MONITORING THE ENVIRONMENTAL IMPACT OF THE WORKS REGARDING THE IMPROVING OF THE NAVIGATION CONDITIONS ON THE DANUBE RIVER BETWEEN CALARASI AND BRAILA, KM 375-175

MONTHLY REPORT N0. 68

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FINAL VERSION

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CONTENT

1. INTRODUCTION

1.1. Brief presentation of the objectives monitored in the construction phase

I. This report presents the monitoring objectives for the period 01-31 December 2016.

For post-construction phase the monitoring frequencies for the environmental components are presented in Table 1.1.

II. *3D numerical modeling*

During this period have been conducted processing activities for bathymetric data aquisition.

Besides a proper organization and development of the field campaign, a permanent cooperation has been ensured between the Coordinator and Partners.

Table 1.1. Post-construction phase - monitoring objectives - frequencies with differences in the Critical Points

MONITORING OBJECTIVES				Critical points							
				Main Critical Points			Secondary Critical Points				
				01	02	10	03A	03B	04A	04B	07
A.	AIR			S	S	S	Q	Q	Q	Q	Q
B.	NOISE			S	S	S	Q	Q	Q	Q	Q
C.	SOIL			S	S	S	Q	Q	Q	Q	Q
D.	HYDROMORPHOLOGY	Water level		C	C	C	Q	Q	Q	Q	Q
		Water velocity		M	M	M	Q	Q	Q	Q	Q
		Turbidity		C	C	C	Q	Q	Q	Q	Q
		2D bathymetric elevation		M	M	M	Q	Q	Q	Q	Q
		3D bathymetric elevation		Q	Q	Q	Not the case				
E.	WATER QUALITY			Q	Q	Q	S	S	S	S	S
	SEDIMENTS			Q	Q	Q	S	S	S	S	S
F.	AQUATIC FLORA			August			Q	Q	Q	Q	Q
	AQUATIC FAUNA			Q	Q	Q	Q	Q	Q	Q	Q
	F. is STURGEONS AND BARBELL	STURGEONS		Two seasons / year (February - May / August – December)			Two seasons / year (February - May / August – December)				
		BARBELL		One season/year April- May (breeding season)			One season/year April- May (breeding season)				
	F. i OTHER FISH SPECIES			Annually (April- May, July - September)			Annually (April- May, July - September)				
G.	TERRESTRIAL FLORA			Annually in July			Annually in July				
	TERRESTRIAL FAUNA/ AVIFAUNĂ			Annually (April - June, September - October, January)			Annually (April - June, September - October, January)				
H.	NATURA 2000 SITES	SCI	ICHTYOFAUNA	Annually (April- May, July - September)			Annually (April- May, July - September)				
			AQUATIC FLORA	July			Q	Q	Q	Q	Q
			AQUATIC FAUNA	Q	Q	Q	Q	Q	Q	Q	Q
			TERRESTRIAL FLORA	Annually in July			Annually in July				
			TERRESTRIAL FAUNA	Annually (April - June, September - October, January)			Annually (April - June, September - October, January)				
		SPA	AVIFAUNĂ	Annually (April - June, September - October, January)			Annually (April - June, September - October, January)				
J.	3D numerical modeling			M							

NOTĂ: QC – quasi continuous | M- monthly | Q – quarterly | S – semester | C – continuous

1.2. Overview

The elements related to the sampling periods for the objectives monitored in November 2016 for post-construction period are presented in Table 1.2.

Table 1.2. Objectives monitored during the period of 01.12-31.12.2016

Objectives monitored		Sampling period / ongoing activities	Campaign	Critical Points							
				Main Critical Points			Secondary Critical Points				
				01	02	10	03A	03B	04A	04B	07
A.	AIR	05, 15.12.2016	63	NO	NO	NO	YES	YES	YES	YES	YES
B.	NOISE	05, 15.12.2016	66	NO	NO	NO	YES	YES	YES	YES	YES
C.	SOIL	14.12.2016	C24	YES	YES	YES	YES	YES	YES	YES	YES
D.	HYDROMORPHOLOGY	-	-	NO	NO	NO	NO	NO	NO	NO	NO
E.	WATER QUALITY	14.12.2016, 16.12.2016	C62	YES	YES	YES	NO	NO	NO	NO	NO
	SEDIMENTS	14.12.2016, 16.12.2016	C62	YES	YES	YES	NO	NO	NO	NO	NO
F.	AQUATIC FLORA	14.12.2016	C25 - phytoplankton	NO	NO	NO	YES	YES	YES	YES	YES
	AQUATIC FAUNA	-	-	NO	NO	NO	NO	NO	NO	NO	NO
	F.is. STURGEONS	02, 05, 07, 10, 11, 21, 24.12.2016	C28	YES	YES	YES	YES	YES	YES	YES	YES
	F.is. BARBELL	-	-	NO	NO	NO	NO	NO	NO	NO	NO
	F.i. OTHER FISH SPECIES	-	-	NO	NO	NO	NO	NO	NO	NO	NO
G.	TERRESTRIAL FLORA	-	-	NO	NO	NO	NO	NO	NO	NO	NO
	TERRESTRIAL FAUNA/ AVIFAUNĂ	-	-	NO	NO	NO	NO	NO	NO	NO	NO
H.	NATURA 2000 SITES	-	-	NO	NO	NO	NO	NO	NO	NO	NO
I.	BUILDING SITE	-	-	NO	NO	NO	NO	NO	NO	NO	NO

NOTE:

YES – samples were taken / activities were conducted in the field

NO - no samples taken / no activities conducted in the field

Means of transportation used for sampling/conducting activities and samples analysis are presented in Table 1.3.

Table 1.3 Means of transportation

Field	Transportation means
WATER	trimaran type boat with 25 CP engine
	Laguna type boat with 25 CP engine
	Lotus type boat with 20 CP engine
	Boat - autolaboratory – with trailer - RANIERI CLF22 model, Suzuki engine, 175 CP
	Boat ANA 5.0 with trailer, Suzuki engine, 40 CP
	Boat ANA 5.5 with trailer, Suzuki engine, 70 CP
LAND	Autolaboratory – Pickup jeep Toyota Hilux Double Cab 4x4
	Autolaboratory – Jeep Toyota LandCruiser
	Autolaboratory for air monitoring
	Autolaboratory for water and soil monitoring

2. STATE OF THE PROGRESS ACTIVITIES

2.1. State and progress on each activity / critical point on specific monitoring objectives

The equipments used for sampling/ongoing activities and samples analysis are presented in table 2.1.

