHORS:**

Gyozo Jordan (HU-SZIE), Peter Gyuris (HU-SZIE), Zsófia Kovács (HU-Pannon University),

RESPONSIBLE(S) OF THE DELIVERABLE: Anca-Marina Vijdea (RO-IGR)

CO-RESPONSIBLE(S) OF THE DELIVERABLE: Gyozo Jordan (HU-SZIE)

EDITING AND PREPARATION FOR PRINTING: Katalin Mária Dudás (HU-NARIC)

For further information on the project, partnership  
and the Danube Transnational Programme:  
[www.interreg-danube.eu/simona](http://www.interreg-danube.eu/simona)



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## 1. INTRODUCTION

WP3 has in its tasks the activity 3.2. "Planning sampling points for 3 test areas and for DRB baseline network", scheduled to be completed in the third period of the project, respectively fifth period for the DRB baseline network.

The objective was to establish in three test sites representing different hidrological conditions and environmental pressures in the Danube River Basin 10 sites where sampling of suspended and bottom sediments would be performed according to the **transnational harmonized sample protocol** developed within WP4. The collected samples, ideally sampled by an accredited sampler, would then be adequately stored and delivered to the reference laboratory of SIMONA project, which will carry out analyses of heavy metals and their compounds, as well as the organic substances in accordance with the list of HSs and laboratory standards established in the **transnational harmonized laboratory protocol** developed also within WP4 in the third period of SIMONA project.

In establishing the representative 10 sampling points for each test area of the SIMONA project, there were analysed the following selection criteria, settled in:

- ◆ ISO 5667 - 12:2017
- ◆ ISO 5667 - 17:2008
- ◆ Guidance Document No. 25
- ◆ TNMN monitoring sites criteria

These criteria were discussed and completed with new criteria during the workshop organized in Baia Mare (Romania), in July 2019 and further on in Sofia (Bulgaria) in October 2019, where weights/priorities have been assigned.

## 2. CHARACTERISATION OF THE SOUTH DANUBE TEST AREA

The River Drava is one of the largest and most significant rivers in Central Europe. It connects five countries from its rise in San Candido, Italy, followed by Austria, Slovenia, Hungary and Croatia and after that it joins the Danube, near Osijek. The whole length of the river is approximately 749 km, it is running 140 km long, along the border between Hungary and Croatia. These countries are downstream regions of the river with meandering character, different biogeographical properties and sedimentation. There is a regional historical pollution, originating mainly from mining and smelting industry in the Alps can be found in the sediments and in the soils in the floodplain. Moreover, industrial areas, water power plants, water reservoirs, agricultural areas, forests and numerous settlements can be found all along the river.

