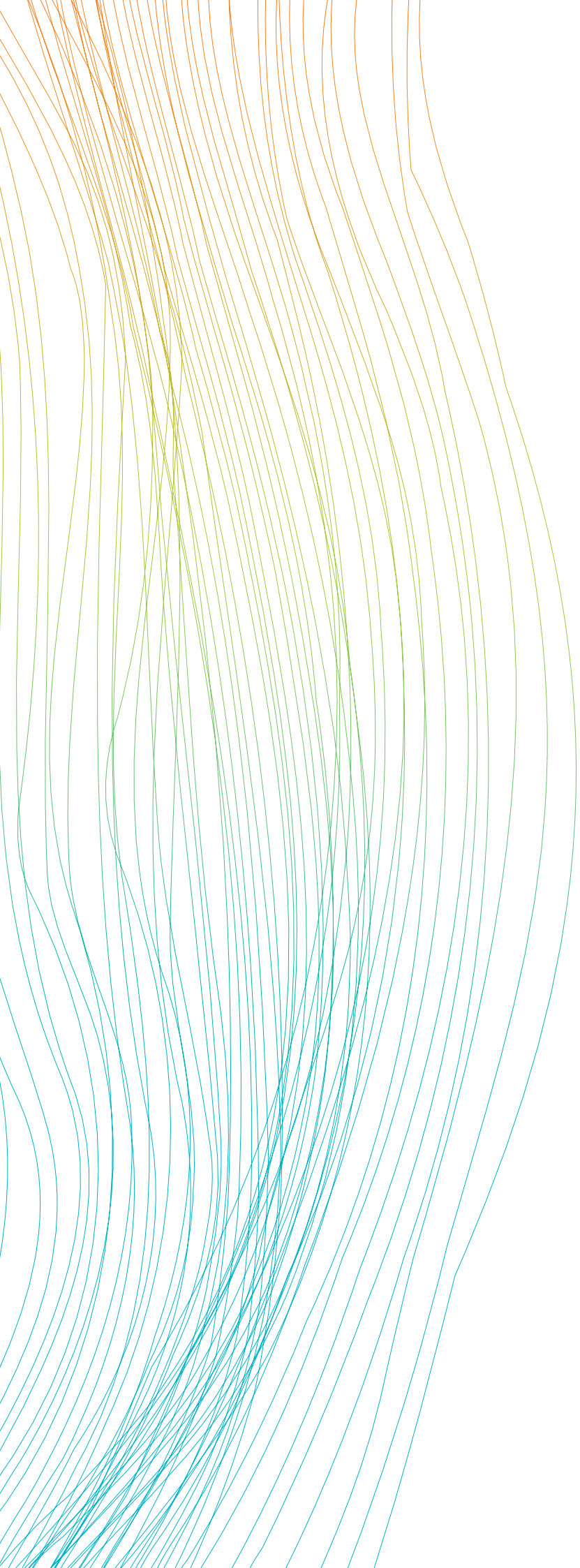
ANNUAL REPORT

2018



VÚV TGM

ANNUAL REPORT 2018

T. G. Masaryk
Water Research Institute, p.r.i.

Prague 2019

Index

INTRODUCTION

T. G. Masaryk Water Research Institute, public research institution, (Institute) can consider 2018 successful in all monitored parameters. There was an increase in the Institute's income as well as an increase in the number of employees and a positive economic result was achieved at the end of the year. The positive economic results enabled the Institute to increase the volume of funds in the reserve fund and subsequently to cancel the previously necessary revolving loan at Komerční banka, a. s., while increasing the income of all employees of the Institute.

The period was characterized by a number of minor and major changes in the way the Institute was managed, and in how priorities and goals were set. In addition to a change of director at the beginning of the year, there was another change in the Institute's senior management at the end of the first quarter. Deputy director for expert and research activities Ing. Petr Bouška, Ph.D., decided to leave the Institute. He was succeeded by Ing. Libor Ansorge, Ph.D., who convinced the selection committee not only by his development strategy and experience from his previous position at the Ministry of Agriculture, but, due to being an employee, also by his knowledge of the Institute and the way that research activities are conducted in the Institute.

As in the previous year, the key source of funding for the Institute were institutional funds for the improvement of research and development allocated by the founder on the basis of Methodology 17+ in the amount of CZK 69.1 million, of which CZK 25 million was used to modernize the Institute's research facilities. Other important sources of income included the continuing project Pole of Growth by the City of Prague, support for the execution of state administration and the project SUCHO. The vast majority of research projects were conducted in response to the current impacts of climate change and were thus more or less associated with the solution of hydrological extremes, especially with the problem of drought.

Positive economic results have made it possible to focus on areas that could not be sufficiently addressed in previous years. In addition to training and renewal of instrumentation, it was mainly effective project administration. The previous method of project management drained a large part of the capacities of the research teams, it was characterized by a number of misconducts and it did not allow the main investigators to carry out continuous control. For these reasons, a project management department was established, the aim of which should be not only to oversee the management of active projects but also to support the preparation and acquisition of new projects. However, the quality of the department's activities is also facilitated by corresponding IT background, and it was therefore decided to acquire a system for project management and then, due to the necessity of linking it with economic and human resources software, to completely change operating systems. An internal discussion, a process analysis, and a public tender were conducted. The winner was the modular system QI supplied by Adaptica. The contract was signed and the implementation started at the end of the year. This comprehensive replacement of IT systems will affect not only the Institute's operational department, but all the activities of all employees and the way in which the Institute is managed, and can be considered one of the greatest changes in the management of the Institute in this decade.

The year 2018 thus successfully followed the results of 2017 and became the basis for the gradual and sustainable development of the Institute. The aforementioned excellent results can be attributed primarily to the high work engagement of all the staff of the Institute, their interest in new areas of research and their active involvement in the management of the Institute.

Ing. Tomáš Urban

the director of the public research institution

BASIC INFORMATION

Name	T. G. Masaryk Water Research Institute, public research institution
Address	Podbabská 2582/30, Prague 6
Identification number	00020711
Tax identification number	CZ00020711
Legal Status	public research institution
Date of entry in the Register of p.r.i.	1. 1. 2007
Bank details	KB Prague 6, bank account number 32931-061/0100
Founder	The Ministry of the Environment
Address of the founder	Vršovická 1442/65, 100 10 Prague 10
Identification number of the founder	00164801

Contacts

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Brno Branch

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tel.: +420 541 126 311, info.brno@vuv.cz

Ostrava Branch

Macharova 5, 702 00 Ostrava
tel.: +420 595 134 800, info.ostrava@vuv.cz

INFORMATION ON INSTITUTE BODIES MEMBERS AND ACTIVITIES

The bodies of the Institute, within the meaning of Section 16 of Act No. 341/2005 Coll., as amended, are:

- a director who is a statutory body and decides on all matters of a public research institution unless it is legally entrusted to the council of the institution, the supervisory board or the founder,
- the Council of the TGM WRI, p.r.i.,
- Supervisory Board of the TGM WRI, p.r.i.

Institute bodies and their members

In 2018, the majority of the bodies of the institution had same members after the significant changes in 2017 (the elections of the Council and selection process for a director). With effect from January 1, 2018, a new director Ing. Tomáš Urban was appointed.

A. Director:
   - Ing. Tomáš Urban

B. The Council of the TGM Water Research Institute, p.r.i.:
   - researchers at TGM WRI, p.r.i.:
     - Ing. Anna Hrabánková (TGM WRI, p.r.i., Prague) – chairwoman,
     - Ing. Petr Tušil, Ph.D., MBA (TGM WRI, p.r.i., Ostrava Branch) – deputy chairman,
     - Ing. Miriam Dzuráková (TGM WRI, p.r.i., Brno Branch),
     - Ing. Jiří Kučera (TGM WRI, p.r.i., Prague),
     - Ing. Adam Vizina, Ph.D. (TGM WRI, p.r.i., Prague),
   - external members:
     - Ing. Jaroslav Beneš (River Board Povodí Vltavy, s. e., Prague),
     - Ing. Jaroslav Kinkor (Ministry of the Environment),
     - Mgr. Vít Kodeš, Ph.D. (CHMI, Prague),
     - doc. Ing. Aleš Havlík, CSc. (Czech Technical University, Prague).

   Secretary of the Council is Ing. Luděk Strouhal, Ph.D. (TGM WRI, p.r.i., Prague) with effect from 1st October 2017.

C. Supervisory Board TGM WRI, p.r.i.
   - Members of the Supervisory Board by January 1st, 2018:
     - Ing. Jan Landa (chairman) – Ministry of the Environment of CR,
     - Ing. Berenika Peštová, Ph.D. – Ministry of the Environment of CR,
     - Ing. Vladimír Sassmann – Ministry of the Environment of CR,
     - Mgr. Ladislav Faigl – Ministry of Agriculture of CR,
     - Ing. Roman Dvořák (TGM WRI, p.r.i.),
     - RNDr. Jan Daňhelka, Ph.D. (CHMI).

   Secretary of the Council of TGM WRI, p.r.i., was Ing. Michal Vaculík from TGM WRI, p.r.i., Prague.

The Report on activity of the Council of the TGM WRI, p.r.i., in 2018

The council of the TGM WRI has had same members without any changes since regular elections in 2017. Ing. Anna Hrabánková was chairwoman and Ing. Petr Tušil, Ph.D., MBA, was deputy chairman.

Five meetings of the TGM WRI Council took place in 2018 at intervals of approximately three months. All meetings were sound and with high attendance. The Council has always had a quorum. The director also attended all meetings as a guest. The most important conclusions and resolutions of these meetings were as follows:

- Resolution No. RU/49/1: The Council of the TGM WRI agrees under section 18 (2) b) of Act No. 341/2005 Coll. Agrees with the policy of development of the TGM WRI. The creation of the policy was assigned at meeting No. 29 on 29th February 2013. The policy is described in the document "Long-term policy of the development of TGM WRI for years from 2018 to 2022".
- Resolution No. RU/51/4: The Council of the TGM WRI approves the conclusion of the Memorandum on Mutual Cooperation with the Faculty of Environment of the Jan Evangelista Purkyně University in Ústí nad Labem.
- Resolution No. RU/51/4: The Council of the TGM WRI approves the conclusion of the Memorandum on Mutual Cooperation with the Institute of Chemical Technology in Prague.

In addition to aforementioned resolutions, the Council focused on improving internal processes and improving scientific and research activities. Newly, the Council has assessed and given recommendations on newly submitted proposals of research projects. The Council initiated changes in the area of motivational tools for TGM WRI staff and evaluation of research results. The Council helped to define the role of emerging Project Department as a support for researches by consulting with the director.

The proceedings are made from every meeting. After ten days of approval procedure by members of the TGM WRI Council and by the director of TGM WRI, the proceedings are at disposal to all employees in internal information database of the Institute.

The Report on Activity of the Supervisory Board of the TGM WRI, p.r.i., in 2018

In 2018, four meetings of the Supervisory Board took place on 8th March, 24th May, 12th October and 13th December. The most important conclusions follow.

Director of TGM WRI, p.r.i., Ing. Tomáš Urban participated at all the meetings.

The Supervisory Board, after discussion, considered:

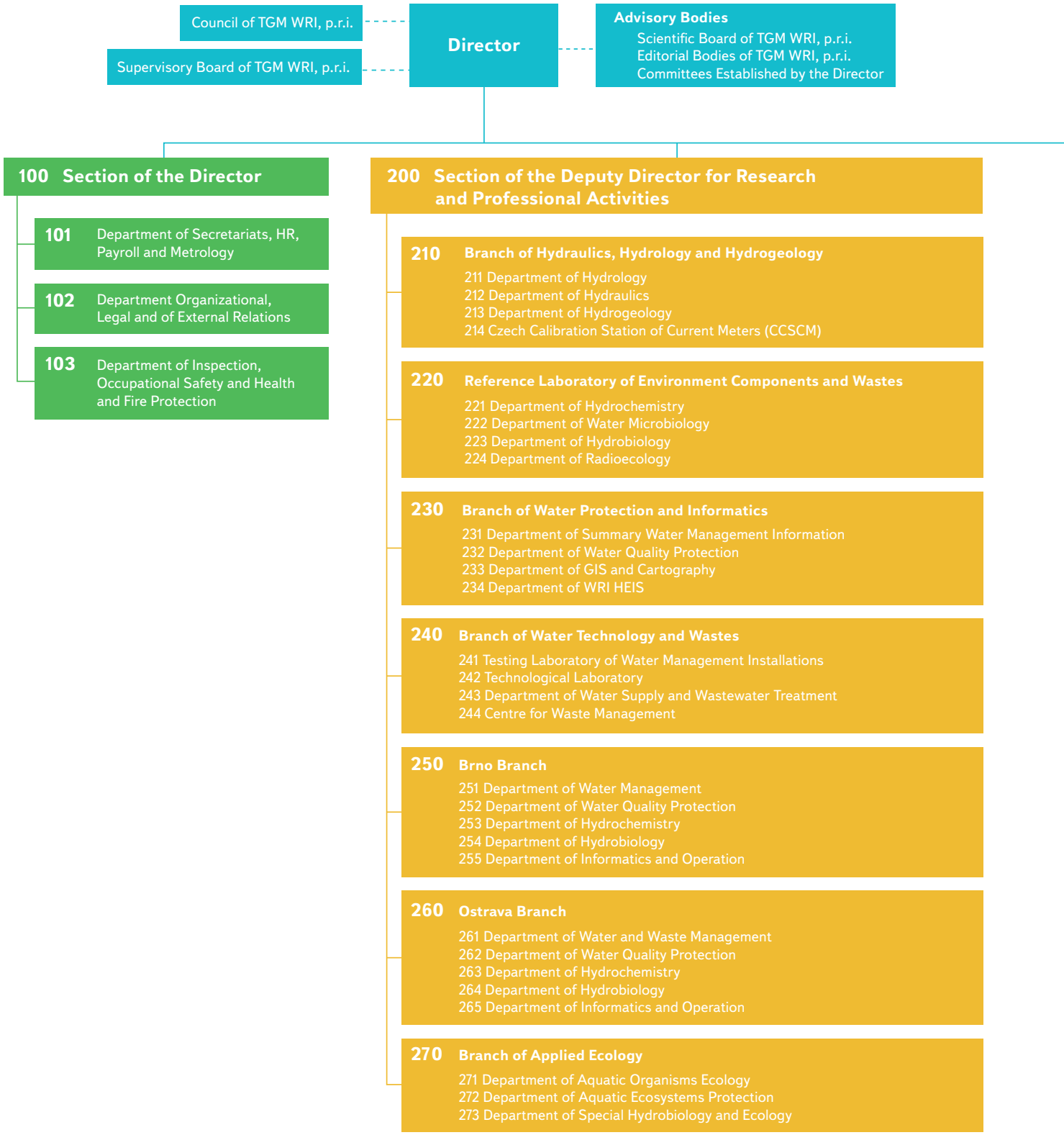
- the Draft of 2017 Annual report and recommended its approval by the Council of TGM WRI, p.r.i.,
- results of economic activities of TGM WRI, p.r.i., in 2017 that are described in 2016 Annual Report with no objection,
- the Draft of the budget of TGM WRI, p.r.i., for 2018.

The Report on activity of the Supervisory Board of the TGM WRI, p.r.i., in 2017 was processed and transferred to be included in 2017 Annual Report.

The Supervisory Board presented the Report about its eleventh year of activity (from 1st June 2017 to 31st May 2018) to the founder and Mgr. Mark Rieder within the meaning of paragraph 19 article (1), letter l) of Act No. 341/2005 Coll., as amended.

The Supervisory Board also dealt with current issues of TGM WRI, p.r.i., activities. For example the most significant changes in the Organizational Rules of TGM WRI were communicated. Other discussed issues were: the transfer of metrologist from section 100 to section 200, the cancellation of the position water manager, the creation of new Department of Preparation and Management of Projects, crenelation of regulations related to ISO 9001 and ongoing information on amendments of existing resolutions. In 2018, the matters of theft of buildings and land at Horní Soběšovice (cadastral zone) from TGM WRI were closed including the completion of the file and its storage in the Cadastral Registry.

ORGANIZATIONAL STRUCTURE



300 Centre for Assessing Proficiency of Laboratories (ASLAB)

400 Section of the Deputy Director for Economic and Operationally Technical Activities

410 Branch of Economics and Contracts Management

411 Department of Plan, Finance and Analyses
412 Department of Financial Accounting
413 Department of Planning, Coordination and Registration of Contracts

420 Investment and Operating Branch

421 Department of Investments
422 Department of Material and Technical Supply and Stock Management
423 Department of Property Registration
424 Department of Internal Administration, Vehicle Fleet and Workshop Operations

430 Branch of Services

431 Department of Scientific and Technical Information Centre (SVTI)
432 Department of Editorial Office
433 Department of Information System Management and Computer Network (LAN)
434 Department of Filing, Archival and Shredding Services

BRANCH OF HYDRAULICS, HYDROLOGY AND HYDROGEOLOGY

It focuses on tasks in the field of hydrology and hydraulics of surface and groundwater. It focuses on issues regarding quantification and protection of water resources, study of water flow in natural and artificial environment, development and application of methods of measurement and monitoring of parameters of water movement in watercourses, reservoirs and rock environment, as well as of Hydroecology. The branch performs expert activity (including expert opinions) and participates in many of national and international projects.

In the field of hydrology, comprehensive research is being carried out to investigate the impact of climate change on hydrological conditions and water resources, including the identification of adaptation measures. The water balance model BILAN is developed continuously. Other water balance, hydraulic and transport models are implemented in research of quantity and quality of surface and groundwater. The research is also focused on the study of extreme phenomena – floods and drought, including the evaluation of current situations. Importantly, the anthropogenic influence of the landscape water regime and its consequences, the hydrological aspects of revitalization of landscape and river systems and relationships of hydrological conditions and protection of ecosystems are evaluated.

The branch is also engaged in research in the field of hydraulics, for example by verifying the operation and functionality of existing and new water structures by means of physical hydraulic models, by conducting hydraulic assessments of bridges and passes on watercourses and by determining floodplains using mathematical modelling. The activities are also focused on the design of preventive measures against floods, the determination of minimum residual flow rates in watercourses and at water structures, the assessment of flash floods and optimization of warning systems.

Another important part of research in the branch is study in the field of hydrogeology. The comprehensive research is carried out regarding the quantity and quality of groundwater; the monitoring of groundwater is carried out including the micropollutants in natural waters. Methodological and conceptual tools are developed for groundwater protection, evaluation of non-point pollution and revision of vulnerable zones according to the Nitrate Directive. Artificial infiltration and induced sources of groundwater are studied. The interaction of surface and groundwater is evaluated and assessment of groundwater effects on terrestrial ecosystems is carried out. Surveys, remediation and monitoring of environmental accidents and contaminated sites, including ecological risk assessments, are carried out.

The branch also operates Czech Calibration Station for Current Meters. It is accredited by the Czech Accreditation Institute and it provides calibration of current-meters of free level water in accordance with CSN ISO 3455.