Table 2.1 Main devices

Objectives monitored		Sampling equipment	Laboratory equipments / ongoing activities
A.	**AIR**	- LECKEL dust sampler - Auto-laboratory - Desaga pump - GPS - Autolaboratory for air monitoring	- Analytical balance KERN 770-14 - Atomic absorption spectrometer with graphite furnace AAS - UNICAM 939
B.	**NOISE**	- Sound Level Meter and Microphone, Brüel & Kjær Denmark - GPS	
C.	**SOIL**	- Burkle sampler - GPS	- ION-CROMATOGRAPH DIONEX ICS 1500 – anions, cations - Multi N/C Analytic Jena (total carbon analyzer and organic carbon) - Spectrometer ATI UNICAM UV-VIS - Mass Spectrometer with inductively coupled plasma ICPMS NexIon 350x equiped with hydrides generator system and autosampler system with autodiluter
D.	**HYDROMORPHOLOGY**	- Portable Turbidimeter type VELP SCENTIFICA - mini ADP SONTEK - Monitoring systems for turbidity and level - Monitoring systems for flow - velocities - Portable Turbidimeter HANNA Instruments - ADCP SONTEK River Surveyor R9 - Multiparameter YSI for turbidity and level measurements - Bathimetric System 3D - Konsgberg GeoSwath Plus Compact, 250 kHz - Acoustic Doppler Current Profiler (ADCP) - Teledyne RD Instruments RiverRay - ROV (Remote Operate Vehicle) – ROVBUILDER Mini 600 - GPS	- Turbidimeter HACH RATIO/RX - Device for water quality parameters measurements, type 1, Manta 2-Sub3.5+Amphibian 2 - Device for water quality parameters measurements, type 2, Manta 2-Sub4.0+Amphibian 2
E.	**WATER QUALITY**	- Ruttner sampler - GPS	- Spectrometer with atomic absorbtion VARIAN - Spectrometer CARY BIO 300 U.V.-VIS - Spectrofotometer with atomic absorbtion – with flame, graphyte oven, hydrides system with amalgamation and automatic system for solids CONTRAA - Automatic analyzer in continous segmented flux model SAN++ - Mineralization system Speedwave Four with microwave
	SEDIMENTS	- Petersen sampler - GPS	- Cryo – drying system ALPHA 2-4 LSCplus - Gas cromatograph coupled with mass spectrometer for dioxine screening, CPF, CPB and pesticides, with autosampler r-GC MS MS 15-02 - Drying stove - Sieving system for sediment samples - Ethos - digester with microwave for sediments - GC-MS-VARIAN - Spectrometer with atomic absorbtion SOLAAR M5 - Mineralization System Speedwave Four with microwave

Objectives monitored		Sampling equipment	Laboratory equipments / ongoing activities
F.	AQUATIC FLORA	- planktonic nets - Patalas sampler - dredges 20cmx50 cm - Square wooden frame, with surface of 1m^2 - GPS	- reverse microscope ZEISS - OPTIKA B-600T microscope - KRUSS microscope - Canon A570 IS camera for microscope
	AQUATIC FAUNA	- zooplanktonic nets - zoobenthic nets - Petersen sampler - benthos grabbing dredges - benthos sampling probe - GPS	- Stereomicroscope Olympus - Binocular Zeiss - Microscope ZEISS - Canon A570 IS camera for microscope - magnifying glass
	F.is. STURGEONS AND BARBELL	- Fixed monitoring system DKTB - Floating monitoring system type DKMR-01T - Complex monitoring, alarming and control system type DK-PRB-01U - Monitoring system with ultrasonic transmitter type 40 - Monitoring system with ultrasonic transmitter type 60 - Mobile receiver for sturgeons' telemetry Vemco VR 100 - GPS	- Reception station of WR2W - VR100 mobile receptor - Multiparameter YSI - Endoscope for sturgeon gender determining WELLD WED 3000V - Radar Lowrance Elite 9 CHIRP – 4 pieces
	F.i. OTHER FISH SPECIES	- High power electrical fishing device Hans Grassl EL 65 II GI - Low power electrical fishing device Hans Grassl EL 60 II HI - Ihtyometer - Electronic scale - GPS - binocular microscope - stereo microscope	
G.	TERRESTRIAL FLORA	Binoculars, GPS, notebook, standard forms, camera	
	TERRESTRIAL FAUNA/ AVIFAUNĂ	Binocular, lunette, camera, GPS	
H.	NATURA 2000 SITES	Binocular, lunette, camera, GPS	
I.	BULDING SITE ACTIVITY	- DESAGA pump - Autolaboratory - Sound Level Meter and Microphone, Brüel & Kjær - dust sampler LECKEL	

2.1.1 Critical Point 01 monitoring, Bala branch area and Caragheorghe sand strip

2.1.1.A. Air quality monitoring

The activities carried out during 01/31.12.2016 related to air quality monitoring for each critical point are presented in Table 2.1.1.A.1.

Table 2.1.1.A.1 Specific objective: air quality monitoring

No.	Activities
1.	Contribution to Monthly Report 68
2.	Contribution to Interim Report 15

According to post-construction monitoring objectives, in December 2016 for air quality monitoring in this main critical point CP 01 is not provided a sampling campaign. In post-construction period (in this main critical point CP01 have been made the reception of the construction work) frequency is biannual (as Table 1.1).

2.1.1.B. Noise monitoring

The activities carried out during 01/31.12.2016 related to noise level monitoring, for each critical point are summarized in Table 2.1.1.B.1.

Table 2.1.1.B.1. Specific objective: noise monitoring

No.	Activities
1.	Contribution to Monthly Report 68
2.	Contribution to Interim Report 15

According to post-construction monitoring objectives, in December 2016 for noise level monitoring in this main critical point CP 01 is not provided a measurements campaign. In post-construction period (in this main critical point CP01 have been made the reception of the construction work) frequency is biannual (as Table 1.1).

2.1.1.C. Soil quality monitoring

The activities carried out during 01/31.12.2016 related to soil quality monitoring, in this Critical Point are summarized in Table 2.1.1.C.1.

Table 2.1.1.C.1. Specific Objective: soil quality monitoring

No.	Activities
1.	Organizing campaign 24 for soil samples (Table 1.2)
2.	Campaign 24 sor soil sampling (soil sampling bulletins - Annex 6.2.3)

No.	Activities
3.	In field observations – presence/absence lumbricides
4.	Performing laboratory analysis (preliminary determinations) for soil physical-chemical-mechanical characterization

Number of soil samples collected from CP01 is presented in Table 2.1.1.C.2.