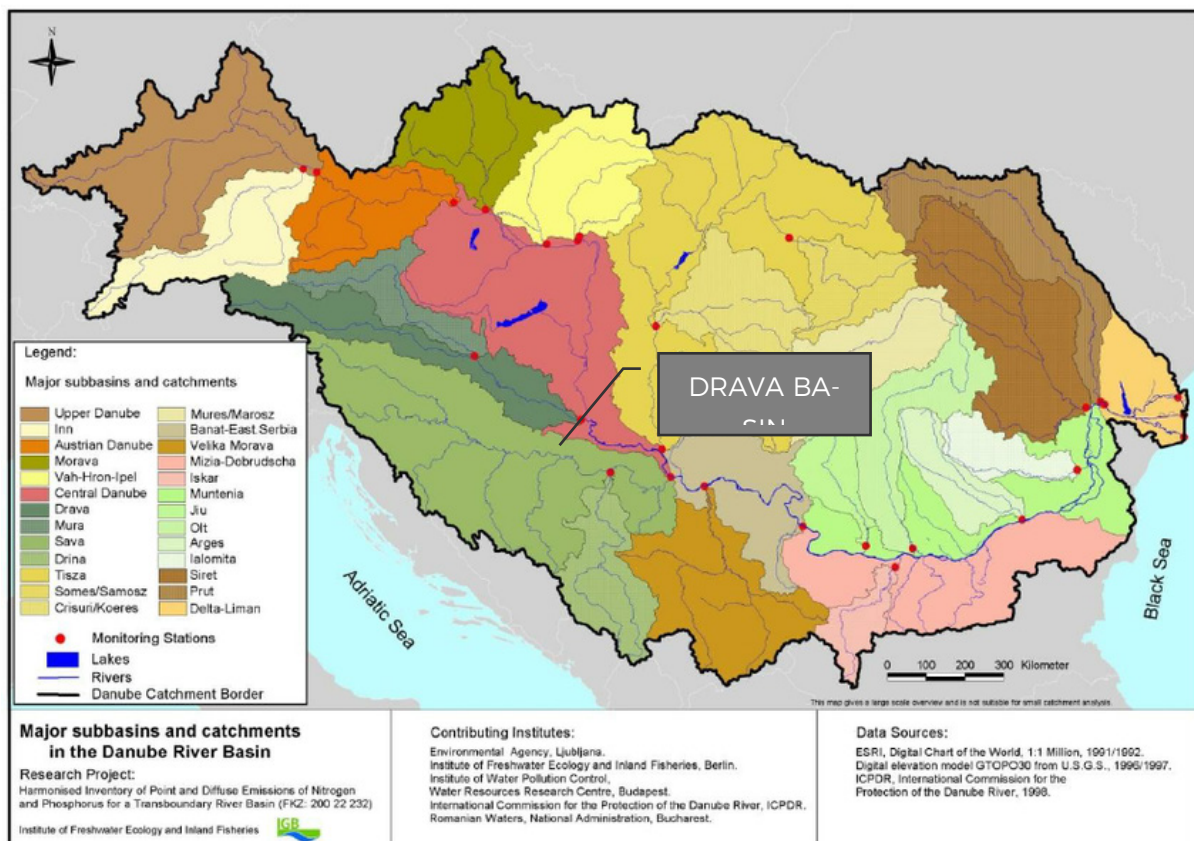


Fig 1 Location of River Drava Basin

### 3. DESCRIPTION OF THE SAMPLING SITES

The sampling sites in Drava River test region were selected in agreement with the project partners in the countries crossed by the Drava River Catchment area (Hungary, Croatia and Slovenia) – Fig.1. Finally, 9 sampling points were selected from the sampling locations of the Hungarian ASP on Drava River and its tributaries and 1 new proposed point on Drava River. The points are located on Drava River and its tributaries and have been approved by the General directorate of Water Management (ASP in SIMONA project). The characteristics of the selected sample points are shown in Table 1 and their overall spatial distribution in Fig 2.

Table 1 Selected sediment sampling stations in South Danube test area

Nr.	Code	Name of the river	Name of the site	WGS Long	WGS Lat	Owner of water monitoring data	Owner of sediment monitoring data	Responsible for sampling	Existent archive water, sediment	Comment
1.	AEP543	Gyöngyös-stream	Kétújfalú	17°43'52"	45°59'06"	OVF	SI-MONA Prj	HU-SZIE	Only water	AEP543
2.	AEP852	Okor-Bükkösi víz	Szentdénés	17°55'45"	45°59'23"	OVF	SI-MONA Prj	HU-SZIE	Only water	AEP852
3.	AEP875	Pécsi-víz	Zók	18°05'54"	46°00'20"	OVF	SI-MONA Prj	HU-SZIE	Only water	AEP875
4.	AEP361	Bükkösi-árapasztó	Gilvánfa	17°57'32"	45°54'58"	OVF	SI-MONA Prj	HU-SZIE	Only water	AEP361
5.	AEP571	Hegydó-stream	Hegyszentmárton	18°05'28"	45°54'18"	OVF	SI-MONA Prj	HU-SZIE	Only water	AEP571
6.	AEP453	Egerszegi-csatorna	Kovácsbuda	18°11'14"	45°50'09"	OVF	SI-MONA Prj	HU-SZIE	Only water	AEP453
7.	AEP478	Fekete-víz	Cún	18°04'52"	45°49'04"	OVF	SI-MONA Prj	HU-SZIE	Only water	AEP478
8.	AEP438	Drava	Drávaszabolcs	18°12'01"	45°47'00"	OVF	SI-MONA Prj	HU-SZIE	Only water	AEP438
9.	CROATIA (HR5)	Drava	Donji Miholjac	18°12'00"	45°46'57"	OVF	SI-MONA Prj	HU-SZIE	Only water	CROATIA (HR5)
10.	SIMONA CODE	Drava	before the Fekete-víz estuary	18°08'57"	45°47'22"	OVF	SI-MONA Prj	HU-SZIE	new site	SIMONA CODE