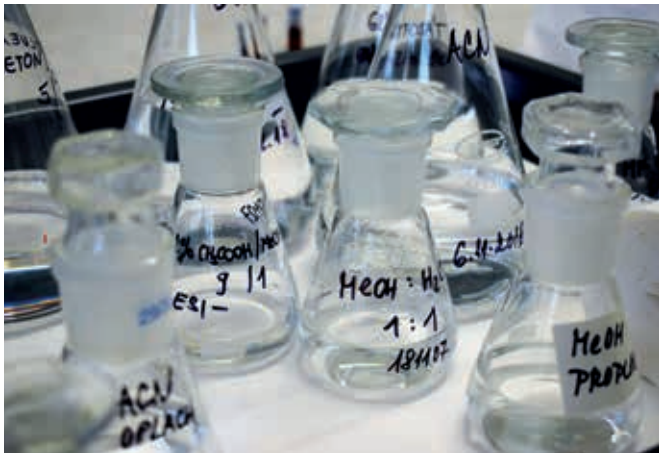
BRANCH OF ANALYSIS AND ASSESSMENT OF ENVIRONMENT COMPONENTS

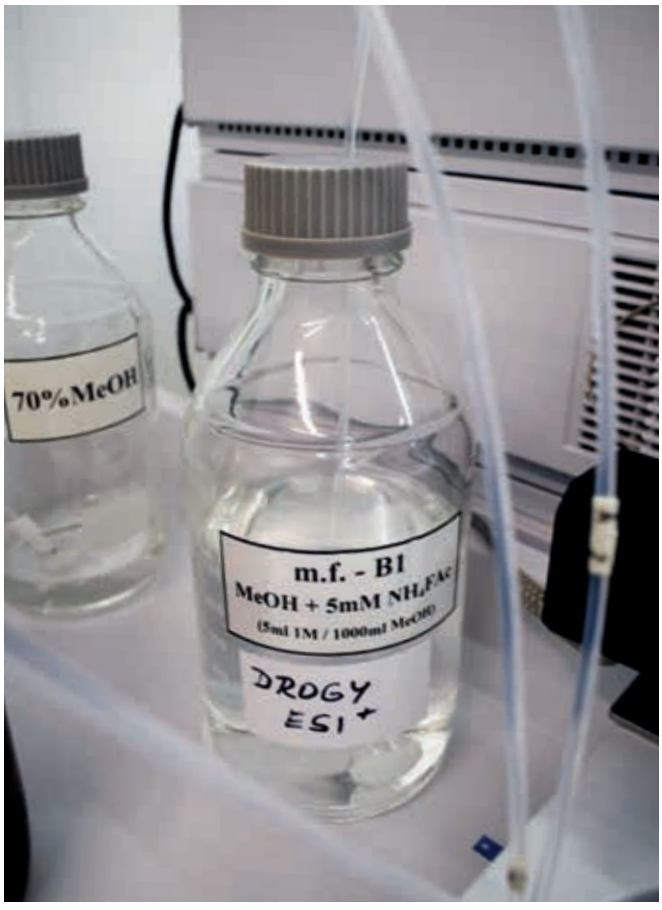
The Branch of Analysis and Assessment of Environment Components is a research centre that focuses on water quality studies. It investigates the occurrence and behaviour of substances in various components of the hydrosphere and their effects on ecosystems and human health. The branch consists of four departments – the Department of Hydrochemistry, the Department of Water Microbiology, the Department of Hydrobiology and the Department of Radioecology. The focus of the departments allows comprehensive research of the status of the hydrosphere and its processes.

An integral part of the branch are laboratories of each department. The laboratories are one of the two parts of Testing Laboratory for Water Technology and Environmental Components of TGM WRI (Testing Laboratory). The main task of the Testing Laboratory is to provide analytical data in order to ensure a qualified implementation of projects and targeted research in area of identifying and assessing water quality changes at water use and water protection. The work of the Testing laboratory is part of monitoring programs of national importance. It also deals with the development and validation of analytical methods and the development of new testing procedures.

The branch has highly qualified professional staff, it is equipped with state-of-the-art instrumentation and has a high quality laboratory and technical laboratory facilities. Therefore, the laboratory can perform chemical, microbiological, hydrobiological and radiological analysis in water and other matrices. Determinations are performed according to standard procedures and according to newly developed methods. It also focuses on a range of unique determinations such as illegal substances (drugs) or very low tritium concentrations.

The results of experimental research are applied in own applied research projects as well as they are used by researchers from other research units of the Institute and external customers.



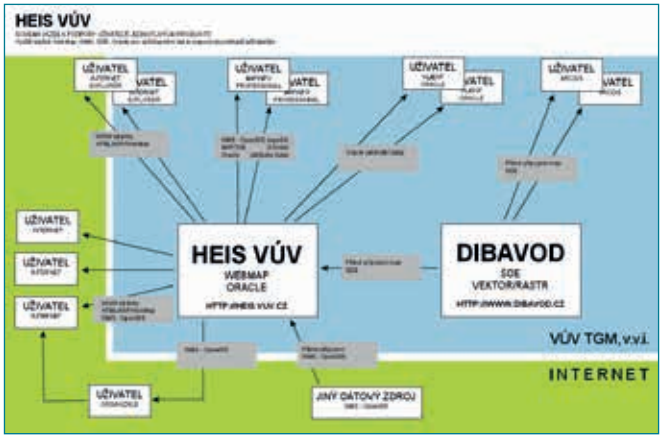


BRANCH OF WATER PROTECTION AND INFORMATICS

The traditional activity of the branch is the support of the projects in the Institute regarding informatics. The support is provided by the development and operation of TGM WRI Hydroecological Information System (HEIS VUV). The other branch activity is the management of DIBAVOD including the activities connected to using of geographic information systems. Other activity was annual preparation of Summary water balance assessment of the main river basins of the Czech Republic according to the Decree of Ministry of Agriculture No. 431/2001 Coll., which provided the results of the analysis of the use of water resources and the water use requirements in terms of quantity and quality in spatial units that are not covered by the water management balances by the River Boards (Povodí, state enterprises).

The branch carried out the support for the state administration (the management of the selected registers ISVS-VODA, EEA reporting on emissions to water environment, preparation of the EC reporting according to Water Framework Directive and support of the reporting in international commissions ICPER, ICPDR and ICPO). The data were collected for Report on Water Management Status in the Czech Republic (the Ministry of the Environment). The branch participated in the projects: "Analysis of permitted and actual surface and groundwater abstractions in the South Moravian Region for period 2012–2017", "Procedures for Compilation and Verification of Water Footprint according to International Standards" (Ministry of Agriculture, program KUS), Assessing the Impact of Drought on Water Use (Ministry of the Environment) and "ResiBil – The Balance of Water Resources in Eastern Part of Czech-Saxon Border Region and Review of Potential of Their Long-term Use" supported by European Fund for Regional Development from program Collaboration Czech Republic – Free State of Saxony 2014–2020.

Another activity was the update of water resource protection zones and Bathing Waters Reporting. Important activity was the initiation of the preparation of implementation of the INSPIRE Directive and participation in the key interdepartmental project "Development of ISVS-VODA". For example, the river network of the Czech Republic is harmonized in this project. The staff of the branch participated in following projects via data support and development of software for calculation and publishing: "Prediction of the hazards of non-native fish and crayfish and optimization of eradication methods of invasive species" (TH02030687), "Protection of Critical Infrastructure – Želivka water resource against the effects of PPCP and pesticides in the conditions of long-term drought (VI20172020097)", "Increasing water resources availability in selected areas of Karlovy Vary Region", "Utilization of artificial and natural structures for revitalization and increase of biological and morphological diversity of Prague streams" which is a part of the project "Water for Prague" (CZ.07.1.02/0.0/0.0/16_023/0000118)". The branch also participated in water management balance of current and projected status for catchments of the river Vltava and the river Ohře, solutions of drought impacts on water use and processing supporting water management studies in connection with preparation of construction of the New Nuclear Facility at Dukovany. The branch also collaborated in the project "Possibilities of water recreation in City of Prague (from history to the present)" (CZ.07.1.02/0.0/0.0/16_040/0000382, Operational program Prague, Growth Pole of the Czech Republic).



BRANCH OF WATER TECHNOLOGY AND WASTES

The Branch of Water and Wastes Technology deals with a wide range of research topics ranging from water supply, wastewater treatment to waste research. Two departments (Testing Laboratory of Water Management Installations and Technological Laboratory) are involved in Testing Laboratory for Water Technology and Environmental Components of TGM WRI (Testing Laboratory). The Testing laboratory is the Testing laboratory No. 1492 accredited by CAI according to CSN EN ISO/IEC 17025: 2005. It was also evaluated by ASLAB according same norm as laboratory No. 4035.

The Testing laboratory of Water Management Installations performs tests for the effectiveness of domestic wastewater treatment plants, light liquids separators and grease traps according to accredited test procedures described by technical standards. It is also able to offer customers other ways to test water management equipment according to their needs.

The Department of Basic Chemical Analysis provides analytical background for the Testing laboratory of Water Management Installations and in the area of basic chemical analysis as well as for researchers from other research branches of the Institute. It also offers its services to external customers.

The Department of Water Supply and Wastewater Treatment is focused primarily on water treatment and wastewater treatment, in recent years mainly on the issues of micro-pollutants, their occurrence, transformation and possibilities of their removal. The department, in cooperation with other departments of the Institute, deals with the impacts of discharged wastewater on the recipients, especially during drought, and the effects of artificial snow on the landscape.

The Centre for Waste Management is another part of the branch. It conducts research on waste management and also deals with commenting on legislative proposals on waste.

BRNO BRANCH

The activity of the Brno Branch is focused in long term on solving the issues caused by hydrologic extremes: floods and droughts. All activities aim to cover the whole range of issues and in the context of the various methods of monitoring the causative phenomena, the research of their modelling, the parametrization, the evaluation and the proposals of a set of measures at hydrological units. The set of measures covers a whole range of types of individual protection elements from structural changes to proposals for adjusting legislation or methods of financing for the relevant types of public services.

Water quality is a broad topic that is also dealt with in the Brno Branch. Specifically, the branch carries out theoretical and practical processing of the issue of monitoring and evaluation of the quality of aquatic environment from the point of view of hydrochemistry, hydrobiology and microbiology, which also leads to the design and application of suitable technologies for improvement of water quality. This relates to long-term research into the use of artificial wetlands and extensive technologies for the treatment of waste and other contaminated waters (root wastewater treatment plants, soil filters, stabilization tanks, etc.).

OSTRAVA BRANCH

The activity of the branch is focused in long term on research, development and expert activities related to the protection and use of the water component of the environment with a predominant orientation on the Odra (Oder) River basin. The activity is mainly focused on research into changes in water quality in the watercourses and in the reservoirs of the Odra (Oder) River basin, water purification technology and water resources management. The branch supervises the activities regarding the toxicity in the frame of water quality monitoring and processes of water quality changes concerning their physical, chemical and biological characteristics. The branch participates in the coordination and activities of the Institute in the framework of surveying and evaluation of the status of surface waters and protected areas. In addition, the staff of the branch deals with water planning issues and the updating of related legislation.

The laboratory departments (Department of Hydrochemistry and the Department of Hydrobiology) carry out chemical, biological and bacteriological analyses of waters and test of acute and chronic toxicity, including genotoxic analyses. In 2017, the Testing Laboratory of Hydrochemical and Hydrobiological Analysis of TGM WRI, p.r.i., Ostrava Branch received the Certificate of Accreditation (No. 1702) from Czech Accreditation Institute. The scope of accreditation covers chemical and biological testing of water, aqueous extract of waste, sediments, suspended sediments, soil, sludge, including sampling of surface water and wastewater. The testing laboratory received an extension of Certificate of good laboratory practice No. 436 issued by ASLAB.

In 2018, the activity of the branch was also focused on participation in public tenders in the field of research on water protection, status and changes in water ecosystems and in the field of other activity. The range of projects is therefore very diverse and it is given by requirements of the contracting authorities.

BRANCH OF APPLIED ECOLOGY

The Branch of Applied Ecology focuses primarily on monitoring and assessing the development of natural and anthropologically affected aquatic ecosystems and their biological components. The activity focuses on the research of selected species, groups and communities of animals and plants, their requirements on the status and level of pollution of the aquatic environment, tolerance to a wide spectrum of anthropogenic influences and methods of their protection in natural and anthropologically affected aquatic ecosystems. The branch also deals with analyses of a wide range of pollution sources and other impacts on aquatic ecosystems and develops methodological procedures for assessing the status of water bodies, the extent of anthropogenic threat to the aquatic environment and the effectiveness of different types of measures. It also focuses on the development of monitoring procedures and sampling devices for monitoring water, pollution sources and biological components of aquatic ecosystems. An integral part of the branch activity is the implementation of research results into practice and legislation (new approaches and methodologies), including consultation and assessment activities.

The Branch of Applied Ecology is organized in three departments – the Department of Aquatic Organisms Ecology, the Department of Aquatic Ecosystems Protection and the Department of Special Hydrobiology and Ecology.

The Department of Aquatic Organisms Ecology deals with the identification and assessment of anthropogenic influences and the study of their impacts on aquatic ecosystems with a special focus on fish communities and the design, development and evaluation of corrective actions to mitigate the impact of various civilization factors. Specific research focuses on the impact of river network fragmentation on fish migration, the study of migratory behaviour of selected species, and the development and use of automated monitoring systems for migration assessments. In addition, the research and activities of the branch focus

on the issue of non-native and invasive fish species and other aquatic animals in aquatic ecosystems and the environmental risks associated with the operation of hydropower plants.

The Department of Aquatic Ecosystems Protection is engaged in research into anthropogenic effects on the aquatic environment and related aquatic ecosystems. An important part of the activity is related to the assessment of the impact of non-point and point sources of pollution on the quality of water and the biological component of the aquatic environment, including research of eutrophication and assessment of eutrophication potential of sources. An important part of the activity of the department is the research of the influence of hydromorphological conditions of the environment on water ecosystems and individual biological components. A new research area is water footprint and life cycle assessment (LCA). Activities include the development of methodologies and procedures to provide expert support for the preparation of river basin management plans and the assessment of the status of water bodies and protected areas.

Department of Special Hydrobiology and Ecology deals with applied water research in the field of ecology and preservation/conservation biology aimed at legislatively specially protected aquatic organisms (macrophytes, molluscs and other invertebrates) and management of protected areas. Other areas of research include ecology of springs and oligotrophic catchments, processes of formation of detritus in running waters, relations between surface and groundwater in terms of their physico-chemical and biological parameters, study of the aquatic environment of specially protected areas (SPAs) including the European protected areas with an emphasis on the Natura 2000 priority areas, the development of environmentally friendly technologies for protected aquatic organisms with special demands and also the impact of anthropogenic acidification and recovery from acidification to chemistry and revitalization of mountain waters.

ASLAB

ASLAB – Centre for Assessing Proficiency of Laboratories is a part of TGM WRI. It is authorized, under the valid authorization of the Ministry of the Environment as the central body of state administration, to exercise powers delegated by the State (Measure No. 12/06, ref. No. 7081/M/06):

- to organize intralaboratory proficiency testing in the field of environmental laboratory analyses, the output is a Certificate of Participation in Proficiency Tests,
- to assess professional competence of hydro-analytical laboratories in the area of environmental research and protection in accordance with the quality management system CSN EN ISO//IEC 17025, the output is a Certificate of Correct Operation of the Laboratory (one of the conditions for meeting the requirements for an authorized laboratory according to Act No. 150/2010 Coll. Decree No. 123/2012 Coll. and Government Order No. 143/2012 Coll., including drinking water and pool water, Act No. 258/2000 Coll., as amended by Act No. 253/2005 Coll.).

Acting as a National Inspection Authority on good laboratory practice in the area of chemical substances and chemical preparations in accordance with the Act No. 350/2011 Coll. (Chemical Act) and Regulation No. 163/2012 Coll., as amended.

Significant proportion of ASLAB activities falls to proficiency testing (PT) that forms the fundamental level of external supervision over hydro-analytic laboratories. In 2018, in total 239 laboratories from the Czech Republic and Slovakia participated in programs organized by ASLAB.

ASLAB continues to new and prepared legislation with new testing methods or reference to such methods and creates the methodologies of proficiency testing in these new areas with aim to implement them in programs of ASLAB. ASLAB prepares the laboratories for the changes that follow from the new or updated legislation and their further verification.

ASLAB granted Certificate of Correct Operation of the Laboratory to 11 newly assessed laboratories in 2018. 50 such certificates were in force by 31st December 2018. In the area of good laboratory practice, ASLAB checked eight testing devices by 31st December 2018.

ASLAB activities include also cooperation in developing of new regulations of the Ministry of the Environment, technical standards and documents concerning the assessment of laboratories. The objective is the support of the state administration, evaluation of data created by ASLAB activities and to transmit data created elsewhere in the activities of ASLAB. ASLAB produces technical reports on all its activities. The reports are stored in the archive of ASLAB.

THE ACTIVITIES OF THE INSTITUTE

T. G. Masaryk Water Research Institute, public research institution, was included to the Register of public research institutions, administered by the Ministry of Education, Youth and Sports, on 1st January 2007.

The activities of the Institute are based on the founding deed of the public research institutions given by Provision No. 12/06 of the Ministry of the Environment from 12th December 2006, as amended by Provision No. 2/11 of the Ministry of the Environment on publication of the full wording of the founding deed from 31st May 2011.

The main mission of the Institute is:

- the research of the status, use and changes of water ecosystems and their linkages with landscape and related environmental risks; waste and packaging management,
- expert support of the water protection; prevention of flood risks and waste and packaging management based on aforementioned research.

Activities of TGM WRI are categorized into main activity and additionally activity according to the founding deed.

The main activity includes:

- hydrological, hydrogeological and hydraulic research,
- research of water resources, protection of water and protection of river basins,
- research in water chemistry, toxicology and radiology,
- research in water biology and microbiology,
- research of processes caused by water pollution and elimination of pollution,
- research of the status of water and water bodies and protection of aquatic ecosystems,
- research of methods for identification and evaluation of water status,
- research of ecological relations of water in a landscape,
- research of monitoring methods, field measurements and sampling techniques including technical instruments,
- research of methods in analytical chemistry including technical instruments,
- research of methods for information processing, development and use of databases including geographical information systems,
- economic research in relation to water and its use as a component of the environment,
- research in remediation of river systems and aquatic remediation of damaged landscape,
- research for selection of water biotopes suitable for renewal or remediation and management of databases of relevant sites,
- research for protection against harmful impacts of water,
- research in water management planning, water balance and use of water,
- research in waste management, composition and quality of waste, including dangerous waste and its impact on aquatic environment,
- research of risks of landfills and contaminated sites for the water environment,
- research of management of packaging and packaging waste research,
- development, application and evaluation of technological methods for waste management including assessment of waste production and waste management,
- development of research infrastructure.

Within its additional activity the Institute ensures:

- expert opinions, positions, assessments and analyses in the area of the main activity,
- observations, field measurements, sample analyses, chemical analyses in the area of the main activity,
- international cooperation, activities in a framework of relevant thematic strategies in the area of the main activity,
- cooperation with universities, institutes of the Academy of Sciences and other research institutions in the area of the main activity,

- publishing and dissemination of information in the area of the main activity,
- proposing of parameters of good ecological status of water,
- proposing of programs for reduction of pollution of surface water by dangerous harmful substances and priority dangerous substances,
- assessment of sensitive and vulnerable zones, as well as surface water suitable for life and reproduction of native fish species and other aquatic fauna, protected areas of natural accumulation of water and bathing surface water,
- proposing and monitoring of areas of natural accumulation of water in the area of the main activity,
- proposing protection measures for water resources,
- maintaining registry of watercourses and water reservoirs, protection zones of water supply reservoirs and water supply groundwater resources,
- maintaining thematic water management cartography,
- assessment and evaluation of surface water and groundwater regime in relation to status of use of water resources,
- determination of minimum residual flows and minimum groundwater levels,
- expert support to preparation of district river basin management plans,
- operation of reference laboratories for all components of the environment,
- proficiency testing of hydroanalytical laboratories for chemical, biological, microbiological, toxicological and radiochemical analytical methods and organizing intercalibration laboratory testing in the area of the environment,
- methodological guidance for hydroanalytical laboratories and unification of their practices,
- expert support to prevention of major accidents involving chemical substances and preparations,
- participation in operating the permanent and emergency component of the national radiation monitoring network,
- development and operation of the evaluation system of status and potentials of water bodies and reference conditions of water bodies,
- establishment and operation of monitoring network for observation of surface water and groundwater except their quantity,
- strategic and organizational provisions of activities for evaluation and assessment of status of surface water and groundwater,
- maintaining and updating registries of water of public administration information system VODA,
- assessment of technologies and evaluation of operation of technological installations for water treatment and wastewater treatment,
- evaluation of effectiveness of remediation measures of river systems,
- expert support to the international cooperation of the Czech Republic within the framework of bilateral and multilateral agreements and conventions in the area of water protection,
- preparation of background documents necessary for meeting the obligations towards the European Union and documents included in reports on implementation of directives in the area of water protection and waste management according to the requirements of the European Community,
- evaluation of the methods of waste management – operating the waste management information systems and maintaining registry of production and management of waste and packaging,
- evaluation of analytical methods and quality of waste, evaluation of efficiency of waste treatment technologies including dangerous waste,
- carrying out the function of the National inspection authority for proper laboratory practice,
- expert support to updating and evaluation of waste management plans,
- provision of information on the status of the environment in the area of waste management,
- carrying out the function of the expert institution for professional and registering activities,
- operating the calibration centre for hydraulic measurements,
- carrying out the function of the centre for evaluation of competency for calibration of measuring instruments for water flow rate in conditions of free water level,

– the function of the calibrator of the working gauges of the free water flow – operation of a Testing laboratory for water management equipment.