Table 2.1.1.C.2. Soil samples

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis	
		depth 5 cm	depth 30 cm
Main	CP 01	3	3

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annex 6.2.3.

2.1.1.D. Hydromorphological monitoring

The activities from this reporting period are synthetically presented in Table 2.1.1.D.1.

Overall one main activity has been carried out, namely continuous turbidity and level measurements in 5 automatic hydrometric stations.

Table 2.1.1.D.1 Specific objective: hydromorphological monitoring

No.	Activities
1.	Turbidity and level continuous measurements in the 5 automatic hydrometric stations

2.1.1.E. Water and sediments monitoring

The activities carried out during 01/31.12.2016, related to water and sediments quality monitoring, in this critical point are summarized in Table 2.1.1.E.1.

Table 2.1.1.E.1. Specific objective: water and sediments quality monitoring

No.	Activities
1.	Organizing campaign 62 for water and sediments sampling (Tabel 1.2)
2.	Conducting sampling campaign for water, on cross-sections, at various depths (water sampling bulletins - Annex 6.2.4)
3.	Conducting campaign for sediments sampling (sampling bulletins for sediments - Annex 6.2.5)
4.	Physical-chemical in field analysis for water samples
5.	Physical-chemical laboratory analysis for water and sediments samples

In this campaign were collected water and sediments samples as presented in Table 2.1.1.E.2.

Table 2.1.1.E.2. Water and sediments samples

Type of Critical Point	Critical Point (CP)	Water samples	Sediments samples
Main	01	20	8

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annexes 6.2.4 and 6.2.5.

2.1.1.F. Aquatic flora and fauna monitoring

During the reporting period have not been collected any samples.

2.1.1.F.is. Sturgeons and barbell migration monitoring

In December on Borcea branch were marked with ultrasonic tags and anti-poaching spaghetti tags 10 specimens of beluga.

Also, during scientific fishing were recaptured 2 beluga specimens namely: 12S21 și 12S28. According to capture sheets these 2 sturgeons were initially tagged on 26.11.2016 and 05.12.2016 respectively, their presence on Borcea branch being continued after the tagging. The time span of 6-14 days from the tagging moment to the time of recapture, the partial recovery of the skin area operated for ultrasonic tagging and the dynamism and energy observed at the time of their identification mean that the sturgeons have been marked with an optimized procedure so as not have direct and bad impact on their behavior.

During the month were downloaded all monitoring systems from this Critical Point.

2.1.1.F.i. Other fish species monitoring

In December are not provided any monitoring activities for fish species other than sturgeons.

2.1.1.G. Terrestrial flora and fauna monitoring

2.1.1.G.1 Terrestrial flora

During this period have not been made monitoring activities for terrestrial flora.

2.1.1.G.2 Terrestrial fauna/ Avifauna

In December 2016 have not been made monitoring activities for avifauna.

2.1.1.H. Natura 2000 sites monitoring

In December 2016 have not been made monitoring activities for Natura 2000 sites.

2.1.1.I. Working site activities monitoring and intervention plan compliance in case of accidental pollution

According to post-construction monitoring objectives are not necessary monitoring activities for the construction site.

2.1.2. Critical Point 02 monitoring, Epurașu Island area (Lebăda)

2.1.2.A. Air quality monitoring

The activities carried out during 01/31.12.2016 related to air quality monitoring in this critical point are those presented in Table 2.1.1.A.1.

According to post-construction monitoring objectives, in December 2016 for air quality monitoring in this main critical point CP02 is not provided a sampling campaign. In post-construction period (in this main critical point CP02 have been made the reception of the construction work) frequency is biannual (as Table 1.1).

2.1.2.B. Noise monitoring

The activities carried out in reporting period, regarding noise level monitoring, in this critical point are those presented in Table 2.1.1.B.1.

According to post-construction monitoring objectives, in December 2016 for noise level monitoring in this main critical point CP 02 is not provided a measurements campaign. In post-construction period (in this main critical point CP02 have been made the reception of the construction work) frequency is biannual (as Table 1.1).

2.1.2.C. Soil quality monitoring

The activities carried out in reporting period, regarding soil quality monitoring, for this Critical Point are those presented in Table 2.1.1.C.1.

Number of soil samples collected from CP02 is presented in Table 2.1.2.C.1.

Table 2.1.2.C.1. Soil samples

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis	
		depth 5 cm	depth 30 cm
Main	CP 02	3	3

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annex 6.2.3.

2.1.2.D. Hydromorphological monitoring

The activities from this reporting period are summarized in table 2.1.2.D.1.

Overall one main activity has been carried out, namely turbidity and level continuous measurements in the 5 automatic hydrometric stations.

Table 2.1.2.D.1 Specific objective: hydromorphological monitoring

No.	Activities
1.	Turbidity and level continuous measurements in the 5 automatic hydrometric stations

2.1.2.E. Water and sediments monitoring

Activities performed during this reporting period, regarding water and sediment quality monitoring, reported to this critical point are those presented in Table 2.1.1.E.1.

In this campaign were collected water and sediments samples as presented in Table 2.1.2.E.1.

Table 2.1.2.E.1. Water and sediments samples

Type of Critical Point	Critical Point (CP)	Water samples	Sediments samples
Main	02	15	6

For each collected sample a bulletin was completed, as Annex 6.2.4 and Annex 6.2.5.

2.1.2.F. Aquatic flora and fauna monitoring

In reporting period no sampling have been made.

2.1.2.F.is. Sturgeons and barbell migration monitoring

In CP02, monitoring of sturgeons migration was made with the monitoring systems placed on Old Danube.

2.1.2.F.i. Other fish species monitoring

In December are not provided any monitoring activities for fish species other than sturgeons.

2.1.2.G. Terrestrial flora and fauna monitoring

2.1.2.G.1 Terrestrial flora

In this period have not been made monitoring activities for terrestrial flora.

2.1.2.G.2 Terrestrial fauna/ Avifauna

In December 2016 have not been made monitoring activities for avifauna.

2.1.2.H. Natura 2000 sites monitoring

In December 2016 have not been made monitoring activities for Natura 2000 sites.

2.1.2.I. Work site activities monitoring and intervention plan compliance in case of accidental pollution

Due to completion of hydrotechnical construction, has not been necessary the construction site activity monitoring. Works reception have been made in November 26th, 2015.