The points have been approved by the Bulgarian Water Authorities (DBRD Plevén), Romanian Water Authority – ANAR (Administrația Națională Apele Române, ASP in SIMONA project) and the Environmental Protection Agency (Ministry of Environmental Protection of the Republic of Serbia). The characteristics of the selected sample points are shown in Table 1 and their overall spatial distribution in Fig 2 and 3.

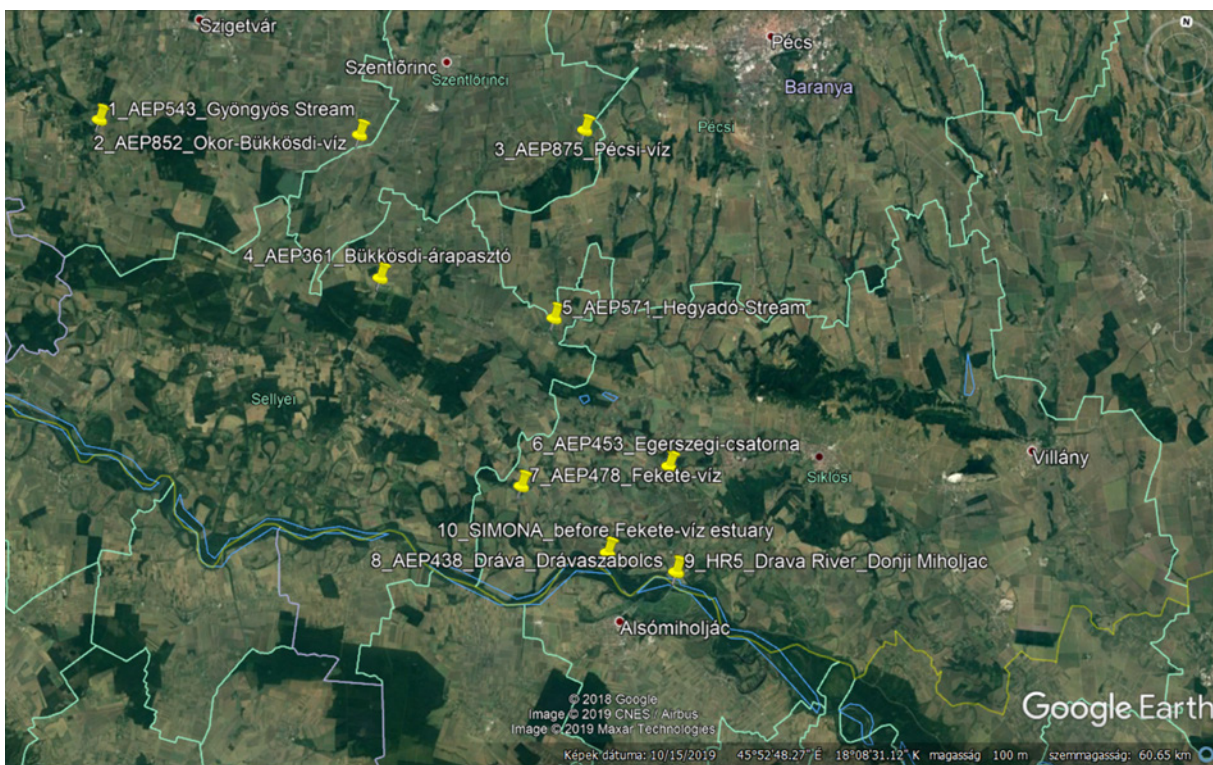
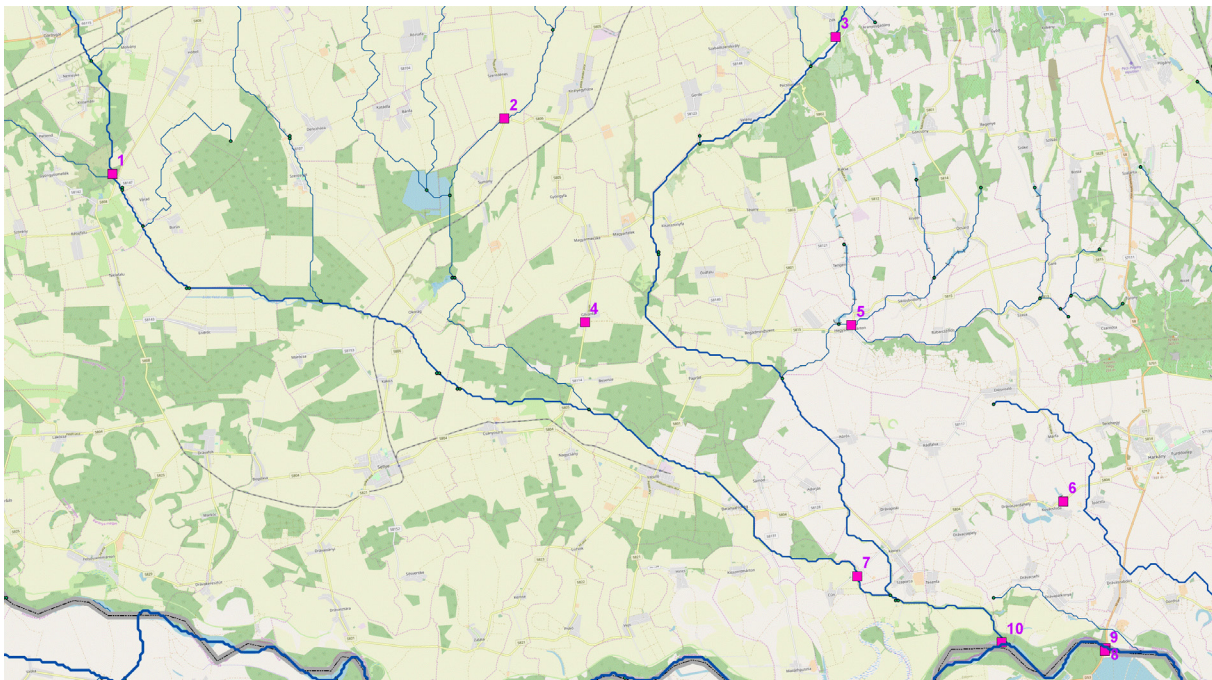