Apart from the above listed functions, the Institute carries out also other activities according to Provision No. 12/06 of the Ministry of the Environment in compliance with the relevant Trade Certificates.

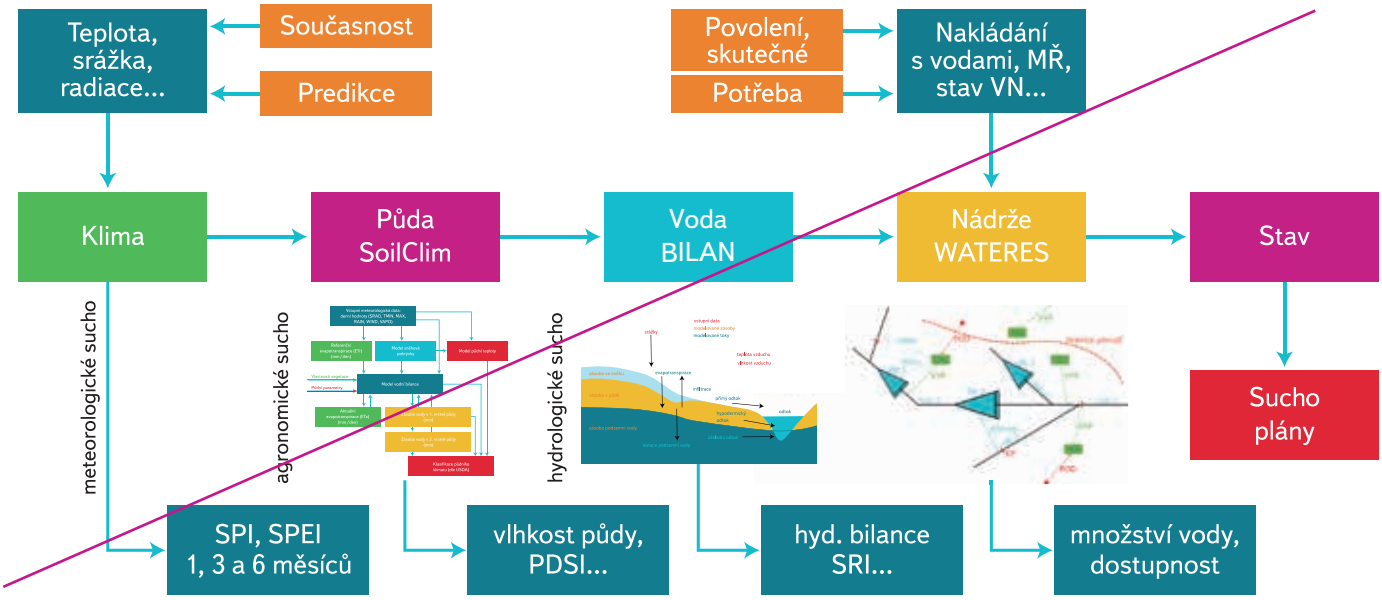
THE MAIN ACTIVITY

In 2018, the activities of the Branch of Hydraulics, Hydrology and Hydrogeology focused on, among other things, the solution of drought issues. Nowadays, water shortages and droughts are rapidly growing in an increasing number of affected areas globally, and in some cases they are at the level of a natural disaster with massive impacts. Regarding drought there is a significant increase in its frequency in some areas including Central Europe. This phenomenon is closely related to the process of global climate change. The problem of securing water resources is already beginning to manifest itself in regions where the population has not yet been aware of the drought, but it is beginning to experience it more intensely. Moreover, the impact of drought and water scarcity on the population and industry in recent years has been favourably influenced by the drop in water consumption of about half that of the 1990. However, the mitigating effect of this development is gradually disappearing. In 2015, problems with supply of population were reported in municipalities with insufficient water resources. The impact of drought on agricultural production and forestry, where the impacts of this phenomenon usually show first, have grown significantly. Also, other economic sectors were affected. An increase in the number of days with lack of water in the key period for the production of most of the crops was observed between 1961–1990 and 1991–2018. In the future, therefore, it can be expected that the existing water resources will not be sufficient, not only in terms of the potentially decreasing available water but also in terms of the unsatisfactory water quality. T. G. Masaryk Water Research Institute, p.r.i., has been carried out research of drought related issues for more than ten years for these reasons and it points out this problem, which is already beginning to manifest. The year 2018 confirmed the existence of this problem. Most recently, the system HAMR (Hydrology, Agronomy, Meteorology and Retention) was created. The system HAMR:

- can evaluate meteorological, agronomic and hydrological drought in the water bodies level of detail of and can predict hydrological conditions up to 8 weeks in advance,
- can analyse time series of hydrological balance by its components (direct runoff, basic runoff),
- analyses water management, with the ability to change it in real time and then evaluate it,
- it is intended for the water management community (river basin administrators i.e. Povodí, s.e.), but also for water authorities at regional level and at level of municipalities with extended powers, or for future Commissions for drought management, etc.

In 2018, support studies were underway in the following areas:

- hydrological balance of water quantity during a drought period in the Czech Republic,
- analysis of shortage volumes in surface and groundwater bodies,
- assessing the impact of drought on water use,
- analysis of status of protection of surface and groundwater bodies, specifics for drought periods,
- Evaluation of the impacts of drought in bodies of surface water to water and water-bound organisms,



- drought impacts on water quality, analysis of current situation and its causes,
- potential of application of nature-friendly measures for water retention in the landscape and improvement of ecological status of water bodies,
- methodology of processing of Operation plans for drought control,
- comparison of the effects and impacts of the construction of new water reservoirs and the spectrum of semi-technical measures,
- hydrological and water management aspects of water transfers and of interference with the hydrographic network during drought,
- water balance assessment of water resources regarding needs of irrigation systems.

The results and outcomes of each activity are available at http://www.suchovkrajine.cz and http://sucho.vuv.cz. The assessment is carried out using the Bilan hydrological balance model (http://bilan.vuv.cz) and the water management model WATERES (http://lapv.vuv.cz). The results of impacts of climate change on water regime in the Czech Republic are available at http://rscn.vuv.cz. The results of model HAMR are available at http://hamr.chmi.cz, which also includes a video report for the week.

In the Branch of Analysis and Assessment of Environment Components, the Department of Hydrochemistry focused on the project TH02030532 "New procedures for treatment and stabilization of sewage sludge from small municipal sources" of Technology Agency of the Czech Republic (program Epsilon II) and on the project CZ.07.1.02/0.0/0.0/16_040/0000 "Waste water as diagnostic medium of the City of Prague" (City of Prague, program Growth Pole). The department participated also in other projects of the Institute. The important activity were the analyses of selected drugs and their metabolites in surface and municipal wastewater not only in the frame of aforementioned project but also for other projects. The department provided the analyses of samples for the other units of the Institute and for external costumers. The department also provided technical preparation of eligibility testing in the area of the basic chemical analysis for the ASLAB.

The Department of Microbiology focused on the project CZ.07.1.02/0.0/0.0/16_040/0000 "Possibilities of water recreation in City of Prague (from history to the present)" supported by City of Prague (program Growth Pole).

The department also coordinated the project for Czech Power Company "Monitoring of the impact of the Dukovany Nuclear Power Plant on the quality of water in the river Jihlava in vicinity of the Dukovany Nuclear Power Plant". In the project "Cooperation with Austria on transboundary waters" the department carries out the activity of an expert for water quality of the Czech-Austrian Commission for transboundary waters. The department provided the analyses of samples for the other units of the Institute and also for external costumers. The important activity of the department was the technical preparation of final report in the area of microbiology for ASLAB.

The Department of Hydrobiology participated in the project CZ.07.1.02/0.0/0.0/16_040/0000 "Evaluation of pollution sources and their impact on recreational potential of water in urban environment" supported by City of Prague (program Growth Pole). The department provided the analyses of samples for the other units of the Institute and also for external costumers. The significant portion of the department activity was the provision of expert data and assessment of the results of final report in the field of hydrobiology for ASLAB.

The Department of Radioecology dealt with the studies focused on occurrence and behaviour of natural and synthetic radionuclides downstream a source of pollution, at uninfluenced monitoring sites in water samples, samples of sediments and atmospheric precipitation. An example is the project "Evaluation of changes in regime and quality of groundwater at the Nuclear Power Plant Temelín" for Czech Power Company. The department provided the analyses of samples for the other units of the Institute and also for external costumers. Tritium analyses have been a significant part of the department activities. It is possible to determine tritium in very low concentrations thanks to unique electrolytic concentration technology. The department performs the activities of the permanent component of the national Radiological Monitoring Network in the normal and emergency radiological situation in cooperation with River Boards, state enterprises (Povodí, s.e.). The department also carried out technical preparation of final report in the field or radiology for ASLAB.

The Branch of Water Protection and Informatics participates in many research project, e.g. the field of development and subsequent application of computational models focused mainly on water management simulation calculations of the quantity and quality of surface waters (e.g. in projects "Protection of Critical Infrastructure – Želivka water resource against the effects of PPCP and pesticides in the conditions of long-term drought" – VI20172020097, the project supported by the KUS program of the Ministry of Agriculture "Increasing water resources availability in selected areas of Karlovy Vary Region" – QJ1520318 and "Procedures for Compilation and Verification of Water Footprint according to International Standards" – QJ1520322). The branch is also focused on development of tools and models for decision support (e.g. in the project "Prediction of the hazards of non-native fish and crayfish and optimization of eradication methods of invasive species" – TH02030687). Other activity of the branch is data support of research projects and provision of publicity (websites of projects).

In 2018, the Branch of Water Technology and Wastes focused on occurrence on PPCP substances in waters, their transformation and removal. Specifically, we examined the pharmaceuticals including antibiotics, hormones and additives that are added to

soaps and perfumes (scents) and some of their intermediate products. We dealt with this topic in many research projects, e.g. in the catchment of Švihov reservoir on the river Želivka. Here, the main sources of these substances are specified from individual wastewater treatment plants. Further, we study the possibilities of removing PPCP while filtering of pre-treated wastewater through activated carbon. We also investigate the possibilities of removing polycyclic aromatic hydrocarbons from precipitation water in the roads by filtration.

Simultaneously, other research topics are dealt with: anthropogenic impacts on water quality at flow through urban area – Vltava river in Prague, impacts of drought on the watercourses as recipients of treated wastewaters, composition of mixed municipal waste from different localities (housing estates, garden suburb, mixed area) and impacts of artificial snow on the water regime and landscape.

Regarding flood related issues, the Brno Branch focuses on topic how to improve the drainage conditions in catchments, where the production on agricultural land is significantly represented, and so the soil layers can be lost by increased erosion. Simultaneously, urbanized sites that are exposed to the dangers of torrential rainfall are also observed. The potential consequences of such torrential rains are mainly losses of human lives and also losses of property. The choice of a suitable set of measures in hydrological units is the desired result. Currently, pilot areas in the basins of rivers Morava, Odra and Vltava are studied in research projects.

An important part of activity of the branch is research in the field of hydrobiology, focusing on development of evaluation of ecological status and water quality. Currently, these procedures are applied as part of monitoring and prediction of drought.

The branch also deals with the development and testing of water treatment technologies in joint projects with commercial entities. Specific research activity is the comprehensive theoretical and practical elaboration of the issue of the quality of the environment of the water elements of cultural monuments and historical settlements in the context of monument care and considering the impact of possible climate changes. Individual projects have been dealt with since 2012 with the support of the Ministry of Culture of the Czech Republic, with the help of experts from other institutions (National Heritage Institute, Institute of Vertebrate Biology of the Academy of Sciences of the Czech Republic, commercial companies, etc.).

In 2018, the Ostrava Branch launched the project "CLEAN WATER: HEALTHY CITY Foreign substances in groundwater, surface water and wastewater as a result of human activity". The project is organized into the four concepts. First concept is focused on pesticide input in Švihov water reservoir using new sampling techniques and removal of organic substances from sorption filters behind ozonisation by highly effective chemical destruction. Second concept is focused on improving the monitoring of biological quality of drinking water. At the same time, Ostrava Branch is responsible for management of the entire project. The employees of the branch also participated in the project "Wastes and prevention of their occurrence: Practical procedures and activities in the implementation of the Regional Waste Management Plan of the City of Prague".

New project was launched: "Wastes and prevention of their occurrence: Practical procedures and activities in the implementation of the Regional Waste Management Plan of the City of Prague". The project is supported by the Ministry of Culture (National and Cultural Identity program).

In 2018, a three-year project aimed at creating a database expert system for Integrated Rescue System, Czech Environmental Inspectorate and river basin administrators (Povodí, s.e.) continued at the Ostrava Branch. The system will be operating on stationary and mobile devices.

Furthermore, the branch deals with the long-term tasks for support of the state administration in the areas of water and waste management, according needs of the founder the Ministry of the Environment of the Czech Republic. For example, the tasks were fulfilled which emerged from the conclusions of the commissions on cooperation on border waters with Poland. The expert support of legislative regulations consisted primarily an update of Decree No. 49/2011 Coll., updating of methodological instructions for the revision of water works reported under Section 15a of the Water Act and for the discharge of wastewater into groundwater pursuant to Decree No. 57/2016 Coll. Also, many support outputs were processed. In addition, expert support was provided for monitoring and evaluation of surface and groundwater status.

An integral part of activity of the branch was finalizing of partial outputs of the project "Compilation and proposal of the concept of protection against impacts of drought in the Czech Republic using implemented measures".

An important topic that the Branch of Ecology has dealt with for more than 19 years is the occurrence of Freshwater Pearl Mussel in watercourses. The occurrence of Freshwater Pearl Mussel is an important indicator of a pure river (oligotrophic watercourses). Freshwater Pearl Mussel Margaritifera margaritifera is an umbrella species (as defined by IUCN) for a number of other rare organisms of pure mountain rivers.

In the Czech Republic, Freshwater Pearl Mussel is currently present mainly in the catchment areas of the South Bohemian rivers: Vodňanská Blanice, Teplá Vltava and Malše. Other occurrences are in the west of the Aš region in the catchment areas of Rokytnice and Lužní potok. All these rivers (excluding Vodňanská Blanice) are border watercourses or are influenced by cross-border watercourses. For this reason, cross-border cooperation with German and Austrian colleagues is important for monitoring of water quality, morphology, food sources (detritus), host fish and other living conditions and, above all, to protect populations.

Department of Special Hydrobiology and Ecology participated in the formation of the current Rescue Program for Freshwater

Pearl Mussel and the Plans of Care for the current European protected areas with the presence of pearl mussel. The department is engaged in systematic monitoring of water chemistry, it disposes of long time series to monitor changes in these catchment areas and also to search for pollution sources and support of measures to eliminate them. The viability of the freshwater pearl is influenced not only by the current water quality in the watercourses, but also by the overall state of the catchment area, especially its agricultural and forestry use and the farming methods. The topic is elaborated in detail in the Methodology of support to Freshwater Pearl Mussel, which was published by TGM WRI in 2018. The text of the methodology will be translated into English and. It will be complemented in collaboration with Central European experts on Freshwater Pearl Mussel in order to be usable for international audience.

Several projects are currently in progress to support the occurrence of Freshwater Pearl Mussel, whose purpose is, besides improving the environment for the endangered species, also to strengthen its population (semi-natural breeding), strengthen the host fish population, and to adapt suitable habitats.

TGM WRI is a partner of the international project Malsemuschel at the border with Austria. It covers all scientific and technical activities on the Czech side. The project objective is to improve the environment for the endangered species – monitoring of various aspects of the environment (basic parameters of water quality according to the Rescue Program, non-specific pollutants – metals, pesticides and also the properties of detritus as a food source for pearl mussels). Other project objective is identification of sources of pollution, the state of the hyporheic zone, problems of erosion on the Czech and Austrian sides (primarily addressed by the Austrian project partner) and other aspects of terrain morphology. Bio indications were also carried out using plates with small pearl mussels in different cross sections of a watercourse (Czech University of Life Sciences). Another, equally important goal is to strengthen the pearl mussel population by semi-natural breeding according to the Rescue Program. This is described in detail in the aforementioned methodology. Strengthening the host population and adjusting habitats are also important project objectives. The strengthening of the trout population and the adjustment of habitats is carried out for the TGM WRI by the firm Bivalvia in close cooperation with the Austrian partner. Here, the biggest problem in setting the fish stock structure was the different legislation and fishing rights in the Czech Republic and in Austria.

Before the project started, the population had been considered to be stagnant as in other localities. During the project, adult and subadult individuals were found as a sign of self-renewal of the population. Therefore, a detailed mapping of the river bed and the search for freshwater pearl mussels was undertaken in backbone watercourse. Artificial breeding of juvenile individuals take place at the nursery on the river Blanice in cooperation with the firm Dort. Genetic analyses of pearl mussels and their host species continue (Czech University of Life Sciences).

Other major projects are currently underway to support the occurrence of freshwater pearl mussels. We participate as a member of a consortium in a project on the river Teplá Vltava for National Park Šumava. The project is supported by Operational program Environment.

Publications in Journals

In 2018, the employees of the Institute were authors or co-authors of 46 contributions in scientific journals. The absolute majority of the contributions were published in peer reviewed journals. The number 68 contributions were published in proceedings. Five contributions were published in journals with IF (Hydrobiologia, Journal of Environmental, Fundamental and Applied Limnology, Soil and Water Research etc.).

Results with legal protection and technically implemented results

In 2018, many technically implemented research results have been created in the Institute. Three utility models were registered. One of them is the *PPCPs pollution early warning system for Káraný water treatment plant*. This a unique water management tool in the Czech Republic. It will allow to optimize the abstraction of surface water from the river Jizera and to avoid the periods with increased concentrations of micropollutants that were proved by two-year monitoring of water in the river Jizera. PPCPs have been not yet monitored in such range and accuracy in the Czech Republic. The functional sample consists of software (a combination of the Bilan model and the concentration model) and the operating regulations.

In the years 2017–2018, within the NAKI II project, a S*elf-supporting, closed, fully autonomous bioreactor* was designed, prepared and implemented in the form of a functional sample. The bioreactor is designed to cultivate a mixture of microorganisms and enzymes from the initial dose and application of the prepared solution. The bioreactor construction will allow for optimal conditions for cultivation.

The third registered functional sample is an A*utomatic irrigation system for the utilization of wastewater* with residual nutrient concentration.

Two software applications were also created. One of them was the Software tool for optimization of proposal of a *Software tool to optimize integrated land protection design*. The tool is used to quickly estimate the lengths of the ephemeral streams, which significantly contribute to the total volume of erosion wash in runoff paths. The second software created in 2018 is a program to evaluate the availability of water resources – VSTOOLS.DOVOZ.

Regarding pilot plants, a *Pilot plant of an autonomous bioreactor* was implemented at the TGM WRI. In 2018, the researchers further developed a *Mobile sludge field with vegetation using a container*. It is a technology designed for passive sludge dewatering on site. Another registered pilot plant is field lysimeters with controlled infiltration of pre-purified wastewater.

International cooperation in research

In the field of hydrogeology, the RESIBIL project (the amount and use of groundwater in the Czech Saxon borderland) is carried out. The objective of the project is to evaluate the possibilities of long-term use of groundwater resources in Czech-Saxon border region and stability of water resources against changes caused by climate changes and extreme weather fluctuations. The project is financed by the European Regional Development Fund. The developed decision-making system will contribute to optimizing the use of groundwater resources with regard to their sensitivity to climate change and changes of landscape water regime.

International research also takes place in the field of hydrology and hydraulics. Cooperation takes place, for example, within international projects FRIEND (Flow Regimes from International Experimental and Network Data). The project RAINMAN (Integrated Heavy Rain Risk Management) is also carried out in the Institute. The project is financed by EU funds – INTERREG CENTRAL EUROPE. The project is focused on prevention of pluvial floods and is carried out in close cooperation of the Czech Republic, Germany, Poland, Austria, Hungary and Croatia. Further collaboration takes place with Undesanstalt für Gewässerkunde on the project Elberegime 2100.