2.1.3. Critical point 10 monitoring, Caleia Branch (Ostrovu Lupu)

2.1.3.A. Air quality monitoring

The activities carried out during 01/31.12.2016, regarding air quality monitoring, in this critical point are those presented in Table 2.1.1.A.1.

For main critical point CP10, in December 2016 have not been made monitoring activities for air quality, as a post-construction period (in this main critical point CP10 have been made the reception of the construction work) frequency is biannual (as Table 1.1).

2.1.3.B. Noise monitoring

The activities carried out during reporting period, related to noise level monitoring, related to this critical point are those presented in Table 2.1.1.B.1.

For main critical point CP10, in December 2016 have not been made monitoring activities for noise level, as a post-construction period (in this main critical point CP10 have been made the reception of the construction work) frequency is biannual (as Table 1.1).

2.1.3.C. Soil quality monitoring

The activities carried out during 01/31 December 2016, regarding soil quality monitoring, in this critical point are summarized in Table 2.1.1.C.1.

Number of soil samples collected from CP10 is presented in Table 2.1.3.C.1.

Table 2.1.3.C.1. Soil samples

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis	
		depth 5 cm	depth 30 cm
Main	CP 10	3	3

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annex 6.2.3.

2.1.3.D. Hydrophological monitoring

Activities performed during this reporting period, are summarized in Table 2.1.3.D.1.

Overall, have been performed one main activity, namely continuous turbidity and level measurements in the 3 automatic hydrometric stations.

Table 2.1.3.D.1. Specific objective: hydromorphological monitoring

No.	Activities
1.	Continuous measurements for turbidity and level in the 3 hydrometric automatic stations

2.1.3.E. Water and sediments quality monitoring

The activities carried out in reporting period related to water and sediments quality in this critical point are those presented in Table 2.1.1.E.1.

In this campaign were collected water and sediments samples as presented in Table 2.1.3.E.1.

Table 2.1.3.E.1. Water and sediments samples

Type of Critical Point	Critical Point (CP)	Water samples	Sediments samples
Main	10	15	6

For each collected sample a bulletin was completed, as Annex 6.2.4 and Annex 6.2.5.

2.1.3.F. Aquatic flora and fauna monitoring

In reporting period no sampling have been made.

2.1.3.F.is. Sturgeons and barbell migration monitoring

Monitoring of sturgeons migration was made with monitoring systems on Caleia, Cravia branches and navigable Danube. During the reporting period, data from the monitoring systems was downloaded.

2.1.3.F.i. Other fish species monitoring

In December are not provided any monitoring activities for fish species other than sturgeons.

2.1.3.G. Terrestrial flora and fauna monitoring

2.1.3.G.1 Terrestrial flora

In this period have not been made monitoring activities for terrestrial flora.

2.1.3.G.2 Terrestrial fauna/ Avifauna

In December 2016 have not been made monitoring activities for avifauna.

2.1.3.H. Natura 2000 sites monitoring

In December 2016 have not been made monitoring activities for Natura 2000 sites.

2.1.3.I. Work site activities monitoring and intervention plan compliance in case of accidental pollution

Due to completion of hydrotechical works has not been necessary the building site activity monitoring. Works reception was carried out on August 1st, 2014.

2.1.4. Monitoring in the critical points 03÷07

2.1.4.1. Monitoring in the CP 03 (upstream and downstream Seica)

2.1.4.1.A. Air quality monitoring

The activities carried out during 01/31.12.2016 related to air quality monitoring for each secondary critical points are presented in Table 2.1.4.1.A.1.

Table 2.1.4.1.A.1. Specific objective: air quality monitoring

No.	Activities
1.	Organizing the measurements campaign (Table 1.2)
2	Conducting the sampling campaign for air (air sampling bulletins - Annex 6.2.1)

In Table 2.1.4.1.A.2. is presented the number or air samples collected/measurements "in situ" during 01-31 December 2016.

Table 2.1.4.A.2. Air samples repartition

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis	Number of "in situ" measurements
Secondary	03 A and 03 B	4	4

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annex 6.2.1.

2.1.4.1.B. Noise level monitoring

The activities carried out during 01/31.12.2016, regarding noise level monitoring, in this secondary critical points are those presented in Table 2.1.4.1.B.1.

Table 2.1.4.1.B.1. Obiectiv specific - Noise level monitoring

No.	Activities
1.	Measurements campaign for noise level in zero naval traffic/naval traffic (noise level measurements bulletins - Annex 6.2.2)
2	Primary processing for data obtained from measurements

In this monitoring campaign for noise level, conducted during 01/31.12.2016, were made measurements as presented in Table 2.1.4.1.B.1, below.

Table 2.1.4.1.B.2. Noise level monitoring

Type of Critical Point	Critical Point (CP)	Number of measurements	
		zero naval traffic	intense naval traffic
Secondary	03 A	2	0
	03 B	2	0

For each sampling point, there have been established geographic coordinates which were then transcalculated in the STEREO'70 projection system. The measurements were coded according to the encoding instructions. Also, for each measurement a bulletin for noise level has been completed, see Annex 6.2.2.

2.1.4.1.C. Soil quality monitoring

The activities carried out during 01/31 December 2016 regarding soil quality monitoring, in this critical point are those presented in Table 2.1.1.C.1.

Number of soil samples collected from CP03 (A and B) is presented in Table 2.1.4.1.C.1.

Table 2.1.4.1.C.1. Soil samples

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis	
		depth 5 cm	depth 30 cm
Secondary	CP 03A	2	2
Secondary	CP 03B	2	2

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been

completed, see Annex 6.2.3.

2.1.4.1.D. Hydromorphological monitoring

No activities regarding hydromorphological monitoring during this period.

2.1.4.1.E. Water and sediments quality monitoring

During this period have not been made water and sediments sampling.

2.1.4.1.F. Aquatic flora and fauna monitoring

Activities performed during this reporting period, regarding **aquatic flora and fauna** (except for ichtyofauna) are summarized in Table 2.1.4.1.F.1.

Table 2.1.4.1.F.1. Specific Objective: aquatic flora and fauna monitoring

No.	Activities
1.	Organizing the sampling campaign for phytoplankton (Table 1.2)
2.	Conducting the sampling campaign for phytoplankton (sampling bulletins for aquatic flora and fauna - Annex 6.2.6)
3.	Laboratory analysis for phytoplankton samples
4.	Preliminary processing and analysis of the obtained results

In this campaign, from CP 03 were collected *phytoplankton samples* for quantitative and qualitative analysis, as presented in Table 2.1.4.1.F.2.