Fig 2 Overall view of the sediment sampling points in Drava test area



## 1. Kétújfalú



Fig. 3 Sampling point 1 Kétújfalú (Google Earth)

### Description and reason for selection

Kétújfalú sampling point (fig. 3) is one of the points that samples water for quality analysis by the Hungarian Water Authority.

A Gyöngyös River: different types of pollution: point and agricultural sources.

The area is characterized by a low sediment load in the floodplain and average sediment loads in the river bottom and as suspended solids.

National Administration Hungarian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N – nutrient regime, HM – hydromorphological alteration, SPP – hazardous substances

## 2. Szentdénés



Fig. 4 Sampling point 2 Szentdénés (Google Earth)

### Description and reason for selection

Szentdénés sampling point (fig. 4) is one of the points that samples water for quality analysis by the Hungarian Water Authority.

Okor-Bükkösdi víz: combining different types of pollution: point and agricultural sources.

The area is characterized by a low sediment load in the floodplain and average sediment loads in the river bottom and as suspended solids.

National Administration Hungarian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N – nutrient regime, HM – hydromorphological alteration, SPP – hazardous substances

### 3. Zók

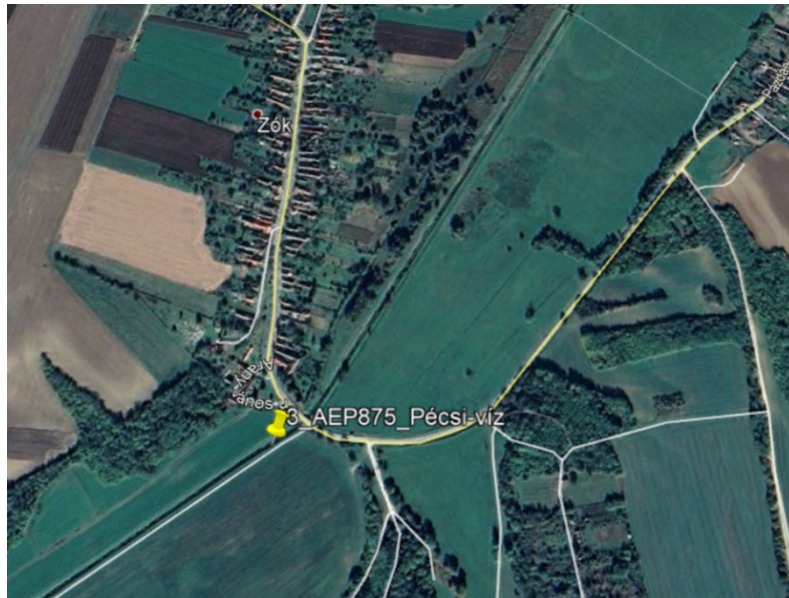


Fig. 5 Sampling point 3 Zók (Google Earth)

#### Description and reason for selection

Zók sampling point (fig. 5) is one of the points that samples water for quality analysis by the Hungarian Water Authority.

It's characterized by mostly industry pollution sources.

The area is characterized by a low sediment load in the floodplain and average sediment loads in the river bottom and as suspended solids.

National Administration Hungarian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N - nutrient regime, HM - hydromorphological alteration, SPP - hazardous substances

## 4. Gilvánfa

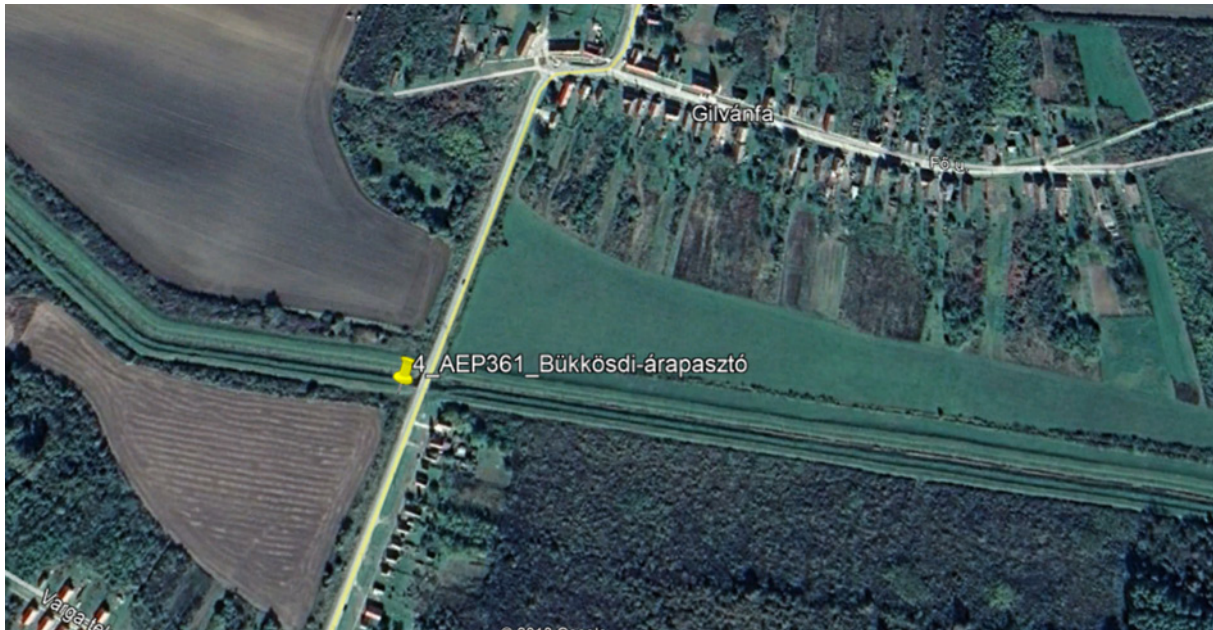


Fig. 6 Sampling point 4 Gilvánfa (Google Earth)

### Description and reason for selection

Gilvánfa sampling point (fig. 6) is one of the points that samples water for quality analysis by the Hungarian Water Authority.