Within the Cooperation on Transboundary Waters with Austria, activities related to water quality follow from the meetings of the Czech-Austrian Commission for transboundary waters. One of activities is to ensure and evaluate extensive monitoring of water quality of border watercourses, its assessment with regard to national differences and solutions to problems with extraordinary pollution affecting the quality of waters of neighbouring countries.

The relevance of the analytical data of the laboratories carrying out monitoring at the border watercourses is inspected in the frame of an international interlaboratory comparison.

Furthermore, the project of foreign development assistance in Moldova was focused on some aspects of implementation of European Directive 91/271/EEC. The project was completed in 2018. Cooperation took place with the Moldavian Ministry of Agriculture, Local Development and Environment, and the State Environmental Inspectorate of Moldova. The project is financed by Czech Development Agency.

Another examples of international cooperation are:

- project Interreg Malsemuschel (ATCZ37 Malsemuschel, 2017–2021) – support for the natural environment and the occurrence of the Freshwater Pearl Mussel (Margaritifera margaritifera) in the catchment of the river Malše,

- project Interreg Dyje 2020/Thaya 2020, project partners are important water management institutions (Povodí Moravy, s.e., Via Donau, both national parks (National Park Thayatal, National Park Podyjí) and protection authorities (Umweltbundesamt), the main objective of the project is creation cross-border strategies, concepts and partial methodological documents.

Presentation at international meetings of experts

The employees of the Institute participated in international experience exchange.

They participated in 18 international conferences and had 33 oral presentations, conference proceedings or posters. The most important conferences were e.g.:

- 4th IWA Specialized International Conference ecoSTP 2018,
- 5th European Congress of Conservation Biology,
- 15th specialized conference on Small Water and Wastewater Systems,
- 16th International Conference on Wetland Systems for Water Pollution Control,
- 17th Biennial Conference ERB 2018,
- 19. slovenská hydrogeologická konference (19th Slovak hydrogeological conference),
- ECHOPOLIS 2018,
- FMCS International Freshwater Mollusk Meeting,
- Mikrobiológia vody a životného prostredia 2018 (Microbiology of water and environment) etc.

Important national meetings of experts

In 2018, employees of TGM WRI, p.r.i., organized or participated in preparation of more than 28 conferences, seminars and workshops. They presented more than 30 contributions in the form of lectures, presentations or posters.

Examples are:

- Fishponds 2018,
- Dry Period 2014–2017: evaluation, impacts and measures,
- Adolf Patera Seminar 2018,
- Wastewater 2018,
- River Landscape 2018,
- XVIII conference of Czech Limnological Society and Slovak Limnological Society
- GIS Esri conference etc.

Employees of TGM WRI, p.r.i., organized in 2018 many seminars, e.g. the sampling course was carried out for water management laboratory staff. On the course, the participants pass the test and can receive a certificate. On the World Fish Migration Day, the TGM WRI in cooperation with the Czech Nature Conservation and Landscape Protection Agency and the Czech Fisheries Association organized a two-day follow-up program for children and the public focused on fish migration, life in the water and its surroundings.

ADDITIONAL AND OTHER ACTIVITY

Support for the state administration

Support for the state administration is a long-term activity carried out for the Ministry of Environment. It is defined so-called task forms. The number of 25 partial projects were carried out in 2018. The most attention is focused on technical support in the implementation and reporting of selected EU directives and international cooperation in the field of water, on data and expert support to the Ministry of the Environment as a central water office.

In 2018, the main areas of support for the performance of state administration are the provision of expert support in international cooperation of the Czech Republic in the area of water, registration and access to water management data and information, especially in relation to national and European regulations, support for the implementation of European regulations, including reporting, operation of the national radiation monitoring network and analyses of water use and quality, and preparation of documents for the Report on Water Management Status. In 2018, the significant portion of activity was dedicated to the update of protection zones of water resources and to support of activities in planning process in water management.

International cooperation in the field of water

TGM WRI staff actively participated in the work of following international bodies: the International Commission for the Protection of the Elbe River (ICPER), the International Commission for the Protection of the Danube River (ICPDR), the International Commission for the Protection against Pollution of the Odra River (ICPO), the Standing Committee for Saxony and the Standing Committee for Bavaria of the Czech-German Commission for Transboundary Waters and Commissions for Transboundary Waters with Poland, Austria and Slovakia. Expert support consisted mainly of participation in working groups and expert groups.

The operation and publishing of water management data and information

The activities were focused mainly on the creation, collection and processing of data in the field of water and their access to the general public. Specifically, these were: data collection for recording under the responsibility of the Ministry of the Environment pursuant to the relevant section 21 of the Water Act, elaboration of documents for aggregate water balance according to section 22 of the Water Act, processing of comprehensive information on the waters of the Czech Republic, provision of web services for informing the public about the activities in a bilingual version, including the processing of expert texts placed on the web, update of data and information support for the system for managing, updating and sharing data from the water resources protection zones. Furthermore, the Institute participate in provision of information support for the performance of public administration and in fulfilling the information obligations of the Ministry of the Environment in the area of water protection and water management. In particular, it is the management and updating of 10 selected registers of ISVS WATER as defined by Decree No. 252/2013 Coll., on the extent of data in surface and groundwater status registers and on the manner of processing, storage and transmission of such data to information systems of public administration. Furthermore, support was provided for the provision of watercourse identifiers pursuant to Act No. 200/1994 Coll. and the interconnection of watercourses and drainage divides. One of the key outputs was the drought monitoring system HAMR.

Implementation of European directives including reporting

As a part of support of the implementation of European Directives and reporting, the activities were focused on update of input data for the List of Bathing Waters prior to the start of the bathing season and also on providing the baseline documents for the program for the bathing water measures. Furthermore, the activities were focused on the implementation of the evaluation of new priority substances under Directive 2008/105/EC as amended by Directive 2013/39/ EU. Review of the delimitation of vulnerable zones for the Nitrate Directive (91/676/EEC), including support of reporting. It was necessary to update and report data on agglomerations of the Czech Republic with a size of more than 2 000 equivalent inhabitants to inform the European Commission about the implementation of Council Directive 91/271/EEC in the Czech Republic pursuant to Article 15 of this Directive (reporting under the Urban Waste Water treatment Directive 91/271/EEC). The support was also focused on the tasks related to the review and updating of the preliminary flood risk assessment under Directive 2007/60/EC. In addition, the support focused on processing the reporting to the European Environment Agency (EEA) on water emissions "Water emissions quality, WISE 1" as part of environmental reporting. The information support also included expert support in the implementation of the INSPIRE Directive.

An independent activity was support the implementation of the Water Framework Directive (2000/60/EC) and to support to activities in the water planning process. Following activities were carried out in the frame of this support:

- design of new typology and comprehensive testing from the point of view of new goals for general physicochemical

parameters of ecological status, including analysis of impacts of these changes and evaluation of status on new targets;

- workflow for evaluating the significance of hydromorphological effects;
- update of the methodology for defining heavily modified water bodies;
- expert support and consultancy in the preparation and commenting of partial documents for ensuring the preparation of 3rd river basin management plans in the field of water, operational tasks resulting from the evaluation of 2nd planning cycle by EC;
- expert support in establishing the exemption procedure under Article 4.7 of the WFD and the issue of assessing the impact of the project on the status of the concerned water body;
- cooperation in updating the schedule and program of activities for the preparation of the 3rd planning period;
- commenting on project outputs of the update of the catalogue of measures and updating the data models of the district river basin plans and national river basin plans;
- participation in meetings within the Commission's organizational structures for water planning;
- expert support in implementing the measures adopted in the national river basin management plans for the 2nd planning period;
- preparation of reporting to the European Commission on the implementation of programs of measures proposed in the 2nd planning cycle.

A part of the support was a participation in the meetings of the EU WG Groundwater, WG Chemicals, WG Flood, WG ECOSTAT, the Nitrate Committee and other EU expert meetings.

Operation of radiation monitoring network

T. G. Masaryk Water Research Institute, p.r.i., in cooperation with the Povodí, s.e., in accordance with Resolution of the Government of the Czech Republic of 12th April 2006 No. 388 and Resolution of the Government of the Czech Republic of 13th July 2011 No. 522 (Annex 1) ensures fulfilment of the Framework Agreement on activities of the components of the national radiation monitoring network (RMN). TGM WRI participates in ensuring the activities of the permanent and emergency RMN unit and transmits the acquired data to the information system. The RMN carries out monitoring activities in the normal regime and in the emergency regime, i.e. under the radiological emergency. The RMN continues in activities after the announcement of the emergency regime by the State Office for Nuclear Safety Emergency Headquarters, according to its instructions.

Methods and results reflected in standards and legislation

The Institute staff was also significantly involved in the preparation of guidelines, legislation and standardization in 2018. The Institute staff prepared around 12 methodological documents in 2018. Examples are: "Methodology for assessing the safety of water reservoirs under climate change, focusing on poorly gauged sites", "Preliminary flood risk assessment methodology in the Czech Republic – Delineation of areas with significant flood risk", "Methodology of monitoring of sources of surface water pollution using the solid phase (fish)" etc. The staff of the Institute also participated in the development of the standard ČSN 75 7622 Water quality – Determination of radium 226. This standard applies to the determination of radium 226 volume activity in water by method of scintillation emanometry.

Consulting and expert activity

Consulting and expert activity is an important form of the direct application of research results. In 2018, two expert opinions were prepared for Povodí Labe, s.e. They consisted in measuring and modelling the extent of the mixing zone below two significant sources of pollution discharging wastewater into the river Elbe.

Consulting services were permanently provided in various areas for local authorities, non-governmental organizations, specialized laboratories and also for the public. Example of such activity is the performing of support for the activities of the Monitoring and Assessment Expert Group (MA EG) of the International Commission for the Protection of the Danube River; expert support for the activity of the WGA ECOSTAT of European Commission, etc.

The researches of the Institute participated in the evaluation of the effects of existing nuclear sources on the hydrosphere and on the expert support of the assessment of the impact of new nuclear sources.

In 2018, several contracts were focused on sampling of industrial technology and wastewaters and chemical and toxicological analyses.

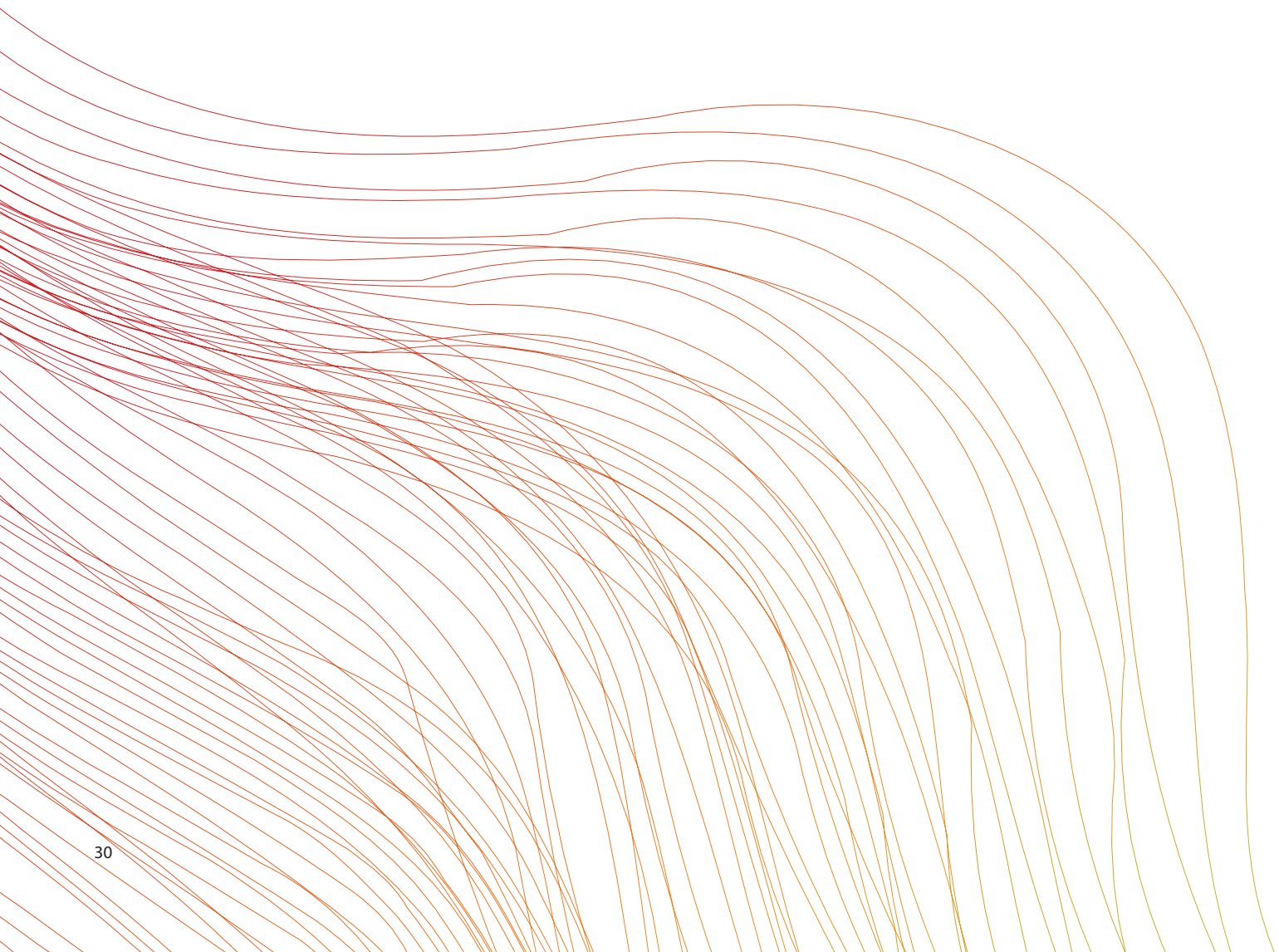
The TGM WRI also prepared inventory survey of Natural Monument Kamenec (Plecoptera, Megaloptera, Trichoptera a Psychodidae) for the Regional Authority of the Moravian-Silesian Region. They carried out also assessment of the efficiency of the cleaning process of the vertical facade root treatment plant.

Other activities

An important part of the activity of the Institute includes also collaboration with universities. The staff of the Institute is active mainly at Faculty of Environmental Sciences of Czech University of Life Sciences, Faculty of Natural Sciences of Charles University, Faculty of Natural Sciences of Masaryk University, Faculty of Arts of Charles University, VSB-Technical University of Ostrava, Faculty of Natural Sciences of Ostrava University, Palacký University Olomouc, Mendel University in Brno and at Brno University of technology.

The employees of the Institute provide consultations and are supervisors of bachelor and master diploma theses and dissertations (e.g. Faculty of natural sciences of Brno University of technology, Czech University of Life Sciences, University of Jan Evangelista in Ústí nad Labem). Students can participate in excursions organized by the staff of the Institute and the internships are provided by the Institute.

The employees of the Institute also act as members of the state examination commissions at Charles University, Czech University of Life Sciences and VSB-Technical University of Ostrava. The employees of the Institute participate also in secondary education by leading the expert practice in chemical laboratory of the Academician Heyrovský Secondary Industrial School of Chemistry, Ostrava.



LIST OF PROJECTS

Title	Project manager	Client
Branch of Hydraulics, Hydrology and Hydrogeology		
The analysis of adaptive measures towards mitigation of climate change impacts and urbanization impacts on water regime in outer Prague	Ing. A. Hrabánková	Prague City Hall
The analysis of impacts of hydrological extremes and assessment of adaptive measures	Ing. P. Balvín	Prague City Hall
Goal 3 – Transboundary Collaboration Saxony – RESIBIL	doc. RNDr. Z. Hrkal, CSc.	CRD
Erosion	Ing. L. Strouhal, Ph.D.	Ministry of the Environment
Hydro-geophysical survey for the New Nuclear Facility at Nuclear Power Plant Temelín in 2018 – expert support	RNDr. J. Datel, Ph.D.	Czech Power Company
Hydrological and hydrogeological monitoring in vicinity of the new nuclear facility of Dukovany Nuclear Power Plant for 2019	Mgr. D. Rozman	Nuclear Research Institute Řež, a. s.
Hydrological and hydrogeological monitoring in vicinity of the new nuclear facility of Dukovany Nuclear Power Plant for 2018	Mgr. D. Rozman	Nuclear Research Institute Řež, a. s.
Hydrological and hydrogeological conditions in investigated area	RNDr. J. Datel, Ph.D.	Prague City Hall
Hydrological model for project Túrow – II survey stage	Ing. R. Vlnas	Czech Geology Survey
Interreg heavy rain risk management	Ing. P. Balvín	Ministry of the Environment
Calibration of hydrometric propellers	Ing. A. Trávníčková	CHMI
Water quality in pilot areas: evaluation using the quantity-quality model	Ing. A. Vizina, Ph.D.	Prague City Hall
Monitoring, cooperation with CHMI	Ing. A. Beran	Ministry of the Environment
The proposal of the online system "Drought Management"	Ing. A. Vizina, Ph.D.	Ministry of the Environment
Water resource protection zones	RNDr. J. Datel, Ph.D.	Ministry of the Environment
Support of performance of state administration	Ing. P. Bouška, Ph.D.	Ministry of the Environment
Support of performance of state administration in area "water"	Ing. L. Ansorge, Ph.D.	Ministry of the Environment
Impact assessment of using of water from Mohelno water reservoir	RNDr. J. Datel, Ph.D.	Nuclear Research Institute Řež, a. s.
Assessment of the measures using BILAN tools	Ing. A. Beran	Ministry of the Environment
Project Elberegime 2100	Ing. R. Kožín	Bfg–Bundesanstalt
Project Nitrate Directive-monitoring of waters for period from 2018 to 2021	Ing. A. Hrabánková	Ministry of Agriculture
Preparation of a methodology for developing drought management plans	Ing. A. Vizina, Ph.D.	Ministry of the Environment

Title	Project manager	Client
Regional hydrological study of Ore Mountains	Ing. L. Kašpárek, CSc.	Povodí Ohře, s.e.
Revision of vulnerable zones for Nitrate Directive including support to monitoring	Ing. A. Hrabánková	Ministry of the Environment
Solving drought issues in 2017:	Ing. A. Vizina, Ph.D.	Ministry of the Environment
Preparation of draft concept of protection against drought impacts in the Czech Republic	Ing. M. Nesládková	Ministry of the Environment
Creation of type plan "Long-term Drought"	Ing. R. Vlnas	Ministry of the Environment
Controlled artificial infiltration	doc. RNDr. Z. Hrkal, CSc.	Ministry of the Environment
Warning system for the Prague water supply network against micro-pollutant pollution, including software for flow and PPCP concentration prediction	Ing. A. Hrabánková	Prague City Hall
Šanov Water Reservoir, Senomaty Water Reservoir – hydrological data assessment and operational hydrological monitoring	Ing. L. Kašpárek, CSc.	Povodí Vltavy, s. e.
Construction of four new hydrogeological monitoring boreholes of shallow a medium range at Temelín	RNDr. J. Datel, Ph.D.	Power plant Temelín II
Elaboration of expert opinion: clarification of hydrological and hydrogeological conditions on the left bank of the Labe river between Račice and Dobříň	Ing. A. Vizina, Ph.D.	Radiation monitoring network CEMEX
Creation of software for calculation of evaporation from water surface for the Czech Republic	Ing. A. Beran	Technology Agency of the CR
Development of hydraulically suitable weir for measurement of small flow	Ing. J. Hlom	Technology Agency of the CR
Increasing water resources availability in selected areas of Karlovy Vary Region	Ing. A. Beran	Ministry of Agriculture KUS 2014
Hydrogeological expert opinion on the assessment of the impact and operation of the planned construction of the road 46 Olomouc Eastern Tangent on water resources of OLMA, a. s., at Holice at Olomouc	Mgr. P. Eckhardt	OLMA, a. s.
Processing of the water management balance of current and prospective status of groundwater in sub-basins Upper Vltava, Berounka, Lower Vltava and other Danube tributaries	RNDr. H. Prchalová	Povodí Vltavy, s.e.
Branch of Analysis and Assessment of Environment Components		
Waste water analysis – 24-hour samples	Ing. V. Očenášková	Prison Service of the Czech Republic
Evaluation of changes in regime and quality of groundwater at the Nuclear Power Plant Temelín	Ing. E. Hanslík, CSc.	Czech Power Company
Laboratory analyses and tests – determination of drugs and their metabolites in surface waters according the requests of the client	Ing. V. Očenášková	Povodí Labe, s.e.
Laboratory analyses and tests – determination of tritium in surface waters	Ing. B. Sedlářová	Povodí Labe, s.e.
The monitoring of total atmospheric deposition	RNDr. D. Marešová, Ph.D.	The Krkonoše Mountains National Park
New procedures for treatment and stabilization of sewage sludge from small municipal sources	Ing. J. Kratina, Ph.D.	Technology Agency of the CR
The content of radioactive substances in the Orlík water reservoir	RNDr. D. Marešová, Ph.D.	Povodí Vltavy, s.e.
Waste water as diagnostic medium of the City of Prague	Ing. V. Očenášková	Prague City Hall