Table 2.1.4.1.F.2. Phytoplankton samples

Type of Critical Point	Critical Point (CP)		Samples collected for laboratory analysis							
			Qualitative analysis				Quantitative analysis			
			Left bank	Thalweg	Right bank	Thalweg	Left bank	Thalweg	Right bank	Thalweg
Secondary	03	03A	1	1	1	1	1	1	1	1
		03B	1	1	1	1	1	1	1	1
TOTAL			**6**			**2**	**6**			**2**

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annex 6.2.6.

2.1.4.1.F.is. Sturgeons and barbell migration monitoring

Monitoring of sturgeons migration have been conducted on this sector by the monitoring systems placed between km 348 and km 240, on Old Danube.

2.1.4.1.F.i. Other fish species monitoring

In December are not provided monitoring activities for fish species, other than sturgeons.

2.1.4.1.G. Terrestrial flora and fauna monitoring

2.1.4.1.G.1 Terrestrial flora

In this period have not been made monitoring activities for terrestrial flora.

2.1.4.1.G.2 Terrestrial fauna / Avifauna

In December 2016 have not been made monitoring activities for avifauna.

2.1.4.1.H. Natura 2000 sites monitoring

In December 2016 have not been made monitoring activities for Natura 2000 sites.

2.1.4.1.I. Work site activities monitoring and intervention plan compliance in case of accidental pollution

Because the hydrotechnical works have not started, was not necessary the monitoring of construction site activity.

2.1.4.2. Critical point 04 monitoring/Ceacâru/Fermecatu

2.1.4.2.A. Air quality monitoring

The activities carried out during 01/31.12.2016 regarding air quality monitoring, for each secondary critical points are presented in Table 2.1.4.1.A.1.

In Table 2.1.4.1.A.2. is presented the number or air samples collected/measurements “in situ” during 01-31 December 2016.

Table 2.1.4.2.A.1. Air samples repartition

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis	Number of “in situ” measurements
Secondary	04 A and 04 B	4	4

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample/measurement, a bulletin has been completed, see Annex 6.2.1.

2.1.4.2.B. Noise level monitoring

The activities carried out during 01/31.12.2016, regarding noise level monitoring, in this secondary critical points are those presented in Table 2.1.4.1.B.1.

In this monitoring campaign for noise level, conducted during 01/31.12.2016, were made

measurements as presented in Table 2.1.4.2.B.1, below.

Table 2.1.4.2.B.1. Noise level monitoring

Type of Critical Point	Critical Point (CP)	Number of measurements	
		zero naval traffic	intense naval traffic
Secondary	04 A	2	0
	04 B	2	0

For each sampling point, there have been established geographic coordinates which were then transcalculated in the STEREO'70 projection system. The measurements were coded according to the encoding instructions. Also, for each measurement a bulletin for noise level has been completed, see Annex 6.2.2.

2.1.4.2.C. Soil quality monitoring

The activities carried out during 01/31 December 2016 regarding soil quality monitoring in this critical point are summarized in Table 2.1.1.C.1.

Number of soil samples collected from CP04 (A and B) is presented in Table 2.1.4.2.C.1.

Table 2.1.4.2.C.1. Soil samples

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis	
		depth 5 cm	depth 30 cm
Secondary	**CP 04A**	2	2
Secondary	**CP 04B**	2	2

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annex 6.2.3.

2.1.4.2.D. Hydromorphological monitoring

No activities regarding hydromorphological monitoring during this period.

2.1.4.2.E. Water and sediments quality monitoring

During this period have not been made water and sediments sampling.

2.1.4.2.F. Aquatic flora and fauna monitoring

The activities carried out during this reporting period, regarding **aquatic flora and fauna** (except for ichtyofauna) are summarized in Table 2.1.4.2.F.1.

Table 2.1.4.2.F.1. Specific objective: aquatic flora and fauna monitoring

No.	Activities
1.	Organizing the sampling campaign for phytoplankton (Table 1.2)
2.	Conducting the sampling campaign for phytoplankton (sampling bulletins for aquatic flora and fauna - Annex 6.2.6)
3.	Laboratory analysis for phytoplankton samples
4.	Processing and analysis of the obtained results

In this campaign, from CP04 were collected ***phytoplankton samples*** for *quantitative and qualitative analysis*, as presented in 2.1.4.2.F.2.

Table 2.1.4.2.F.2. Phytoplankton samples

Type of Critical Point	Critical Point (CP)		Samples collected for laboratory analysis							
			Qualitative analysis				Quantitative analysis			
			Left bank	Thalweg	Right bank	Thalweg	Left bank	Thalweg	Right bank	Thalweg
Secondary	04	04A	1	1	1	1	1	1	1	1
		04B	1	1	1	1	1	1	1	1
TOTAL			**6**			**2**	**6**			**2**

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annex 6.2.6.

2.1.4.2.F.is. Sturgeons and barbell migration monitoring

Monitoring of sturgeons migration was performed on this sector by the monitoring systems placed between km 348 and km 240 on Old Danube.

2.1.4.2.F.i. Other fish species monitoring

In December are not provided any monitoring activities for fish species other than sturgeons.

2.1.4.2.G. Terrestrial flora and fauna monitoring

2.1.4.2.G.1 Terrestrial flora

During this period have not been made monitoring activities for terrestrial flora.

2.1.4.2.G.2 Terrestrial fauna/Avifauna

In December 2016 have not been made monitoring activities for avifauna.

2.1.4.2.H. Natura 2000 monitoring sites

In December 2016 have not been made monitoring activities for Natura 2000 sites.

2.1.4.2.I. Monitoring the building site activities and the compliance with the intervention plan in case of accidental pollution

The monitoring of the construction site was not necessary because the hydrotechnical works have not been started.

2.1.4.3. Critical Point CP 07 / Fasolele monitoring

2.1.4.3.A. Air quality monitoring

Activities performed during 01/31.12.2016, regarding air quality monitoring, for this secondary critical point are those presented in Table 2.1.4.1.A.1.

In Table 2.1.4.3.A.2. is presented the number or air samples collected/measurements "in situ" during 01-31 December 2016.

Table 2.1.4.3.A.1. Air samples repartition

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis	Number of "in situ" measurements
Secondary	07	2	2

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample/measurement, a bulletin has been completed, see Annex 6.2.1.

2.1.4.3.B. Noise level monitoring

Activities performed during 01/31.12.2016, regarding noise level monitoring, in this secondary critical point are those presented in Table 2.1.4.1.B.1.