Bükkösi árapasztó: combining different types of pollution: point and agricultural sources.

The area is characterized by a low sediment load in the floodplain and average sediment loads in the river bottom and as suspended solids.

National Administration Hungarian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N – nutrient regime, SPP – hazardous substances

## 5. Hegyszentmárton

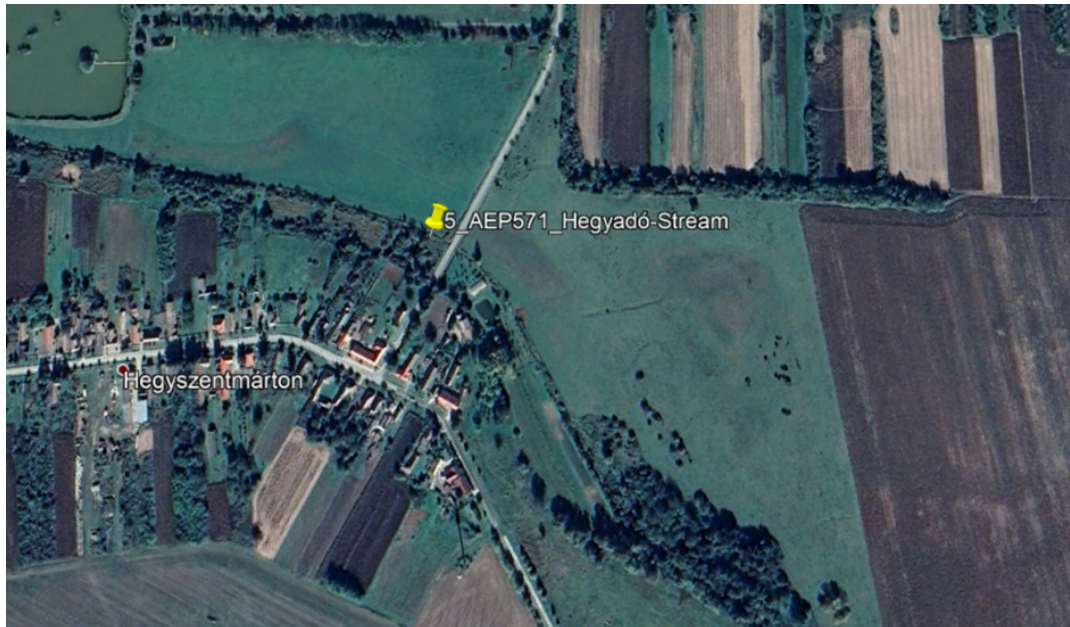


Fig. 7 Sampling point 5 Hegyszentmárton (Google Earth)

### Description and reason for selection

Hegyszentmárton sampling point (fig. 7) is one of the points that samples water for quality analysis by the Hungarian Water Authority.

The area is characterized by a low sediment load in the floodplain and average sediment loads in the river bottom and as suspended solids.

National Administration Hungarian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N – nutrient regime, SPP – hazardous substances

## 6. Kovácshida



Fig. 8 Sampling point 6 Kovácshida (Google Earth)

### Description and reason for selection

Kovácsida sampling point (fig. 8) is one of the points that samples water for quality analysis by the Hungarian Water Authority.

The area is characterized by a low sediment load in the floodplain and average sediment loads in the river bottom and as suspended solids.

National Administration Hungarian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N – nutrient regime, SPP – hazardous substances

## 7. Cún



Fig. 9 Sampling point 7 Cún (Google Earth)

### Description and reason for selection

Cún sampling point (fig. 9) is one of the points that samples water for quality analysis by the Hungarian Water Authority.

It's characterized by mostly industry pollution sources.

The area is characterized by a low sediment load in the floodplain and average sediment loads in the river bottom and as suspended solids.

National Administration Hungarian Waters monitoring: Yes

Monitoring type: (S) Surveillance monitoring point

Monitoring programs: N – nutrient regime, SPP – hazardous substances

## 8. Drávaszabolcs



Fig. 10 Sampling point 8 Drávaszabolcs (Google Earth)

### Description and reason for selection

Drávaszabolcs sampling point (fig. 10) is one of the points that samples water for quality analysis by the Hungarian Water Authority.