Title	Project manager	Client
Site remediation (removal of contamination) – Nuclear Research Institute Řež	Ing. E. Hanslík, CSc.	Nuclear Research Institute Řež, a. s.
Influence of flood plains at the Ploučnice river bed by mining and processing of uranium ore	Ing. E. Hanslík, CSc.	DIAMO, s.e.
Radiation Monitoring Network water contamination monitoring sites	Ing. B. Sedlářová	Ministry of the Environment
Determination of tritium in surface water influenced by wastewater discharged from Temelín Nuclear Power Plant	Ing. B. Sedlářová	Povodí Vltavy, s.e.
Determination of pesticides in crops hop	Ing. V. Očenášková	PP servis
Systems for on-line measurement of artificial radioactivity in surface waters in case of accident of a nuclear power station with remote data transmission	Ing. B. Sedlářová	National Radiation Protection Institute
Support to activities of the permanent and emergency component of nationwide Radiation Monitoring Network	Ing. B. Sedlářová	SONS
Branch of Water Protection and Informatics		
Updating of water resource protection zones	Ing. H. Nováková, Ph.D.	Ministry of the Environment
Analysis of input data of water management balance of surface water quantity in subbasins Upper Vltava, Berounka, Lower Vltava and other Danube tributaries	Ing. P. Vyskoč	Povodí Vltavy, s.e.
Water balance, audit and evaluation in the field of water quantity and quality	Ing. J. Dlabal	Ministry of the Environment
Data support to state administration in water management and preparation of cartographic outputs in relation to Operational program Environment	Ing. T. Fojtík	Ministry of the Environment
Data support to state administration in water management and preparation of cartographic outputs	Ing. T. Fojtík	Ministry of the Environment
Monitoring of water in the river Jihlava in vicinity of the Dukovany Nuclear Power Plant	RNDr. H. Mlejnková, Ph.D.	Czech Power Company
Possibilities of water recreation in City of Prague (from history to the present)	RNDr. H. Mlejnková, Ph.D.	Prague City Hall
The support of the representation of the Czech Republic in activities of the International Commission for the Protection of the Elbe River (ICPER)	Ing. M. Kalinová	Ministry of the Environment
The support of the participation of the Czech Republic in activities of the Czech-German Commission for Cross-Border Water	Ing. M. Kalinová	Ministry of the Environment
Issues of INSPIRE	Ing. T. Fojtík	Ministry of the Environment
Reporting of emissions to water environment	Mgr. S. Semerádová	Ministry of the Environment
Bathing waters reporting: update of the delimitation	Ing. T. Fojtík	Ministry of the Environment
Water for Prague	Mgr. A. Zbořil	Prague City Hall
Development of simulation model for the catchment of the river Želivka and data management	Ing. J. Picek	Ministry of Interior
Branch of Water Technology and Wastes		
Accredited collection and analysis of samples of wastewater from wastewater treatment plants	Ing. M. Beránková	Nuclear Research Institute Řež, a. s.
Harmonization of Legislation with the EU Directive for Waste Water Management	Ing. M. Váňa	Czech Development Agency

Title	Project manager	Client
Impact assessment of point sources and proposals of measures	Ing. M. Váňa	Ministry of Interior
Wastes and prevention of their occurrence: Practical procedures and activities in the implementation of the Regional Waste Management Plan of the City of Prague	Ing. D. Vološinová	Prague City Hall
Authorization and operation of domestic wastewater treatment plants abroad	Ing. J. Kučera	Ministry of the Environment
Reporting under Articles 15 and 17 of Council Directive No. 91/271/EEC	Ing. J. Čejková	Ministry of the Environment
River flow in urban area – determination and optimization of anthropogenic pressures	RNDr. J. Fuksa, CSc.	Prague City Hall
Technical and economical optimization of tertiary technologies for the removal of PPCPs from wastewater	Ing. M. Váňa	Technology Agency of the CR
Technology of separation of specific pollutants from rainwater	Ing. M. Váňa	ASIO, s.r.o.
Brno Branch		
Historical Water management structures, their value, function and importance for present time	Ing. M. Dzuráková	Ministry of Culture – program NAKI II
Hydrochemical water monitoring – Vita-Min	RNDr. D. Němejcová	Bioanalytika CZ
Intercalibration for assessment of biological components	RNDr. D. Němejcová	Ministry of the Environment
Design of an effective monitoring, diagnostics and maintenance procedure to ensure water management functions of water reservoirs	Ing. K. Drbal, Ph.D.	Prague City Hall
Notification of vulnerability and support of natural landscape functions in conditions of changed Climate in large special areas of conservation	Mgr. J. Kroča	Technology Agency of the CR
New approaches to optimization of territorial integrated protection systems	Ing. K. Drbal, Ph.D.	Ministry of Agriculture, program KUS 2014
The expert support for the evaluation and mitigation of flood risks	Ing. K. Drbal, Ph.D.	Ministry of the Environment
Optimization of automatic irrigation systems for the use of treated wastewater – measures to reduce drought risks and eutrophication of surface water sources	Ing. M. Rozkošný, Ph.D.	Technology Agency of the CR
Expert support of the Czech Republic's participation in the International Commission for the Danube River Protection	Ing. S. Juráň	Ministry of the Environment
Procedures for solving the quality of the aquatic environment in the context of heritage care	Ing. M. Rozkošný, Ph.D.	Ministry of Culture – program NAKI II
Prediction of possible occurrence of dangerous chemical substances in accidents and floods, risk of leakage of harmful waters and preventive measures: basis for emergency plan	Ing. S. Juráň	Prague City Hall
Determination of flow rates at sampling time	Ing. M. Forejtníková	AQUATIS, a. s.
Determination of the efficiency of the purification process of the vertical facade root treatment plant	Ing. H. Hudcová	LIKO-S, a. s.
Study of runoff conditions and comprehensive proposals for measures in the part of the catchment of the Želivka – Švihov water reservoir	Ing. K. Drbal, Ph.D.	Prague City Hall
System of Water Management Infrastructure Monitoring and Maintenance	Mgr. P. Štěpánková, Ph.D.	Ministry of Agriculture, program KUS 2014
Evaluation of seminatural measures, catalogue of measures	Ing. M. Dzuráková	Ministry of the Environment

Title	Project manager	Client
Drying of watercourses a biodiversity of running water: the influence of natural conditions and anthropogenic interventions	Mgr. M. Straka, Ph.D.	Masaryk University
Ostrava Branch		
CLEAN WATER: HEALTHY CITY: Foreign substances in groundwater, surface water and wastewater as a result of human activity	Ing. P. Tušil, Ph.D.	Prague City Hall
Expert information system NAVAROSO	RNDr. P. Soldán, Ph.D.	Technology Agency of the CR
Monitoring the quality of water and biota before and after the implementation of nature-friendly measures in a catchment area and in watercourses	RNDr. D. Němejcová	Ministry of the Environment
Expert support of legislative regulations in the field of water management	Ing. T. Mičaník, Ph.D.	Ministry of the Environment
Expert support for monitoring and assessment of surface and groundwater status	Ing. M. Durčák	Ministry of the Environment
Construction assessment I/39 Přísečná	Ing. R. Kořínek, Ph.D.	Pragoprojekt, a. s.
Cooperation in transboundary waters with Poland	Ing. M. Durčák	Ministry of the Environment
Study of pesticide input in Švihov water reservoir using new sampling techniques and removal of organic substances from sorption filters behind ozonisation by highly effective chemical destruction	Ing. T. Mičaník, Ph.D.	Prague City Hall
Water tank towers: identification, documentation, presentation, new uses	Ing. R. Kořínek, Ph.D.	Ministry of Culture – program NAKI II
Improving the monitoring of biological quality of drinking water	RNDr. P. Soldán, Ph.D.	Prague City Hall
Branch of Applied Ecology		
Dyje 2020 – THAYA 2020	Ing. J. Musil, Ph.D.	Povodí Moravy, s.e.
The evaluation of PPCP and pesticides in the catchment of Želivka river and in the Švihov water reservoir	Mgr. P. Rosendorf	Ministry of Interior
Evaluation of pollution sources and their impact on recreational potential of water in urban environment	Mgr. P. Rosendorf	Prague City Hall
Hydrological, hydromorphological and biological exploration of changes in experimental measures in 2018 (Navigation Step Decin)	Mgr. E. Bouše	Directorate of Waterways
Hydraulic, hydromorphological and biological research of changes in experimental measures in 2017 – Improvement of navigation conditions on the Elbe in section Ústí n. Labem – the border of the Czech Republic/Germany-Navigation Step Decin	Mgr. E. Bouše	Directorate of Waterways
Engineering activity and provision of expert support in EIA process for the new nuclear facility of Dukovany Nuclear Power Plant	Mgr. P. Rosendorf	Nuclear Research Institute Řež, a. s.
Comprehensive localization and Categorization of non-point agricultural pollution localities	Mgr. P. Rosendorf	Povodí Vltavy, s.e.
Methodology of evaluation of status of protected areas	Mgr. P. Rosendorf	Technology Agency of the CR
Monitoring and evaluation of the concentration of polyaromatic hydrocarbons (PAHs) in surface waters in vicinity of Nuclear Power Plant Dukovany – 2nd stage	Mgr. P. Rosendorf	Power plant Dukovany
Monitoring of water chemistry in the catchments of the Blanice river and Zlatý potok	Ing. V. Kladivová	Nature Conservation Agency of the Czech Republic

Title	Project manager	Client
Expert study on evasion of European eel from the Czech Republic in relation to Eel management plans in the Odra and Elbe river basins according to Council Regulation 1100/2017/EC in 2010–2017	Ing. J. Musil, Ph.D.	Ministry of Agriculture
Support for the natural environment and the occurrence of the Freshwater Pearl Mussel in the catchment of the river Malše	Ing. V. Kladivová	Ministry of the Environment
Strengthening and protection of the population of the Freshwater Pearl Mussel in Šumava National Park	RNDr. Z. Hořická, Ph.D.	Beleco, z. s.
Prediction of the hazards of non-native fish and crayfish and optimization of eradication methods of invasive species in program EPSILON	RNDr. J. Svobodová	Technology Agency of the CR
Recreation potential of water in Prague: status and perspectives	Mgr. P. Rosendorf	Prague City Hall
The compilation of water management balance of surface water	Mgr. P. Rosendorf	Povodí Vltavy, s.e.
Expert study for action Monitoring and evaluation of the concentration of polyaromatic hydrocarbons (PAHs) in surface waters in vicinity of Nuclear Power Plant Dukovany – 1st stage	Mgr. P. Rosendorf	Nuclear Research Institute Řež, a. s.
Effects of PPCP and pesticides under long-term drought conditions	Mgr. P. Rosendorf	Ministry of Interior
Evaluation of the necessity of wastewater cooling for new nuclear facility at Nuclear Power Plant Dukovany: expert support	Mgr. P. Rosendorf	Power Plant Dukovany
Utilization of artificial and natural structures for revitalization and increase of biological and morphological diversity of Prague streams	Mgr. P. Kožený	Prague City Hall
Expert support at discussions and implementation of results of water management studies for the needs of EIA of new nuclear facility at Nuclear Power Plant Dukovany	Mgr. P. Rosendorf	Nuclear Research Institute Řež, a. s.

ABSTRACTS OF PROJECTS

Branch of Hydraulics, Hydrology and Hydrogeology

Project title:
Water for Prague – Warning system for the Prague water supply network against micro-pollutant pollution, including software for flow and PPCP concentration prediction

Contracting authority:
Prague City Hall

Duration:
2016–2018

Project team:
Ing. Anna Hrabánková, RNDr. Josef V. Datel, Ph.D.,
Ing. Adam Vizina, Ph.D., doc. RNDr. Zbyněk Hrkal, CSc.,
Ing. Jan Hlom, Mgr. Pavel Eckhardt, Ing. Pavel Balvín

Description:
The capital city of Prague is currently supplied with drinking water from two sources: 75% of water is from water treatment plant Želivka and the rest is from the water treatment plant Káraný. The water treatment plant in Podolí is a backup drinking water source for the capital. The objective of the project was to quantify the PPCP contents in the entire water treatment process on the example of water resources and set up the mechanisms how to monitor their concentrations in various hydrological situations, including extreme phenomena. The project provided information on PPCP (Pharmaceuticals and Personal Care Products), which have become a major water quality problem over past 20 years.

Data on water quality was obtained in assessed water resources (Kárané, Želivka, back-up source Podolí) for PPCP parameters (93 items of foreign organic substances). Longer-term monitoring allowed to obtain information on fluctuations of these substances during a year and in dependence on other parameters such as flow rates, precipitation situation, raw water abstraction etc.

The evaluation and generalization of the achieved data made it possible to optimize the use of the assessed water resources. In addition, the results of the project can be applied to other water resources used for drinking water supply (introduction of special monitoring of PPCPs, the use of newly developed functional sample of prediction software and warning system).

Project title:
The analysis of adaptive measures towards mitigation of climate change impacts and urbanization impacts on water regime in outer Prague

Contracting authority:
Prague City Hall

Duration:
2018–2020

Project team:
Ing. Anna Hrabánková, RNDr. Josef V. Datel, Ph.D.,
Ing. Adam Vizina, Ph.D., Ing. Pavel Balvín

Description:
The territorial development of the capital city of Prague influences the natural conditions on its territory. As the free areas and agriculture shrink due to urbanization, there are changes in the hydrological conditions of watercourses and even of groundwater. There is reduction in natural infiltration areas, different infiltration regime takes place due to artificial infiltration measures and controlled or uncontrolled changes in outflow conditions occur. There are two situations that can arise: In predominantly built-up areas of the capital, the hydrogeological conditions of groundwater are significantly influenced by the drainage of the area. Consequently, surface runoff is significant here. In less urbanized parts of the capital, the natural drainage conditions are preserved and infiltration into groundwater and groundwater outflow are significant. The project goal is to assess the long-term impact of rapidly advancing urbanization on the water regime in these outlying parts of the capital closely linked to the ongoing climate changes and their expected future impacts. The project objectives are: to assess the effectiveness of existing proposed and already implemented adaptation measures, to propose additional measures in case of need, to build a pilot plant of a system allowing the assessment of immediate rainfall-runoff conditions on small streams and to create follow-up utility model, type project of such a measure. The project focuses on upper parts of catchments of local small streams. These streams flow from Central Bohemian Region or spring in suburban areas of the capital and have not yet been centre of attention of research studies.

Project title:
Support of long-term planning in the field of water management on the territory of the Krkonoše Mountains National Park with an emphasis on solving the problem of influence of technical snow on the decrease of flow

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2017–2020

Project team:
Mgr. Pavel Treml, Ing. Martin Vokoun, Mgr. Pavel Eckhardt, Ing. Luděk Strouhal, Ph.D., Ing. Ondřej Taufer, Ing. Adéla Trávníčková, Pavla Drdová

Description:
The project deals with the analysis of the impact of snowmaking on the change of flow rates and in general on the change of the hydrological balance of the streams in the Krkonoše National Park.

The second year of the project (2018) focused mainly on regular measurements in the field (measurement of flow rates, conductivity and water temperature in the streams, evaluation of the difference between the water value of the snow on the ski slopes and beyond, the pollution in the snow and the streams from which water is used for technical snowmaking etc.) and their continuous evaluation. A comprehensive evaluation of the measurements for the first full winter (2017/2018) was carried out and a comparison of winter and summer observation results could be made. Mathematical modelling was also carried out for selected catchments. The results of the observations will be added and interpreted in consequent years.

On the basis of the final results, the methodology will be created. The aim of the methodology is help to solve the negative impact of technical snow on the decrease of flow rates, both in relation to maintaining optimum conditions for biota in watercourses, as well as in terms of efficient, fair and long-term sustainable use of water resources. Next, software for impact modelling will be created and a clear map will be created.

Project title:
Creation of software for calculation of evaporation from water surface for the Czech Republic

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2018–2019

Project team:
Ing. Adam Beran, Mgr. Petra Fialová, Ing. Roman Kožín, Ing. Eva Melišová, Ing. Johanna Ruth Blöcher, Ing. Petr Bašta, doc. Ing. Martin Hanel, Ph.D.

Description:
In 2018, the processing of data from the evapometric station Hlasivo was completed. Then, the variables that are inputs for evaporation calculation were analysed. The variables are: evaporation from comparative vapour meter, air temperature, temperature of the water level in the vapour meter, global solar radiation, wind speed and relative air humidity. Based on the paired dependence of the average daily evaporation in the month on the individual meteorological variables, the basic formulas for vapour calculation were created. These formulas were subsequently extended by other variables (meteorological parameters). In this way, approximately 70 formulas were created to calculate the vapour for the Hlasivo station. In the next step, the formulas were validated on a shorter data series from the Hlasivo station and on historical data from the Tišice evaporation station. The formula evaluation was based on the Kling Gupta efficiency (KGE) coefficient and the MRE.

Another aim of the first year of the project was to verify the formulas for the calculation of vapour using satellite data obtained by remote sensing methods and using of observed data. For comparison, the reference water reservoir Lake Most was selected, where values from the meteorological station are available, and other water reservoirs in the Czech Republic. Satellite data was compared with meteorological data. Different interruptions were visible on the data, which could be due to poor cloudiness or omission of the measurements. Data was underestimated. When validating the formulas, it was found that the satellite data versus the observed data were fluctuating and would require correction and regionalization.

Project title:
Development of hydraulically suitable weir for measurement of small flow

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2018–2019

Project team:
Ing. Jan Hlom, Ing. Pavel Balvín (mentor), Ing. Johanna Ruth Blöcher, Mgr. Petra Fialová

Description:
Specific weirs can be used for measurements of minimum flow rates. Such weirs can be used for measurement in wide range of flow rates with great precision. Usually, the measurement is realized indirectly by measuring the level of water upstream of the weir (most commonly using a pressure probe) and known relationship between the height of the spill and corresponding value of the flow. When measuring small or minimum flow rates, a number of difficulties and problems potentially occur. Low flow rates fall over a weir with small overflow height and consequently the value of the overflow coefficient is not constant. Furthermore, there are problems with clogging of weirs, which can largely distort the measured flow rates. Our goal is to develop geometrically and hydraulically suitable shape of the weir for measuring minimum flow rates. This issue is becoming very topical at the current recurring dry periods. The minimum flow rate can be defined in the range of units of litter for the area under investigation. The research itself is divided into two phases. In the first phase, the individual proposed geometric variants of the weirs were tested in a laboratory channel. Different variants of placement of the specific weir in the watercourse were tested in laboratory settings. Placement other than perpendicular can cause errors. These errors were identified. The second phase takes place in field conditions where individual weirs and measures are tested under real conditions. 3D printing method was used for manufacturing of specific weirs. The method provides exact geometric design and variable size of the weir. Different materials (various plastic materials for 3D printing, metal and wood). The project is supported by the program ZETA of the Technology Agency of the Czech Republic. The program is focused on the support of cooperation between academia and business through the involvement of university students and young researches up to 35 years old. The project results are a research report and utility models.

Branch of Analysis and Assessment of Environment Components

Project title:
New procedures for treatment and stabilization of sewage sludge from small municipal sources

Contracting authority:
Technology Agency of the Czech Republic

Duration:
01/2017 – 04/2020

Project manager:
Ing. Josef Kratina, Ph.D.