In this campaign for noise level monitoring, conducted during 01/31.12.2016, were made measurements as presented in Table 2.1.4.3.B.1, below.

Table 2.1.4.3.B.1. Noise level monitoring

Type of Critical Point	Critical Point (CP)	Number of measurements	
		zero naval traffic	intense naval traffic
Secondary	07	2	0

For each sampling point, there have been established geographic coordinates which were then transcalculated in the STEREO'70 projection system. The measurements were coded according to the encoding instructions. Also, for each measurement a bulletin for noise level has been

completed, see Annex 6.2.2.

2.1.4.3.C. Soil quality monitoring

Activities performed during 01/31.12.2016, regarding soil quality monitoring, in this critical point, were summarized in Table 2.1.1.C.1.

Number of soil samples collected from CP07 is presented in Table 2.1.4.3.C.1.

Table 2.1.4.3.C.1. Soil samples

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis	
		depth 5 cm	depth 30 cm
Secondary	PC 07	2	2

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annex 6.2.3.

2.1.4.3.D. Hydromorphological monitoring

No activities regarding hydromorphological monitoring during this period.

2.1.4.3.E. Water and sediments quality monitoring

During this period have not been made water and sediments sampling.

2.1.4.3.F. Aquatic flora and fauna monitoring

Activities performed during reporting period, regarding regarding **aquatic flora and fauna** (except for ichtyofauna) are summarized in Table 2.1.4.3.F.1.

Table 2.1.4.3.F.1. Specific objective: aquatic flora and fauna monitoring

No.	Activities
1.	Organizing the sampling campaign for phytoplankton (Table 1.2)
2.	Conducting the sampling campaign for phytoplankton (sampling bulletins for aquatic flora and fauna - Annex 6.2.1)
3.	Laboratory analysis for phytoplankton samples
4.	Processing and analysis of the obtained results

In this campaign, from CP07 were collected ***phytoplankton samples*** for *quantitative and qualitative analysis*, as presented in Table 2.1.4.3.F.2.

Table 2.1.4.3.F.2. Phytoplankton samples

Type of Critical Point	Critical Point (CP)	Samples collected for laboratory analysis							
		Qualitative analysis				Quantitative analysis			
		Left bank	Thalweg	Right bank	Thalweg	Left bank	Thalweg	Right bank	Thalweg
Secondary	07	1	1	1	1	1	1	1	1
TOTAL		**3**			**1**	**3**			**1**

For each sampling point, have been determined geographical coordinates. Samples were labeled according to the encoding and labeling instructions. For each sample, a bulletin has been completed, see Annex 6.2.6.

2.1.4.3.F.is. Sturgeons and barbell migration monitoring

Sturgeons migration monitoring were performed on this sector by the monitoring systems placed between km 348 and km 240 on Old Danube.

2.1.4.3.F.i. Other fish species monitoring

In December are not provided any monitoring activities for fish species other than sturgeons.

2.1.4.3.G. Terrestrial flora and fauna monitoring

2.1.4.3.G.1 Terrestrial flora

During this period have not been made activities for terrestrial flora monitoring.

2.1.4.3.G.2 Terrestrial fauna / Avifauna

In December 2016 have not been made monitoring activities for avifauna.

2.1.4.3.H. Natura 2000 sites monitoring

In December 2016 have not been made monitoring activities for Natura 2000 sites.

2.1.4.3.I. Work site activities monitoring and intervention compliance plan in case of accidental pollution

Because the hydrotechnical works not started, was not necessary the construction site monitoring.

2.2. Stage of 3D numerical modeling

In December, INCDPM specialists have achieve, according to Specifications, bathymetric data processing in main critical points CP01, CP02 and CP10 areas. Thus, for this activity have been performed:

- bathymetric measurements processing for morphology and for sections profiling;
- bathymetric measurements processing for velocity and flow rates;
- longitudinal bathymetric measurements processing for bottom sill geometry determination.

3. MEMBERS OF THE EXPERTS TEAM

3.1. Members of the experts' team

Team's members who carried out activities in the reporting period and the number of days worked by each expert are schematically presented in Table 3.1.

Table 3.1. Members of the team experts

No.	Experts	Names of experts	Number of working days post-construction
1.	Project manager	Deák György	5
2.	Chemist 1	Ghiță Gina	9
3.	Chemist 2	Borș Adriana	5
4.	Ichthyologist 1	Cristea Victor	8
5.	Ichthyologist 2	Falka Istvan	0
6.	Hydrology	Poteraș George	8
7.	Hydraulic sedimentology	Ungureanu Gh Viorel	7
8.	Phytoplankton and aquatic macrophytes	Marinescu Florica	9
9.	Zooplankton	Adina Popescu	0
10.	Terrestrial invertebrates	Șerban Cecilia	3
11.	Aquatic macroinvertebrates	Florea Luiza	0
12.	Terrestrial flora and vegetation	Frink Jozsef Pal	0
13.	Ornithologist 1	Jozsef Szabo	0
14.	Ecologist 1	Ambrus Laszlo	3
15.	Ecologist 2	Zaharia Tania	0
16.	Assessor	Tudor Marian	6

3.2. Experts' tasks during the project

The tasks accomplished by experts on each phase/activity/critical point are presented in Experts' Activity Reports (Annex 6.3).

3.3. Planning the activities for the next month on each phase/activity/critical point

The monitoring activities for the period 01–31 January 2017 are synthetically presented in the table 3.4.