Dráva: combining different types of pollution: point and diffuse sources.

National Administration Hungarian Waters monitoring: Yes

Monitoring type: (S) Surveillance monitoring point and TNMN monitoring point

Monitoring programs: N – nutrient regime, SPP – hazardous substances



## 9. HR5 Dony Miholjac



Fig. 11 Sampling point 9 Dony Miholjac (Google MyMaps)

### Description and reason for selection

Dravasabolcs sampling point (fig. 11) is one of the points that samples water for quality analysis by the Croatian Water Authority.

Dráva: combining different types of pollution: point and diffuse sources.

National Administration Croatian Waters monitoring: Yes

Monitoring type: (S) Surveillance monitoring point and TNMN monitoring point

Monitoring programs: N – nutrient regime, SPP – hazardous substances

## 10. Dráva



Fig. 12 Sampling point 10 Dráva (Google MyMaps)

### Description and reason for selection

The sampling point has been designated in the vicinity of the Feketevíz Catchment to study the background concentration in both water and sediment.

Both the Feketevíz and its tributaries flow through industrially polluted areas and reach the Drava.

## REFERENCES

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Dráva részvízgyűjtő vízgyűjtő-gazdálkodási terve

[http://www.vizugy.hu/vizstrategia/documents/AF1E0815-6987-46AB-B1D1-37477B1200F1/Drava\\_RVGT\\_aprilis.pdf](http://www.vizugy.hu/vizstrategia/documents/AF1E0815-6987-46AB-B1D1-37477B1200F1/Drava_RVGT_aprilis.pdf)



## LIST OF PRIORITY SUBSTANCES AND DANUBE RIVER BASIN SPECIFIC POLLUTANTS APPENDIX 2 OF THE SIMONA SEDIMENT QUALITY SAMPLING PROTOCOL

List of priority substances (PS) in the field of water policy (Part A, Annex I; Directive 2013/39/EU)

	Number in PS directive	WISE-SoE code (CAS/EEA) number <sup>1</sup>	Name of priority substance
1	2	CAS_120-12-7	Anthracene
2	5	EEA_32-04-2	Brominated diphenylethers (congener numbers 28, 47, 99, 100, 153 and 154)
3	6	CAS_7440-43-9	Cadmium and its compounds
4	7	CAS_85535-84-8	C10-13-chloroalkanes
5	12	CAS_117-81-7	Di(2-ethylhexyl)phthalate (DEHP)
6	15	CAS_206-44-0	Fluoranthene
7	16	CAS_118-74-1	Hexachlorobenzene
8	17	CAS_87-68-3	Hexachlorobutadiene
9	18	CAS_608-73-1	Hexachlorocyclohexane
10	20	CAS_7439-92-1	Lead and its compounds
11	21	CAS_7439-97-6	Mercury and compounds
12	23	CAS_7440-02-0	Nickel and its compounds
13	26	CAS_608-93-5	Pentachlorobenzene
14	28	EEA_33-56-7	Total PAHs (Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Indeno(1,2,3-cd)pyrene)
15	30	CAS_36643-28-4	Tributyltin-cation
16	34	CAS_115-32-2	Dicofol
17	35	CAS_1763-23-1	Perfluorooctane sulfonic acid and its derivatives (PFOS)
18	36	CAS_124495-18-7	Quinoxifen
19	37	EEA_33-58-9	Dioxins and dioxin-like compounds (7 PCDDs + 10 PCDFs + 12 PCB-DLs)
20	43	EEA_33-57-8	Hexabromocyclododecane (HBCDD)
21	44	EEA_33-50-1	Heptachlor and heptachlor epoxide

List of River Basin Specific Pollutants for the Danube River Basin (ICPDR, 2003)

	CAS number <sup>1</sup>	Name of Substance
22	CAS_7440-38-2	Arsenic and its compounds
23	CAS_7440-50-8	Copper and its compounds
24	CAS_7440-66-6	Zinc and its compounds
25	CAS_7440-47-3	Chromium and its compounds

<sup>1</sup> WISE-SoE: European Environment Information and Observation Network reporting systems; CAS: Chemical Abstracts Service; EEA: European Environment Agency registration number (if CAS is not acceptable)