Description:
The primary idea of the project is to use all resources of organic matter and nutrients that are available in our conditions and then to return these resources to the soil ecosystem. Therefore, the aim of the project is to simplify and streamline the process of treatment and stabilization of sewage sludge from small municipal pollution sources (WWTPs up to 1000 PE) at their place of origin and their subsequent use. The system is designed for the needs of small municipalities that do not have a sludge management system as a part of wastewater treatment. They have to deal with the treatment of sewage sludge and organic material resulting from wastewater treatment in other ways.

Project title:
Waste water as diagnostic medium of the City of Prague

Contracting authority:
Prague City Hall

Duration:
2018

Project manager:
Ing. Věra Očenášková

Description:
Municipal wastewater contains a complex mixture of chemicals, including human metabolites: biomarkers. Quantitative measurement of these specific substances will provide information e.g. on diet, population health, disease incidence, alcohol consumption, drug exposure and population exposure to environmental contaminants, such as pesticides. The purpose of the project is to obtain unbiased data, i.e. even data from that part of the population that was not included in the questionnaire on the monitored topic, does not have health problems with e.g. the use of illicit substances etc.

Project title:
Influence of flood plains at the Ploučnice river bed by mining and processing of uranium ore

Contracting authority:
DIAMO, s.e.

Duration:
2018

Project manager:
Ing. Eduard Hanslík, CSc.

Description:
The project objective was to select the sampling sites for the determination of the distribution of radium and other radioactive and non-radioactive indicators in the section from Noviny to Mimoň in the old river bed of Ploučnice river and in the flood plains. In situ doses were measured to specify the positions of vertical probes for which gamma spectrometric analyses and barium determination were performed.

Project title:
Possibilities of water recreation in City of Prague
(from history to the present)

Contracting authority:
Prague City Hall

Duration:
2018–2020

Project manager:
RNDr. Hana Mlejnková, Ph.D.

Description:
The aim of the project "Possibilities of water recreation in City of Prague (from history to the present)" is to examine the current state and possibilities of water recreation in Prague, to assess their potential, to map the progress of water recreation in Prague from the end of the 19th century to the present, to check recreational potential of previously unused bodies of water and to raise public awareness of recreational opportunities in Prague. In 2018, more than 100 potential bathing sites were located based on available data. The seven of them are official bathing sites monitored by Hygienic Station of the City of Prague and about 40 are swimming pools and outdoor swimming pools with operators. In 2018, monitoring was carried out at 24 sites in the "other bodies of water" category, the results of which are available at: http://www.dibavod.cz/vodni-rekreace-praha.

Project title:
Systems for on-line measurement of artificial radioactivity in surface waters in case of accident of a nuclear power station with remote data transmission

Contracting authority:
National Radiation Protection Institute

Duration:
2018

Project team:
Ing. Eduard Hanslík, CSc., Ing. Barbora Sedlářová

Description:
The project objective was to ensure conditions for the testing of detectors and analytical systems in semi-field and field conditions. Suitable locations were selected for device installation.

Branch of Water Protection and Informatics

Project title:
Water balance, audit and evaluation in the field of water quantity and quality

Contracting authority:
Ministry of the Environment

Duration:
2018 (long-term activity)

Project team:
Ing. Jiří Dlabal, Ing. Anna Hrabánková, Ing. Radek Vlnas

Description:
The project objective is to elaborate the Summary Water Balance (SWB) of the main river basin areas of the Czech Republic pursuant to Section 1 (2) of the Decree of the Ministry of Agriculture No. 431/2001 Coll., on the content of water balance, the method of its compilation and data for the water balance.

The following outputs were prepared as part of the analysis of the use of resources and water requirements in terms of quantity and quality for 2017:

- registration of data on realized withdrawals and discharges of transferred to the River Boards, state enterprises – Povodí, s.e., on the basis of Decree No. 431/2001 Coll. (Updated files on withdrawals and discharge for 2017 and data transformed for calculations in the form of database files and other sub-outputs),
- control calculation of water balance (matching previous SWB and methodological instruction of the ministry of Agriculture for processing of water management balances of river basin districts,
- summary hydrological balance,
- summary water management balance: the amount of surface water and of groundwater.

Project title:
Reporting of emissions to water environment

Contracting authority:
Ministry of the Environment

Duration:
2018 (long-term activity)

Project manager:
Mgr. Silvie Semerádová

Description:
Membership of the European Environment Agency commits to a number of reporting obligations based on the annual activity plan of member states, including annual reporting of emissions to the aquatic environment.

TGM WRI compiles aggregated data on pollutant discharges into the aquatic environment in the Czech Republic from national sources, modifies them for reporting purposes and performs its own reporting, i.e. it carries out electronic data transmission to the European Central Data Repository. In 2018, aggregated data were processed for discharges of pollutants into surface water from point sources which were carried out in 2017, categorized by sub-basin district and source of pollution (industrial WWTPs, municipal WWTPs treated/untreated, segregation by WWTP size). The selection of evaluated substances was based on the evaluation of the status of surface water bodies. The data sources were: the property and operational records of water supply and sewerage systems provided by the Ministry of Agriculture, water management balance processed by TGM WRI, the integrated pollution register administered by CENIA and marginally also the data provided by the polluter pursuant to Section 38/4 of the Water Act, administered by CENIA.

Project title:
The support of the representation of the Czech Republic in activities of the International Commission for the Protection of the Elbe River (ICPER)

Contracting authority:
Ministry of the Environment

Duration:
2018 (long-term activity)

Project team:
Ing. Marie Kalinová, Mgr. Pavel Rosendorf, RNDr. Hana Prchalová et al.

Description:
The aim of the project is to provide expert support for ICPER activities in certain fields, the preparation of documents and participation of the TGM WRI employees at the activities of the ICPER expert groups. In 2018, the TGM WRI participated mainly at the activities of expert group Surface Water (SW), expert

group Nutrients (NP) and expert group Groundwater (GW). The employees of the other organizations (Povodí, s.e., CHMI etc.) participate also in activities of expert groups. Main tasks of the expert groups were in 2018: completion of the Strategy for nutrient management in international river basin district, update of the International program of the Elbe River monitoring, completion of the document the Strategy of the International Label Measurement Program, preparation of the Water Quality Report in the Elbe and its tributaries for the period 2013–2018 and detailed monitoring in sediments along the Elbe.

Project title:
The support of the participation of the Czech Republic in activities of the Czech-German Commission for Cross-Border Water (Permanent Committee Saxony and Permanent Committee Bavaria)

Contracting authority:
Ministry of the Environment

Duration:
2018 (long-term activity)

Project team:
Ing. Marie Kalinová, Ing. Věra Kladivová, Mgr. Pavel Eckhardt et al.

Description:
The objective of the project is a long term provision of expert materials to Ministry of the Environment for cooperation on cross-border water and a support of activity of both the Permanent Committees. The issues are solved in Czech-German expert groups, alternatively in direct collaboration of Czech and German experts. Employees of TGM WRI, p.r.i., participate on preparation of expert materials for meetings of expert groups and superior bodies of this cooperation. The project activities are diverse: from conceptual and methodological documents to solving of specific problems of individual localities, the procedures of the Water Framework Directive are implemented on border waters. Employees of other organizations (Povodí, s.e., CHMI etc.) also participate in this activity. The aim is to support the development of specifically focused joint projects that would bring new knowledge to address the issue of border waters. In 2018, the experts from TGM WRI participated in direct collaboration of Czech and German expert institutions on solution of the problems of cross-border water bodies, the quality of surface water and groundwater protection. In the Bavarian section, the activity was focused on a common solution to problematic locations: protection of Margaritifera margaritifera and Unio crassus in the area of town Aš (Asch), water protection against eutrophication in the lake Dračí jezero (Drachensee) in the catchment of Kouba, issues of nutrient pollution in the Skalka reservoir on the Ohře river, mercury pollution in the Ohře river and in Reslava river and joint inspections of selected border watercourses.

Branch of Water Technology and Wastes

Project title:
Water for Prague. Activity 4: River flow in urban area – determination and optimization of anthropogenic pressures

Contracting authority:
Prague City Hall

Duration:
2017–2018

Project team:
RNDr. Josef K. Fuksa, CSc., Ing. Lenka Matoušová, Ing. Václav Šťastný et al.

Description:
The two-year project (2017–2018) addressed the anthropogenic pressures on water quality in the river Vltava (pollution in general, the influence of tributaries and the outflow of sewage) in order to optimize and improve the integration of the river into the life of the city. The project also included the processing of map materials and the operational model of the system river/tributaries according the status of flow, precipitation etc. The project was completed in 2018, the project is maintained, results are published etc.

Project title:
Wastes and prevention of their occurrence: Practical procedures and activities in the implementation of the Regional Waste Management Plan of the City of Prague

Contracting authority:
Prague City Hall

Duration:
2018–2020

Project team:
Ing. Dagmar Vološinová, Ing. Robert Kořínek Ph.D.

Description:
The project consists of two related parts that are carried out in parallel. The content of the first part is the monitoring of waste management in the region of the Capital City of Prague with the aim to evaluate and model the current state of "waste service". Part of the project activity is to evaluate the effectiveness of sorting and consequently the fulfilment of the obligations of the Waste Management Plan of the City of Prague. The second part of the project is focused on the issue of waste prevention.

In 2018, a selection of monitored sites was carried out. The sites represent three types of development (housing, rural and city centre). In these locations, the effectiveness and cleanliness of the separated components and the usability of the waste

collection bins were monitored monthly. The monitoring was followed by an analysis of mixed municipal waste (MMW) coming from the monitored sites. The monitored MMW components were physically and chemically analysed. Based on the obtained data, a study was conducted on the possibility of waste prevention including detailed proposals for their practical implementation.

Project title:
Technical and economical optimization of tertiary technologies for the removal of PPCPs from wastewater

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2017–2019

Project team:
Ing. Miroslav Váňa, Ing. Jiří Kučera, Ing. Lenka Matoušová, Ing. Anna Kólová

Description:
The aim of the project is to develop and verify the technology suitable for tertiary wastewater treatment from some specific pollutants (PPCPs – Pharmaceuticals and personal care products), from the pre-treated wastewater, which allow the re-use of the treated wastewater.

In 2018, a pilot plant (advanced tertiary filter) was constructed, based on theoretical a practical knowledge on the use of granulated activated carbon to remove organic micropollutants from wastewater. The filter will make it possible to test this technological variant of municipal wastewater treatment (tertiary treatment) in a real wastewater treatment plant (WWTP). A great advantage of the existing technological line based on membrane separation technology (MBR – membrane bioreactor) was used in the selected real wastewater treatment plant. Thanks to the technology, it is possible to assume the absence of suspended solids in the discharged water. The presence of such solids can reduce the efficiency of the adsorption process. Samples from runoffs from individual types of activated carbon were continuously collected and evaluated.

Project title:
Technology of separation of specific pollutants from rainwater

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2018–2020

Project team:
Ing. Jiří Kučera, Ing. Jana Čejková, Ing. Martina Beránková, Ing. Anna Kólová

Description:
The main goal of the project is the development of technology (technical solution) for the removal of pollutants from splashed rainwater with a focus on PAHs. The project considers technology that primarily removes suspended solids and also the specific contaminants adsorbed on the suspended solids.

In 2018, the main objective was to confirm the hypothesis of adsorption of selected pollutants on suspended solids in rainwater and their quantification. To do this, we used our own measurements at selected sites and compared these with other publicly available relevant results. Furthermore, the project was focused on the selection of suitable technology for removal of insoluble matter from splashed rainwater and design solutions. Advanced hydrodynamic 3D modelling was also used for the design.

The result was a physical model and its laboratory verification at the end of 2018. Currently, the physical model is being optimized using data from both laboratory measurements and 3D mathematical models. Once the optimization phase has been completed in the first months of 2019, a prototype of the device will be built based on the results.

Project title:
Reporting under Articles 15 and 17 of Council Directive 91/271/EEC

Contracting authority:
Ministry of the Environment

Duration:
2018 (long-term activity)

Project manager:
Ing. Jana Čejková

Description:
In 2018, the objective of the project "Reporting under Articles 15 and 17 of Council Directive 91/271/EEC" was to process and verify data on municipal wastewater pollution sources. The collected data informs the European Commission on the status of municipal and wastewater treatment from agglomerations above PE 2000 pursuant to Articles 15 and 17 of Council Directive 91/271/EEC on urban wastewater treatment. The final version of the data was exported in due time.

Brno Branch

Project title:
Historical water management structures, their value, function and importance for present time

Contracting authority:
Ministry of Culture

Duration:
2018–2022

Project team:
Ing. Miriam Dzuráková, Mgr. Martin Caletka, Mgr. David Honek, Ing. Radka Klepárníková, Ing. Miloš Rozkošný, Ph.D., Ing. Milena Forejtníková, Ing. Hana Hudcová, Ph.D., Ing. arch. et Mgr. Klára Nedvědová

Cooperating Organizations: National Heritage Institute (Methodological Center of Industrial Heritage in Ostrava), Silva Tarouca Research Institute for Landscape and Ornamental Gardening, p.r.i., Faculty of Science, Palacký University in Olomouc

Description:
The objective of the project supported by the Ministry of Culture via NAKI program is to create a methodology for the evaluation of a specific group of industrial heritage sites: historical water management structures. The methodological procedure will contribute to the correct identification, systematic documentation and implementation of robust unbiased assessment criteria for water management structures in the context of their spatio-temporal development, based on an interdisciplinary approach. The project outputs will make a significant contribution to further research activities, for rescue, rehabilitation, protection and, where appropriate, defining a new use of this specific type of industrial heritage monument.

The research project addresses the need for the development of a tool that will contribute to the systematic documentation and unbiased evaluation of one specific type of the industrial heritage sites – water management structures from the perspective of their conservation. The methodological procedure in the form of a certified methodology will define the terminology and typology of water management structures and set a group of suitable criteria for their assessment in the context of conservation. A systematic field survey and analysis of the causes of development of these objects over time will be carried out in order to set up and verify the proposed methodological assessment procedures and to compare the development of different types of historical water management structures in various natural and socio-economic settings. The detailed field survey will be going on in five selected pilot areas. It will be accompanied by thorough archival research and documentation of technical condition. The map outputs will be implemented in the format of specialized thematic databases into the information system of the National Heritage Institute, thus expanding the current system to include complex thematic databases of historical water management structures at different time periods in pilot areas.

Project title:
Prediction of possible occurrence of dangerous chemical substances in accidents and floods, risk of leakage of harmful waters and preventive measures: basis for emergency plan

Contracting authority:
Prague City Hall

Duration:
2018–6/2020

Project team:
Ing. Stanislav Juráň et al.

Description:
The goal of the project is to improve the awareness of the occurrence of hazardous water substances, defined as priority and priority hazardous substances (PPHSs), and to assess the risk for the capital with their occurrence and the related management. The project focuses on a specific group of chemicals in the catchments upstream the capital, which pose a high risk of propagation and accumulation.

In 2018, data were collected on discharges of wastewater containing PPHSs, their storage according to Act No. 224/2015 Coll. On Prevention of Major Accidents including their placement in endangered inundation plains and flood plains and on concentrations of PPHSs in river sediments, which could be released from sediments when water levels are elevated. The processed data are from information databases (ISPOP: Integrated Environmental Reporting System, eSPIRS-SEVESO, E-PRTR). The using of data is based on results of monitoring of river sediments by TGM WRI and by other organizations.

Project title:
New approaches to optimization of territorial integrated protection systems

Contracting authority:
Ministry of Agriculture, program KUS 2014

Duration:
2015–2018

Project team:
Ing. Karel Drbal, Ph.D., Ing. Jana Uhrová, Ph.D.

Description:
The aim of the project is especially to provide verified procedures of proposals of integrated protection of a territory against the effects of the local floods and erosion phenomena. The procedures have to be effective, enforceable and sustainable. The project is financed by the Ministry of Agriculture.

T. G. Masaryk Water Research Institute, p.r.i., is the project leader. Other project investigator is Brno University of Technology. Project partners are Povodí Moravy, s.e., Zemědělské družstvo Vrchovina and the town of Fulnek.

The practical part of the project was carried out in pilot areas: the catchment of the Husí stream (a left tributary of the Odra river) and the catchment of the river Litava (a right tributary of the river Svratka). In these localities, some sub-catchments are extremely vulnerable to dangerous runoff from torrential rainfall that cause numerous floods, intense water erosion and sediment transport. In June 2009, flood damage in the Husí stream basin reached an extraordinary amount of approximately CZK 317 million, which represented almost 10% of the total damage in the Moravian-Silesian Region.

The partial objectives of the project were:

- Proposal of Integrated Flood Protection (IFP) in the Husí stream (Odra River Basin) and Litava (Morava River Basin);
- Proposal of the optimization of a system of integrated territorial protection and of the management of the water regime in a catchment and creating a structure of an optimization mathematical model for the whole pilot catchment area;
- Development of a software tool to optimize the integrated territorial protection;
- Design of monitoring and information system, its installation and verification in the catchment of the Husí stream (measurement of intensity and rainfall of torrential rains, observation of changes in water levels at monitoring gauges, information transfer).

The project provided a design of integrated management of water regime in the catchments of Husí stream and Litava. The focus was on designing the most appropriate territorial protection and organization and optimal development of agricultural management in these heavily endangered territories. Particular attention was paid to defining the most appropriate organizational, agrotechnical, biotechnical and water management measures across the catchment area, which will contribute to integrated protection of settlements, water management infrastructure, transport infrastructure and important structures in the landscape as well as providing water resources for dry periods.

The project was aimed at obtaining support tools for the optimization process of designing protective measures. The mathematical models of runoff conditions in the pilot catchment areas were used in the processing of the optimization model, and in particular the formulation of the appropriate purpose function – the criteria of optimality.

The design of system of measures in the catchment of the Husí stream will be used by the State Land Office as a basis for the planned comprehensive land consolidations which are planned in this territory. Other project output is an implementation project of a water reservoir in the catchment of the Stříbrný stream (Jerlochovice water reservoir). It will enable the immediate realization of this water structure right after completion of comprehensive land consolidations in a given cadastre.

The design of the system of measures in the pilot catchment area Litava will be used by another project participant Povodí Moravy, s.e., as a basis for the activities of river basin management.

Project title:
Determination of the efficiency of the purification process of the vertical facade root treatment plant

Contracting authority:
LIKO-S, a. s.

Duration:
2018

Project team:
Ing. Hana Hudcová, Ph.D., Ing. Miloš Rozkošný, Ph.D.

Description:
The aim of the study is to determine the efficiency of the purification process of the facade vertical root treatment plant for ordinary municipal wastewater from small producers at different loads with using a real pilot plant model.

The subject of the contract was the execution of the order of the company LIKO-S, Slavkov aimed at determination of the efficiency of the purification process of the vertical facade root treatment plant. The focus was on small wastewater producers (households, a hotel, a firm etc.). The pilot plant of the facade treatment plant was used for the study. The pilot plant was connected to the modelled pre-treatment of real municipal wastewater. The facade treatment plant was equipped with selected types of wetland plants tolerating inflow of contamination with decorative function. The set was operated and tested during the growing season in 2018 under various hydraulic and contamination loads.

The measurements and analyses of the collected runoff water samples revealed the minimum residence time of the purified water in the facade vertical root treatment plant, the optimum mode of operation of the delivered set and the minimum required filtration area necessary for the treatment of wastewater produced by one person. Modifications of the technical solution of the facade treatment plant were proposed on the basis of testing.

Ostrava Branch

Project title:
CLEAN WATER – HEALTHY CITY: Foreign substances in groundwater, surface water and wastewater as a result of human activity

Contracting authority:
Prague City Hall

Duration:
01/2018–06/2020

Project team:
Ing. Petr Tušil, Ph.D., MBA, Ing. Tomáš Mičaník, Ph.D., RNDr. Přemysl Soldán, Ph.D., Ing. Stanislav Juráň, Ing. Věra Očenášková

Description:
A wide range of contaminants enter the environment and water due to anthropogenic influences. These contaminants consequently affect not only life in watercourses (aquatic ecosystems), but also humans. Indeed, they can migrate from surface water to drinking water and to groundwater and thus indirectly adversely affect the quality of life of the human population. Monitoring of surface water quality can provide, in addition to water quality information, information on significant sources of pollution. Various trends can be identified by long-term monitoring. The monitoring of biological quality of surface water before treatment into drinking water should be part of any water treatment plant. The monitoring of biological quality of produced drinking water helps to capture possible negative effects of the technology itself on the biological properties of drinking water. Moreover, it is possible to trace correctly various habits of the population in the monitored locality, city districts, etc. in the case of monitoring of selected indicators in municipal wastewater flowing to the WWTP, or at selected key points of the sewerage system. Four concepts are verified within the project. They are targeted at different types of waters and different types of contaminants. Each validated concept has its own comprehensive main output as well as secondary outputs that are closely related to the main output:

- Concept I. Study of pesticide input in Švihov water reservoir using new sampling techniques and removal of organic substances from sorption filters behind ozonisation by highly effective chemical destruction;
- Concept II. Improving the monitoring of biological quality of drinking water;
- Concept III. Prediction of possible occurrence of dangerous chemical substances in accidents and floods, risk of leakage of harmful waters and preventive measures: basis for emergency plan;
- Concept IV. Waste water as diagnostic medium of the City of Prague.