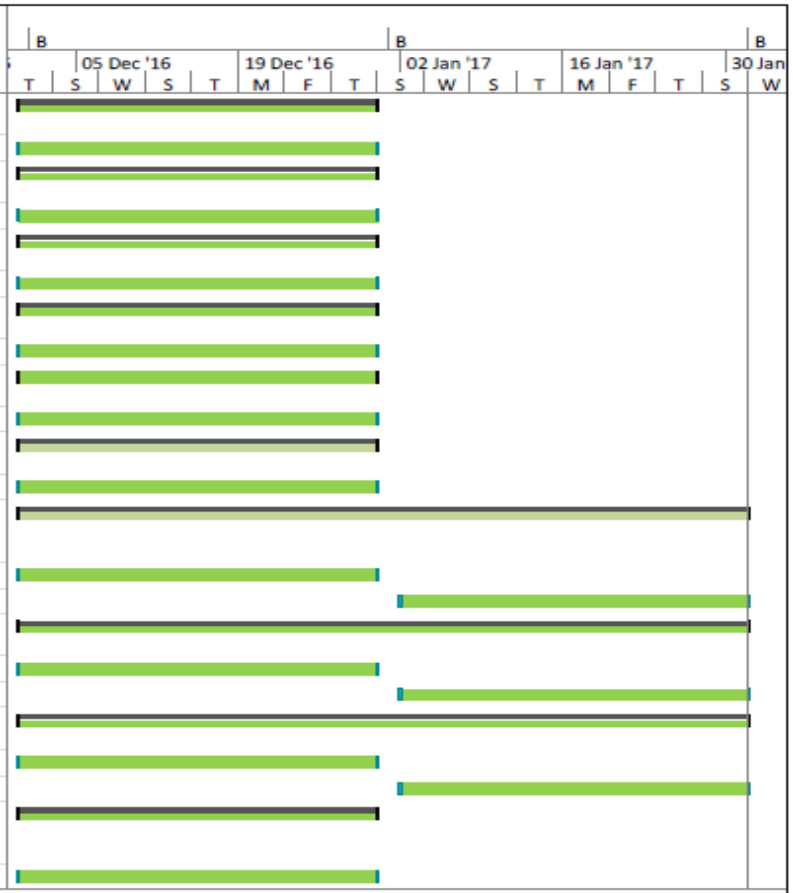
Table 3.4. Activities for the period of 01-31.01.2017

No.	ACTIVITIES	Critical points							
		Main critical points			Secondary critical points				
		01	02	10	03A	03B	04A	04B	07
1.	Further campaign of measurements, field observations (where is necessary)	YES	YES	YES	YES	YES	YES	YES	YES
2.	Processing and interpretation of field and laboratory data (where is necessary)	YES	YES	YES	YES	YES	YES	YES	YES
3.	Monthly report preparation	YES	YES	YES	YES	YES	YES	YES	YES

4. TIME SCHEDULE AND BUDGET PROJECT

4.1. Time schedule for project implementation

ID	Task Name	Start	Finish
1	Hydromorphological monitoring in CP 01/CP 02/CP 10 - level and turbidity measurements in automatic hydrometric stations of INCDPM	Wed 30.11.16	Fri 30.12.16
2	68th Month	Wed 30.11.16	Fri 30.12.16
3	Soil monitoring - CP01, CP02, CP10, CP03 (A+B), CP04 (A+B), CP07 - presence, abundance lumbricides	Wed 30.11.16	Fri 30.12.16
4	68th Month	Wed 30.11.16	Fri 30.12.16
5	Soil monitoring - CP01, CP02, CP10, CP03 (A+B), CP04 (A+B), CP07 - mineral salts, humic acids, organic matter, physical-chemical	Wed 30.11.16	Fri 30.12.16
6	68th Month	Wed 30.11.16	Fri 30.12.16
7	Water quality monitoring CP01, CP02, CP10 - Sediments (heavy metals, organic micropollutants)	Wed 30.11.16	Fri 30.12.16
8	68th Month	Wed 30.11.16	Fri 30.12.16
9	Water quality monitoring - CP01, CP02, CP10 - Water (physical-chemical analysis)	Wed 30.11.16	Fri 30.12.16
10	68th Month	Wed 30.11.16	Fri 30.12.16
11	Aquatic flora monitoring - CP 03A/03B/04A/04B/07 - Phytoplankton - sampling, composition, abundance, biomass	Wed 30.11.16	Fri 30.12.16
12	68th Month	Wed 30.11.16	Fri 30.12.16
13	Ichthyofauna Biodiversity Monitoring in CP 01/02/10/03/04/07 - Monitoring for the migration trails and seasons for ultrasonic tagged sturgeons specimens	Wed 30.11.16	Tue 31.01.17
14	68th Month	Wed 30.11.16	Fri 30.12.16
15	69th Month	Mon 02.01.17	Tue 31.01.17
16	Ichthyofauna Biodiversity Monitoring in CP 01/02 - data downloading from the monitoring systems	Wed 30.11.16	Tue 31.01.17
17	68th Month	Wed 30.11.16	Fri 30.12.16
18	69th Month	Mon 02.01.17	Tue 31.01.17
19	Ichthyofauna Biodiversity Monitoring in CP01 - fishing and tagging for sturgeon species specimens	Wed 30.11.16	Tue 31.01.17
20	68th Month	Wed 30.11.16	Fri 30.12.16
21	69th Month	Mon 02.01.17	Tue 31.01.17
22	Noise monitoring (zero and intense traffic): Conducting the campaign on noise monitoring in secondary critical points CP 03A, CP 03B, CP 04A, CP 04B and CP 07. Contribution to Interim Report RI15	Wed 30.11.16	Fri 30.12.16
23	68th Month	Wed 30.11.16	Fri 30.12.16



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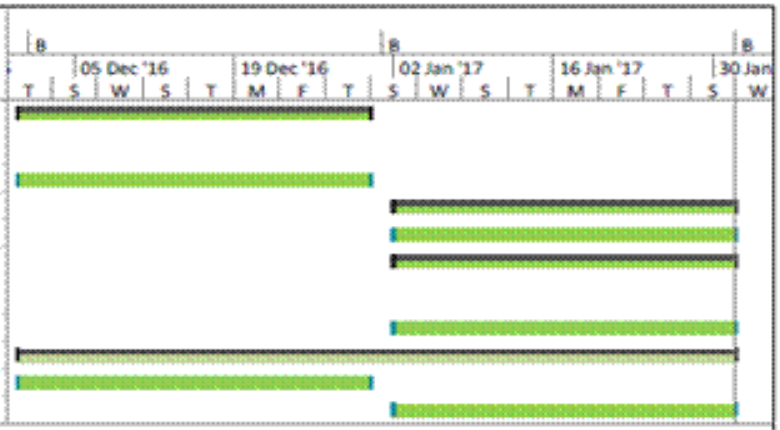
ID	Task Name	Start	Finish
24	Air monitoring: Conducting the sampling and measurements campaign for air quality, in secondary critical points CP 03A, CP 03B, CP 04A, CP 04B and CP 07. Contribution to Interim Report RI15	Wed 30.11.16	Fri 30.12.16
25	68th Month	Wed 30.11.16	Fri 30.12.16
26	Noise monitoring: Contribution to Interim Report RI15	Mon 02.01.17	Tue 31.01.17
27	69th Month	Mon 02.01.17	Tue 31.01.17
28	Air monitoring: Data and measurements processing and assessing, related to air quality, in secondary critical points CP 03A, CP 03B, CP 04A, CP 04B and CP 07. Contribution to Interim Report RI15	Mon 02.01.17	Tue 31.01.17
29	69th Month	Mon 02.01.17	Tue 31.01.17
30	Monthly Reports	Wed 30.11.16	Tue 31.01.17
31	68th Month	Wed 30.11.16	Fri 30.12.16
32	69th Month	Mon 02.01.17	Tue 31.01.17