Phase 1 of each concept "Feasibility verification" was carried out in 2018. Phase 1 contained data gathering, field surveys and sampling of surface water and wastewater at various localities.

Project title:
Water tank towers: identification, documentation, presentation, new uses

Contracting authority:
Ministry of Culture – program NAKI II

Duration:
03/2018–2022

Project team:
Ing. Robert Kořínek, Ph.D., Ing. Alena Kristová (TGM WRI), Ing. Martin Vonka, Ph.D., Mgr. Michal Horáček, doc. Ing. arch. Václav Dvořák, CSc., doc. Ing. Eva Burgetová, CSc., Ing. Zuzana Rácová (CTU)

Description:
In 2018 the formation of a tower water tanks database was launched. The database will be a web application for storing the collected data and for presentation. Simultaneously, a systematic identification of water tank towers was launched in order to build a database of existing and available non-existing water tank towers in the Czech Republic. Currently, there are more than 1.240 tower water tanks (241 of which no longer exist). The typology and terminology of tower reservoirs was established.

Approximately 250 objects were selected for further documentation. The research team carried out field surveys at 35 water tank towers in 2018, focusing on the design and technological design of the structure, identifying the energy management, water resources and their subsequent distribution. When possible, positions of structures are determined and present photo-documentation is carried out. Complete geometric position was determined and documentation was processed for 6 structures by external contractor. Moreover, structural engineering survey was carried out for four water tank towers.

Obtaining information on water tank towers is based mainly on archive sources. Their selection is adapted to the project's focus and is preceded by a thorough research. Archival and literary research is not only a primary source of information for project outputs, but also a basis for further research.

Project title:
Expert support for monitoring and assessment of surface and groundwater status

Contracting authority:
Ministry of the Environment

Duration:
2017–2021

Project manager:
Ing. Martin Durčák

Description:
In 2018, the partial aims of the project were the following activities:

- Cooperation with the Czech Hydrometeorological Institute during the update of the Framework Program for Monitoring;
- Expert support in solving the problem of bioavailability of selected metals using BLM models (Biotic Ligand Models);
- Elaboration of a proposal of the Methodology for the derivation of biologically available concentrations of selected metals for the needs of assessment of chemical status of bodies of surface water;
- Expert support of the participation of representatives of the Czech Republic and participation in selected working groups (WG Chemicals, WG Groundwater) for implementation of the WFD and its daughter directives on the assessment and monitoring of the status of surface and groundwater and the elaboration of selected documents to solve the tasks that arise from the activity of these working groups. Part of the solution was also the co-ordination of co-operation with selected expert bodies in the preparation of documents for the amendment of selected methodological procedures and cooperation with the Department of Water Protection of the Ministry of the Environment.

Project title:
Support to the participation of the Czech Republic in the activities of the International Commission for the Protection of the Odra River against Pollution

Contracting authority:
Ministry of the Environment

Duration:
2017–2021

Project manager:
Ing. Petr Tušil, Ph.D., MBA

Description:
Activity regarding the proposal of a timetable and work schedule to ensure the preparation and implementation of the 3rd phase of planning in International Odra River Basin District (ORBD). Cooperation in the implementation of work activities in the working group G3 – Accidents in the preparation and provision of emergency drills for the cross-border disposal of serious pollution of border waters. At the same time, a joint exercise was held, in which a report was transmitted between the international early-warning headquarters. Work activities within the working sub-group GM – Monitoring were focused on testing a professional concept "Basic Technical Concept: ICPO GeoPortal Application – International Monitoring Stations – Odra". In the working subgroup of GP – Planning, the draft of a strategy of superregional significant water management problems was elaborated in the ORBD.

Project title:
Cooperation in transboundary waters with Poland

Contracting authority:
Ministry of the Environment

Duration:
2017–2021

Project manager:
Ing. Martin Durčák

Description:
In 2017, the partial aims of the project were the following activities:

- Preparation and elaboration of relevant documents requested from the Czech side in the framework of the working groups Implementation of the WFD and Hydrologists and Hydrogeologists (expert group) for the area Police nad Metují-Kudowa Zdrój, Adršpach-Krzeszów and catchments of Upper and Middle Stěnava river including joint measurements of surface water at the border;
- Continuous monitoring of selected gauges of groundwater and surface water in the area of the Polická pánev;
- Preparation of documents and expert opinions for the meetings of the Czech – Polish Commission for Transboudary Waters.

Branch of Applied Ecology

Project title:
Protection of Critical Infrastructure – Želivka water resource against the effects of PPCP and pesticides in the conditions of long-term drought

Contracting authority:
Ministry of Interior

Duration:
2017–2020

Project team:
Mgr. Pavel Rosendorf, Mgr. Daniel Fiala, Ing. Jiří Kučera, Ing. Miroslav Váňa, Ing. Jiří Picek (TGM WRI), Ing. Lenka Vavrušková, Ing. Zuzana Nováková, Ing. Bohdana Tláskalová (PVK, a. s.), Ing. Petr Pěkný, Libor Rambousek (Želivská provozní, a. s.) et al.

Description:
The main objective of the project is to define the main threats connected with the input of selected pesticides and PPCP substances into the surface water in the catchment of the Švihov water reservoir. The threats are defined for the Želivka water resource as an example of critical infrastructure. The main objective is also to conduct research of hazardous substances which can due to their properties threaten the quality of raw water that is treated in Hulice water treatment plant. These substances can further penetrate into drinking water with the risk of acute or chronic exposure to the supplied population. The aim of the research is also to use the modelling tools to evaluate the risks associated with the propagation of selected substances in surface waters and water reservoirs in periods of long-term drought and water scarcity. An important objective of the project will be definition of appropriate measures to reduce the risk of hazardous substances penetration into the river basin waters and to propose modifications to the technology limiting the occurrence of these substances in treated water, including their testing in pilot plant conditions.

In 2018, targeted monitoring of pesticides in selected parts of the catchment continued, including monitoring of the transformation of substances in significant equalizing water reservoir Němčice. This is an important barrier to the input of pollution into the Švihov water reservoir from the catchment of Sedlický stream near the dam. Both standard monitoring and sampling using automatic samplers were used. Downstream the significant point sources of pollution in several size categories, outflow and transformation of PPCPs (especially pharmaceuticals) were monitored. Sampling followed the screening monitoring of pollution sources carried out in 2017. It was focused on settlements downstream which it was possible to monitor changes in concentrations of substances in the longer stream section or in the water reservoir of pond type. Sampling was 24-hour with fully automated monitoring of flow, temperature, conductivity, and automatic longitudinal sampling of wastewater.

In 2018, experiments continued with pilot-scale model filtration units with granular activated carbon filling in the Želivka water treatment plant. Želivská provozní, a. s., in cooperation with PVK, a. s., provided a technical design of pilot plant filtration units with granular activated carbon filling. These model units are used to verify the sorption process under real conditions of the Želivka water treatment plant on various types of granular activated carbon. In addition to operating information on the effectiveness of removal of selected hazardous substances from the pesticide and drug groups, several years of operation of these model columns will also provide data for assessing the exhaustion of the sorption charge.

Project title:
WATER FOR PRAGUE. Activity No. 2: Utilization of artificial and natural structures for revitalization and increase of biological and morphological diversity of Prague streams

Contracting authority:
Prague City Hall

Duration:
2017–2018

Project team:
Mgr. Pavel Kožený, RNDr. Hana Janovská, Mgr. Daniel Fiala, Mgr. Pavel Rosendorf, Ing. Jiří Picek, Ing. Jiří Musil Ph.D., Mgr. Eduard Bouše, RNDr. Jitka Svobodová, Mgr. Tereza Beránková, Ph.D.

Description:
The aim of the project was to improve the ecological status of the streams in the territory of Prague by improving their shape structure and distribution of habitats for aquatic organisms. The project was completed in 2018. Objects mimicking the function of natural so called river wood riverbed were developed and tested as a main tool for the improvement of the morphological status of watercourses. The activities are focused on the watercourses in the territory and in the administration of the Prague City Hall (especially Rokytka, Dalejský and Šárecký stream) two technical solutions of construction of river wood objects are commercially exploitable. They were submitted to be registered as utility models.

In 2018, the activities were focused on verifying the function of river wood objects embedded in the experimental sections of the streams Rokytka, Dalejský and Šárecký stream. Hydromorphological measurements were carried out at the localities, the stability of the objects was monitored and fish and macrozoobenthos were harvested to assess the relationship of aquatic organisms to habitats around wooden objects.

Hydromorphological measurements showed that tiny wood structures occupying about 1% of the channel can alter the character of the watercourse. Although there is no major change in hydromorphological conditions, new habitats with variable environmental conditions arise around the wooden objects. The

macrozoobenthos community harvested from river wood was characterized by a higher number of individuals than which was found in samples from other parts of the channel. Samples from different habitats did not differ in the number of taxa, but on average 16% of taxa not found in other habitats were recorded on river wood. River wood, although spatially very slightly represented, increases locality abundance and also the overall biodiversity of aquatic invertebrates. Ichthyologic research also showed the affinity of fish for newly formed habitats around river wood objects. The preferences differed according to the conditions of the watercourse and the type of used wood structures.

The effect of objects on aquatic organisms was presented and discussed with experts at the conference Říční krajina (River Landscape). The field excursion was conducted along the experimental site at Dalejský stream. Two of proven technical solutions were submitted to be registered as utility models. The design of these objects will be available for watercourse administrator in Prague and it will be available to other users under a license agreement.

Project title:
DYJE 2020 – THAYA 2020

Contracting authority:
Povodí Moravy, s.e.

Duration:
2016–2020

Project team:
Ing. Jiří Musil, Ph.D., et al.

Description:
The main objective of the project is the bilateral harmonization of water management and nature conservation and landscape protection in the border area of Podyjí. Partial objectives involving/in cooperation with the TGM WRI project partner include: 1) harmonization of monitoring and evaluation of ecological status, 2) determination of target fish community in relation to the strategy of restoration of migration throughput of the catchment of the Dyje river, 3) harmonization of fishing management in national parks including 4) deadwood management design and 5) biological assessment of the pilot connection of a distributary.

The catchment of the Dyje river is a cross-border Czech-Austrian territory with significant water reservoirs on the Czech side (Vranov, Znojmo, Nové Mlýny) and two national Parks Podyjí and Thayatal. The aim of the project is thus primarily the bilateral harmonization of strategies and approaches in the areas of water management and nature and landscape protection, including active cross-border cooperation with a link to coordinated development of the region and achievement of the required quality of the environment and ecosystem services of this border region. The results of the project include several cross-border mechanisms and elements of green infrastructure that will be used by both watercourse administrators (Povodí Moravy, s.e., via Donau) and nature and landscape conservation authorities, including both national parks, to meet the requirements of the European Water Framework Directive.

Project title:
Support for the natural environment and the occurrence of the Freshwater Pearl Mussel (Margaritifera margaritifera) in the catchment of the river Malše

Contracting authority:
Ministry of the Environment

Duration:
2017–2020

Project team:
Ing, Věra Kladivová, Mgr. Ondřej Simon, Ph.D., RNDr. Zuzana Hořická, Ph.D., Mgr. Jitka Horáčková,Ph.D.

Description:
The aim of the project is to strengthen the population of the critically endangered Freshwater Pearl Mussel in the border river Malše by planting young individuals, to describe precisely the reasons why the species does not reproduce for a long time in the locality and to create bases for improving water purity and reducing erosion throughout the international catchment.

The project is supported under the Interreg Austria Czech Republic program. The aim is to support the formation of cooperation between municipalities, forest administrations, fishermen and conservationists in Bohemia and Austria, linked to the interest of the Freshwater Pearl Mussel, as a clearing indicator of a clean river. In 2018, long-term monitoring continued at localities in Austria and in the Czech Republic. The objectives of the monitoring were mapping of water quality and suitability of conditions for survival of the Freshwater Pearl Mussel population in Malše. Adult and subadult individuals were found during the project in Malše. It is an indication of self-renewal of the population. Therefore, a detailed mapping of the river bed and the search for freshwater pearl mussels was undertaken in backbone watercourse. In 2018, artificial breeding of juvenile individuals took place at the nursery on the river Blanice in cooperation with the firm Dort. Genetic analyses of pearl mussels and their host species continued (Czech University of Life Sciences). The surveys of hyporheic zone and its quality for selection of habitats for young pearl mussels were carried out. Further information on the progress of the project is available on the project website https://www.at-cz.eu/cz/ibox/po-2/atcz37_malsemuschel.

MEMBERSHIP IN COMMISSIONS AND BOARDS

Institutional

- Ad-hoc group of experts "Nutrients" of the International Commission for the Protection of the Elbe River
- Czech-Germany Commission for transboundary waters
- Czech-Austrian Commission for transboundary waters
- Czech-Slovak Commission for transboundary waters
- Expert group SW (surface water) of the International Commission for the Protection of the Elbe River
- Commission for fish passes of the Nature Conservation Agency of the Czech Republic
- International Commission for the Protection of the Elbe River (working group Management of data – DATA)
- International Commission for the Protection of the Danube River (working group Information Management; GIS Expert Group – IMGIS EG)
- International Commission for the Protection of the Odra River against Pollution (working group G5 – Data management)
- NRC (National Reference Centre) for Water Emissions in Czech Republic
- Expert Commission for Working with Experimental Animals according to Section 17 (1) or Section 26 of Act No. 246/1992 Coll. to protect animals against cruelty
- Working group for Priority Axis 1A of the Operational Program Environment 2014–2020
- Working group Priority Axis 3-3A (Waste) of the Operational Program Environment 2014–2020
- Working committee of the Commission for Water Planning for Implementation of the Floods Directive established by the Ministry of the Environment
- Council of Waste Management
- Standing Committee Saxony of the Czech-Germany Commission for transboundary waters
- Standing Committee Bavaria of the Czech-Germany Commission for transboundary waters
- Working Group Data & Information Sharing (DIS) under the Common Implementation Strategy of the Water Framework Directive

Individual

- Ing. Pavel Balvín (member): Technical Standards Commission No. 45
- RNDr. Josef V. Datel, Ph.D. (chairperson): Czech Committee of IAH (International Association of Hydrogeologists)
- Ing. Karel Drbal, Ph.D. (member): Scientific Council of the Faculty of Civil Engineering of the Brno University of Technology
- Ing. Karel Drbal, Ph.D. (member): Supervisory Board of the Global Change Research Institute of the Czech Academy of Sciences (CzechGlobe), Brno
- Ing. Martin Durčák (member): Czech-Polish Commission for transboundary waters – Working Group on Implementation of the Water Framework Directive 2000/60/ES
- RNDr. Josef K. Fuksa, CSc. (member): Czech Limnological Society
- RNDr. Josef K. Fuksa, CSc. (chairperson): Czech Ramsar Committee – advisory body of the Minister of the Environment
- RNDr. Josef K. Fuksa, CSc. (member): Water, Landscape and Biodiversity Committee of the Czech Government Council for Sustainable Development
- RNDr. Josef K. Fuksa, CSc. (member): Commission for the assessment of international projects KONTAKT, INTER-EXCELENCE and INTER-Action of the Ministry of Education, Youth and Sports
- Ing. Eduard Hanslík, CSc. (chairperson): Subcommission No. 4 (radiological methods) of the Technical Standards Commission No. 104
- doc. RNDr. Zbyněk Hrkal, CSc. (member): Czech Committee of IAH (International Association of Hydrogeologists)
- Ing. Jiří Kučera (member): The Czech Water Association
- RNDr. Diana Marešová, Ph.D. (member): Subcommission No. 4 (radiological methods) of the Technical Standards Commission No. 104
- Ing. Lenka Matoušová (member): The Czech Water Association
- Ing. Tomáš Mičaník, Ph.D. (chairperson): Expert Group on Wastewater – Water Purity at the Czech Science and Technology Water Management Association
- Ing. Tomáš Mičaník, Ph.D. (member): working group WG Chemicals at European Commission, DG Environment, ENV.C.1 – Clean Water
- Ing. Miloš Rozkošný, Ph.D. (member): The Czech Water Association
- Ing. Barbora Sedlářová (member): Czech Chemical Society, Expert group Nuclear chemistry
- RNDr. Přemysl Soldán, Ph.D. (member): international organization EurAqua
- Ing. Petr Tušil, Ph.D., MBA (member): Expert Group on Wastewater – Water Purity at the Czech Science and Technology Water Management Association
- Ing. Miroslav Váňa (member): The Czech Water Association
- Ing. Adam Vizina, Ph.D. (member): Editorial board of the Meteorological Bulletin

ECONOMICS AND FINANCE

The year 2018 came and our response is "finally". Finally, the period of fear of survival is over: the damage done over the past years is finally eliminated, we are able to restore instrumentation and thus significantly improve the quality of our activity, finally we are able to change our unsatisfactory information and control system and acknowledge the quality of work done by employees.

At the same time, we succeeded in replacing some of the bigger investments, e.g. radiology device Qantulus (CZK 7 milion) that has been used to determine tritium in waters since 1992.

The year 2017 has already shown better times coming. However in 2018, the positive changes were significant, mainly due to The Long-term Development Concept of the Research Organization for the period 2018–2022 and subsequent increase in support from the founder. Simultaneously, the important project are in full operation, examples are projects Growth Pole I and II (Operational Program Prague), projects from the Ministry of Environment focused on drought management and support to the performance of state administration. A substantial part of the sources of funding is represented by the projects of domestic providers (e.g. Technology Agency of the Czech Republic, the Ministry of Agriculture, the Ministry of Interior, the Ministry of Education, Youth and Sports).

Another source of funding is involvement in international projects INTERREG. However, these projects have several disadvantages: ex-post financing w ithout p re-financing, lo ng pr ocessing deadlines of control authorities causing for examples that founds invested by the Institute are paid only after a year etc. For this reason, it is necessary to carry out commercial projects in the frame of Other Activity to secure the founding of the Institute. We are pleased to say that we are successful in that.

Thanks to responsible management, we managed to create a positive economic result, which will be transferred to the reserve found.

After its expiration, we have not renewed the revolving loan, without which we have not been able to imagine the past few years. We use only our own financial resources.

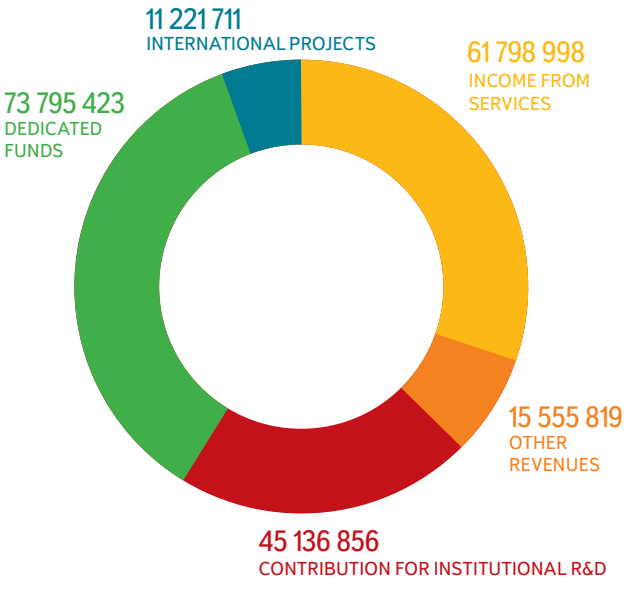
Still in 2018, a major drawback was the wide variety in the specifications among different providers, the unequal assessment of administrative actions by providers such as tenders, cost reporting and often large bureaucracy.