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4.2. Budget and expenses incurred during the reporting period

Justifying calculation for 01 – 31 December 2016

I. EXPERTS EXPENSES				
No.	Experts	No. of working days Post - Construction (36 monts)	Fee (Euro on working day)	Maximum total value of the fees
1	Project leader	5	240	1.200,00 EUR
2	Chemist 1	9	200	1.800,00 EUR
3	Chemist 2	5	200	1.000,00 EUR
4	Ichtyologist 1	8	330	2.640,00 EUR
5	Ichtyologist 2	0	200	0,00 EUR
6	Hydrology	8	200	1.600,00 EUR
7	Hydraulic- sedimentlogy	7	200	1.400,00 EUR
8	Aquatic phytoplankton and macropytes	9	130	1.170,00 EUR
9	Zooplankton	0	130	0,00 EUR
10	Terrestrial invertebrates	3	125	375,00 EUR
11	Aquatic macroinvertebrates	0	125	0,00 EUR
12	Terrestrial flora and fauna	0	125	0,00 EUR
13	Ornithologist 1	0	200	0,00 EUR
14	Ecologist 1	3	140	420,00 EUR
15	Ecologist 2	0	140	0,00 EUR
16	Evaluator	6	330	1.980,00 EUR
SUBTOTAL EXPERTS' FEES				13.585,00 EUR
II EXPENSES with JUSTIFICATION				
1	Ichtyology- telemetry (sturgeons and barbel transmitters, batteries, expensis on stugeons' capturing)			13.159,61 EUR
2	Abiotic and biotic data for the establishment of the framework			
3	Analysis			0,00 EUR
SUBTOTAL EXPENSES with JUSTIFICATION				13.159,61 EUR
III. MATHEMTICAL MODELING				
1	Softaware acquisiton+hardware+ necessary licenses			0,00 EUR
2	Acquisition of bathymetric data, necessary for the mathematical modeling			0,00 EUR
3	Training of 2 specialists in numerical modeling			0,00 EUR
4	Fee for the numerical modeling expert			0,00 EUR
5	3D numerical model and implementation in 3D monitoring			0,00 EUR
SUBTOTAL NUMERICAL MODELING				0,00 EUR
TOTAL without V.A.T.				26.744,61 EUR

4.3. Budget and expenses for the next period

Estimated calculation for 01 – 31 January 2017

I. EXPERTS EXPENSES				
No.	Experts	No. of working days	Fee (Euro on working day)	Maximum total value of the fees
		Post - Construction (36 monts)		
1	Project leader	5	240	1.200,00 EUR
2	Chemist 1	4	200	800,00 EUR
3	Chemist 2	4	200	800,00 EUR
4	Ichtyologist 1	8	330	2.640,00 EUR
5	Ichtyologist 2	0	200	0,00 EUR
6	Hydrology	8	200	1.600,00 EUR
7	Hydraulic- sedimentlogy	7	200	1.400,00 EUR
8	Aquatic phytoplankton and macropytes	0	130	0,00 EUR
9	Zooplankton	0	130	0,00 EUR
10	Terrestrial invertebrates	0	125	0,00 EUR
11	Aquatic macroinvertebrates	0	125	0,00 EUR
12	Terrestrial flora and fauna	0	125	0,00 EUR
13	Ornithologist 1	10	200	2.000,00 EUR
14	Ecologist 1	3	140	420,00 EUR
15	Ecologist 2	5	140	700,00 EUR
16	Evaluator	6	330	1.980,00 EUR
SUBTOTAL EXPERTS' FEES				13.540,00 EUR
II EXPENSES with JUSTIFICATION				
1	Ichtyology- telemetry (sturgeons and barbel transmitters, batteries, expensis on stugeons' capturing)			0,00 EUR
2	Abiotic and biotic data for the establishment of the framework			
3	Analysis			0,00 EUR
SUBTOTAL EXPENSES with JUSTIFICATION				0,00 EUR
III. MATHEMTICAL MODELING				
1	Softaware acquisiton+hardware+ necessary licenses			0,00 EUR
2	Acquisition of bathymetric data, necessary for the mathematical modeling			35.000,00 EUR
3	Training of 2 specialists in numerical modeling			0,00 EUR
4	Fee for the numerical modeling expert			0,00 EUR
5	3D numerical model and implementation in 3D monitoring			0,00 EUR
SUBTOTAL NUMERICAL MODELING				35.000,00 EUR
TOTAL without V.A.T.				48.540,00 EUR

5. CONCLUSIONS, RECOMMENDATIONS, WARNINGS

5.1 This Monthly Report reflects monitoring activities from December 2016 related to post-construction period.

5.2 For the specific monitoring objectives within this phase, the Provider considered that the field and laboratory activities, logistics and infrastructure be sized so as to be according to the graphs and stipulations mentioned in the Specifications.

5.3 Taking into consideration the importance of the construction works that take place on Danube on the section between Calarasi and Braila, the Consortium recommends further actions on biodiversity monitoring, al least with the frequency similar to post-construction phase, up to completion of the project, in order to ensure an informational volume, with a high confidence level, to allow if necessary, the development of preventive solutions.

5.4 In December 2016, hydromorphological monitoring activity mainly based on processing the data from measurements campaigns in previous months, namely: ADCP measurements (flow rates and velocities) in critical points: CP01, CP02 and CP10, as well as from single-beam measurements for sections profiling in the 3 main critical points.

Flow rates in December 2016 were low compared with hystorical data for that period of the year.

6. ANNEXES

6.1 Relevant correspondence

6.2 Recording bulletins for sampling/measurements

6.2.1: AIR sampling sheets

6.2.2: NOISE sampling sheets

6.2.3: SOIL sampling sheets

6.2.4: WATER sampling sheets

6.2.5: SEDIMENTS sampling sheets

6.2.6: AQUATIC FLORA and FAUNA sampling sheets

6.3 Experts' activity reports

6.4 Images of activities

6.5 Hydromorphology monitoring

6.6 Ichtyofauna monitoring

6.6.1: Sturgeons capture centralizer

6.6.2: Capture sheets