All these negative facts are reflected in the unnecessary increase in administration, including staffing, not only in the Institute, but certainly also on the part of providers. Simple solution would be a unified national system for all involved components: such system would be clear and easy to control and inspect.

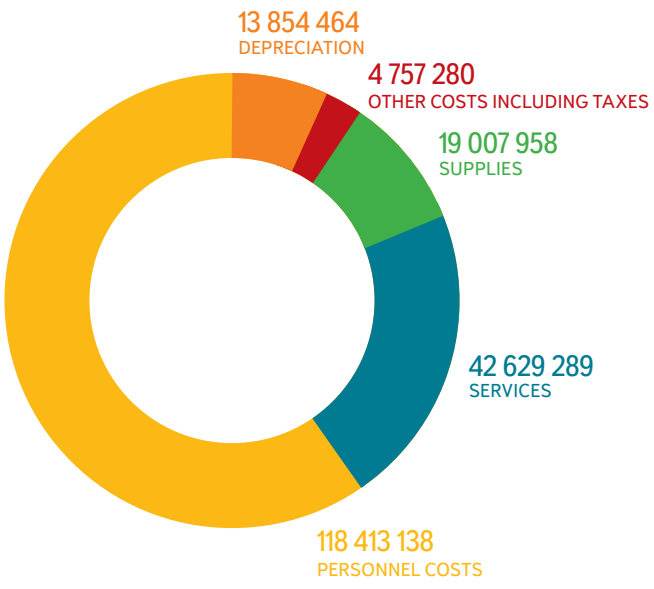
While evaluating the 2018, we are happy to assess very positively the responsible approach of the founder, which helps our development and the fulfilment of the mission of the public research institution, which we try to fulfil with full responsibility and put into practice.

The budget of CZK 220 833 thousand for 2018, was created balanced in accordance with Act No. 341/2005 Coll., on public research institutions. Total revenues amounted in 2018 to CZK 207 508 807 CZK and costs reached CZK 198 662 129. Consequently, the total outcome of the Institute's activities was represented by the end-of-year result of CZK 8 846 677 in surplus before tax and 7 726 991 CZK after tax. The proposal to transfer the whole positive outcome in 2018 in reserve fund was submitted to the relevant bodies of the Institute.

Revenue structure



Cost structure



PERSONAL DATA

Activities in employment relationships

In March 2018, Ing. Petr Bouška, Ph.D., ended his activity as a deputy director for research and professional activities. Based on the results of the tender, Ing. Libor Ansorge, Ph.D., was appointed to this position.

There were several organizational changes in second half of 2018. A new Department of Preparation and Management of Projects was established and a new position of PR coordinator-spokesperson was also established.

In total 190.15 employees worked in TGM WRI, p.r.i., in 2018 (31th December 2018). The research and expert employees constituted 82% (110.90 research workers and 45.92 expert workers) and operational employees constituted 18% of total employees number.

Table 1. Employees structure according to age and sex – physical state by 31st December 2018

Age	Men	Women	Total	%
Up to 25 years	0	3	3	1.26
26–34 years	23	28	51	21.43
35–44 years	30	28	58	24.37
45–54 years	24	29	53	22.27
55–64 years	19	31	50	21.00
65 and more	17	6	23	9.67
Total	**113**	**125**	**238**	**100**

The average age was 46.65 years, the men average age was 47.98 and women average age was 45.46 years.

Table 2. Employees structure according to achieved education and sex – physical state by 31st December 2018

Education level	Men	Women	Total	%
Basic school	0	2	2	0.84
Apprenticeship	5	3	8	3.36
Completed secondary general	1	3	4	1.68
Completed secondary technical	17	33	50	21.01
Bachelor	2	7	9	3.78
Master	60	57	117	49.16
Doctoral	28	20	48	20.17
Total	**113**	**125**	**238**	**100**

Table 3. Employees structure according to a length of employment and sex – physical state by 31st December 2018

Duration	Men	Women	Total	%
Up to 5 years	40	54	94	39.50
6–10 years	11	7	18	7.56
11–15 years	20	19	39	16.39
16–20 years	20	21	41	17.23
over 20 years	22	24	46	19.32
Total	**113**	**125**	**238**	**100**

OTHER REQUIRED INFORMATION

Information on measures for elimination of imperfections of management and their fulfilment

No measures to elimination of imperfections of management were assigned.

Information on things that come to pass after the balance sheet day and are important for fulfilment of the purpose of the institution

No things important for fulfilment of the purpose of the institution come to pass after the balance sheet day.

Activities in a field of environmental protection

Regarding the fact that the type of activity of the Institute is closely connected with topical environmental issues, its operation is focused primarily on this sector: mainly on research of aquatic ecosystems and their relations in landscape and connected environmental hazards and on issues of waste and packaging management.

The Institute lays stress primarily on care of the environment and permanently sustainable development. This care includes the effort of energy saving. The waste is separated to full extent, vegetation is cared about and other relevant activities take place.

Provision of information

In 2018, the Institute dealt with a total of 10 requests for information, of which 8 was in terms of general expert information, 2 of them under Act No. 106/1999 Coll., On Free Access to Information, as amended. No request for information was submitted under Act No. 123/1998 Coll., on the Right to Environmental Information, as amended.

The provision of information contributes to creating a more coherent feedback between public and TGM WRI.

Provision of information under Act No. 106/1999 Coll., on free access to information

In accordance with Section 18 of this Act, TGM WRI publishes an annual report for 2018 on its activities at its website.

Provision of information under Act No. 123/1998 Coll., on the Right to Environmental Information, as amended

No request was submitted under this Act. The majority of requests for information was related to expert issues. Inquiries were related mainly to water management (floodplains, precipitation and water management maps, information on drinking water and water quality).

The development of the number of requests for information in 2017 to 2018 is shown in Table 4. The total number of 2018 requests for information increased slightly compared to the previous year.

Part of the queries concerned issues related to the activities of TGM WRI, in particular providing data for the diploma theses.

Organizational units abroad

T. G. Masaryk Water research Institute, p.r.i., has no organizational units abroad.

Table 4. Overview of the number of requests for information in 2017 and in 2018

Year	Total number of requests	Number of requests under Act No. 106/1999 Coll.	Number of requests under Act No. 123/1998 Coll.	Number of requests for expert information
2017	2	1	0	1
2018	10	2	0	8

Supposed development of the organization in 2019

It can be expected that also the 2019 year will be economically very challenging mainly from point of view of winning contracts of all kinds. TGM WRI, p.r.i., will naturally focus its activity on tasks following from its fundamental mission i.e. mainly on:

- research of aquatic ecosystems and their relations in landscape and connected environmental hazards and on issues of waste and packaging management,

- expert support for the state administration in the field of hydrosphere and waste and packaging management, based on performed research.

The activity of the Institute is focused not only on continuing research projects, grants, commercial projects, but mainly on winning of other projects in the frame of all relevant calls and competitions. The attention is focused of projects financed from resources of EU and also national founders supporting the research and development in sector of water and waste. It's necessary to focus with exceptional intensity on commercial contracts: the only source of financial funds for already absolutely generally requested co-financing in grants.

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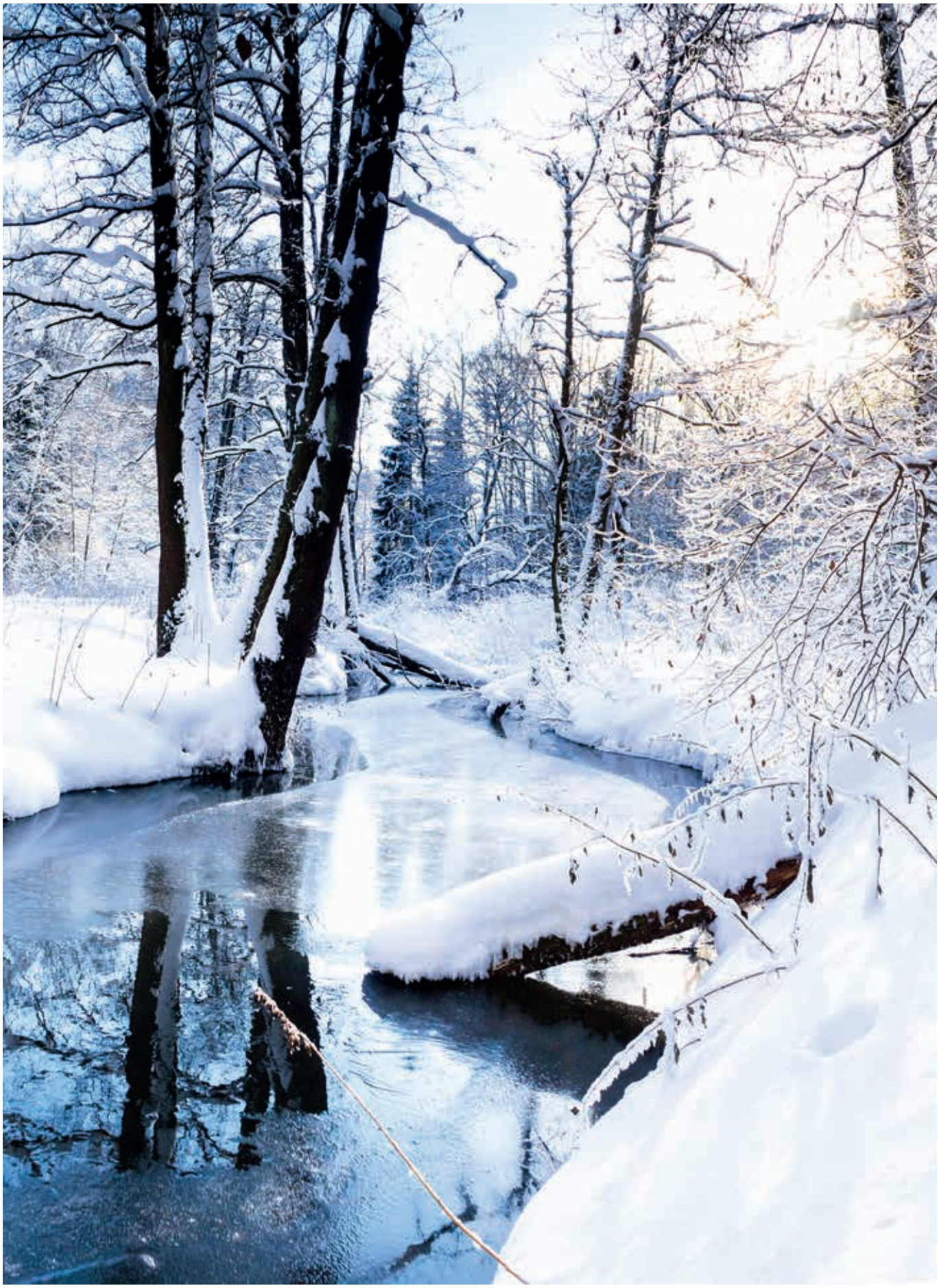

AUDITOR'S REPORT
AND ANNUAL FINANCIAL STATEMENTS 2018

NBG spol. s r.o.

ZPRÁVA NEZÁVISLÉHO AUDITORA
O OVĚŘENÍ ROČNÍ ÚČETNÍ ZÁVĚRKY k 31.12.2018

účetní jednotky

Výzkumný ústav vodohospodářský
T. G. Masaryka,
veřejná výzkumná instituce

NBG spol. s r.o.

ZPRÁVA NEZÁVISLÉHO AUDITORA
O OVĚŘENÍ ROČNÍ ÚČETNÍ ZÁVĚRKY k 31.12.2018

účetní jednotky

Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce

určená pro

ZŘIZOVATELE INSTITUCE

Obsah zprávy:

Přílohy:

Účetní výkazy:

- ROZVAHA v plném rozsahu k 31.12.2018
- VÝKAZ ZISKU A ZTRÁTY v plném rozsahu k 31.12.2018
- PŘÍLOHA k účetní závěrce v plném rozsahu k 31.12.2018
- VÝROČNÍ ZPRÁVA za rok 2018

NBG spol. s r.o.

1. Právní skutečnosti

Příjemce

Název instituce:	Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce
Sídlo:	Praha 6, Podbabská 2582/30, PSČ 160 00
IČ:	000 20 711
Právní forma:	Veřejná výzkumná instituce

Účetní jednotka

Název instituce:	**Výzkumný ústav vodohospodářský T. G. Masaryka veřejná výzkumná instituce**
Sídlo:	Praha 6, Podbabská 2582/30, PSČ 160 00
IČ:	000 20 711
Ředitel:	Ing. Tomáš Urban, Na Petynce 607/62, 169 00 Praha 6 ředitel instituce
Právní forma:	Veřejná výzkumná instituce
Registrace:	Rejstřík veřejných výzkumných institucí vedený Ministerstvem školství, mládeže a tělovýchovy, Karmelitská 529/5, Malá Strana, 118 12 Praha 1
Zřizovatel:	ČR Ministerstvo životního prostředí, se sídlem Vršovická 65, Praha 10, PSČ 100 10

NBG spol. s r.o.

ZPRÁVA NEZÁVISLÉHO AUDITORA

Zřizovateli instituce

Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce

Výrok bez výhrad

Provedli jsme audit přiložené účetní závěrky účetní jednotky **Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce** („Instituce") sestavené na základě českých účetních předpisů, která se skládá z rozvahy k 31.12.2018, výkazu zisku a ztráty za rok končící 31.12.2018 a přílohy této účetní závěrky, která obsahuje popis použitých podstatných účetních metod a další vysvětlující informace. Údaje o Instituci jsou uvedeny v příloze této účetní závěrky.

Podle našeho názoru účetní závěrka podává věrný a poctivý obraz aktiv a pasiv účetní jednotky Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce k 31.12.2018 a nákladů a výnosů a výsledku jejího hospodaření za rok končící 31.12.2018 v souladu s českými účetními předpisy.

Základ pro výrok

Audit jsme provedli v souladu se zákonem o auditorech a standardy Komory auditorů České republiky (KA ČR) pro audit, kterými jsou mezinárodní standardy pro audit (ISA) případně doplněné a upravené souvisejícími aplikačními doložkami. Naše odpovědnost stanovená těmito předpisy je podrobněji popsána v oddílu Odpovědnost auditora za audit účetní závěrky. V souladu se zákonem o auditorech a Etickým kodexem přijatým Komorou auditorů České republiky jsme na Instituci nezávislí a splnili jsme i další etické povinnosti vyplývající z uvedených předpisů. Domníváme se, že důkazní informace, které jsme shromáždili, poskytují dostatečný a vhodný základ pro vyjádření našeho výroku.

Ostatní informace uvedené ve Výroční zprávě

Ostatními informacemi jsou v souladu s § 2 písm. b) zákona o auditorech informace uvedené ve výroční zprávě mimo účetní závěrku a naši zprávu auditora. Za ostatní informace odpovídá ředitel Instituce.

Náš výrok k účetní závěrce se k ostatním informacím nevztahuje. Přesto je však součástí našich povinností souvisejících s ověřením účetní závěrky seznámení se s ostatními informacemi a posouzení, zda ostatní informace nejsou ve významném (materiálním) nesouladu s účetní závěrkou či s našimi znalostmi o účetní jednotce získanými během ověřování účetní závěrky nebo zda se jinak tyto informace nejeví jako významně (materiálně) nesprávné. Také posuzujeme, zda ostatní informace byly ve všech významných (materiálních) ohledech vypracovány v souladu s příslušnými právními předpisy. Tímto posouzením se rozumí, zda ostatní informace splňují požadavky právních předpisů na formální náležitosti a postup vypracování ostatních informací v kontextu významnosti (materiality), tj. zda případné nedodržení uvedených požadavků by bylo způsobilé ovlivnit úsudek činěný na základě ostatních informací.

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Na základě provedených postupů, do míry, již dokážeme posoudit, uvádíme, že

- ostatní informace, které popisují skutečnosti, jež jsou též předmětem zobrazení v účetní závěrce, jsou ve všech významných (materiálních) ohledech v souladu s účetní závěrkou a
- ostatní informace byly vypracovány v souladu s právními předpisy.

Dále jsme povinni uvést, zda na základě poznatků a povědomí o Instituci, k nimž jsme dospěli při provádění auditu, ostatní informace neobsahují významné (materiální) věcné nesprávnosti. V rámci uvedených postupů jsme v obdržených ostatních informacích žádné významné (materiální) věcné nesprávnosti nezjistili.

Odpovědnost ředitele Instituce za účetní závěrku

Ředitel Instituce odpovídá za sestavení účetní závěrky podávající věrný a poctivý obraz v souladu s českými účetními předpisy a za takový vnitřní kontrolní systém, který považuje za nezbytný pro sestavení účetní závěrky tak, aby neobsahovala významné (materiální) nesprávnosti způsobené podvodem nebo chybou. Při sestavování účetní závěrky je ředitel Instituce povinen posoudit, zda je Instituce schopna nepřetržitě trvat a pokud je to relevantní, popsat v příloze účetní závěrky záležitosti týkající se jejího nepřetržitého trvání a použití předpokladu nepřetržitého trvání při sestavení účetní závěrky, s výjimkou případů, kdy ředitel plánuje zrušení Instituce nebo ukončení její činnosti, resp. kdy nemá jinou reálnou možnost, než tak učinit.

Za dohled nad procesem účetního výkaznictví v Instituci odpovídá ředitel.

Odpovědnost auditora za audit účetní závěrky

Naším cílem je získat přiměřenou jistotu, že účetní závěrka jako celek neobsahuje významnou (materiální) nesprávnost způsobenou podvodem nebo chybou a vydat zprávu auditora obsahující náš výrok. Přiměřená míra jistoty je velká míra jistoty, nicméně není zárukou, že audit provedený v souladu s výše uvedenými předpisy ve všech případech v účetní závěrce odhalí případnou existující významnou (materiální) nesprávnost. Nesprávnosti mohou vznikat v důsledku podvodů nebo chyb a považují se za významné (materiální), pokud lze reálně předpokládat, že by jednotlivě nebo v souhrnu mohly ovlivnit ekonomická rozhodnutí, která uživatelé účetní závěrky na jejím základě přijmou.

Při provádění auditu v souladu s výše uvedenými předpisy je naší povinností uplatňovat během celého auditu odborný úsudek a zachovávat profesní skepticismus. Dále je naší povinností:

- Identifikovat a vyhodnotit rizika významné (materiální) nesprávnosti účetní závěrky způsobené podvodem nebo chybou, navrhnout a provést auditorské postupy reagující na tato rizika a získat dostatečné a vhodné důkazní informace, abychom na jejich základě mohli vyjádřit výrok. Riziko, že neodhalíme významnou (materiální) nesprávnost, k níž došlo v důsledku podvodu, je větší než riziko neodhalení významné (materiální) nesprávnosti způsobené chybou, protože součástí podvodu mohou být tajné dohody, falšování, úmyslná opomenutí, nepravdivá prohlášení nebo obcházení vnitřních kontrol ředitelem.

- Seznámit se s vnitřním kontrolním systémem Instituce relevantním pro audit v takovém rozsahu, abychom mohli navrhnout auditorské postupy vhodné s ohledem na dané okolnosti, nikoli abychom mohli vyjádřit názor na účinnost vnitřního kontrolního systému.
- Posoudit vhodnost použitých účetních pravidel, přiměřenost provedených účetních odhadů a informace, které v této souvislosti ředitel Instituce uvedl v příloze účetní závěrky.
- Posoudit vhodnost použití předpokladu nepřetržitého trvání při sestavení účetní závěrky ředitelem a to, zda s ohledem na shromážděné důkazní informace existuje významná (materiální) nejistota vyplývající z událostí nebo podmínek, které mohou významně zpochybnit schopnost Instituce trvat nepřetržitě. Jestliže dojdeme k závěru, že taková významná (materiální) nejistota existuje, je naší povinností upozornit v naší zprávě na informace uvedené v této souvislosti v příloze účetní závěrky, a pokud tyto informace nejsou dostatečné, vyjádřit modifikovaný výrok. Naše závěry týkající se schopnosti Instituce trvat nepřetržitě vycházejí z důkazních informací, které jsme získali do data naší zprávy. Nicméně budoucí události nebo podmínky mohou vést k tomu, že Instituce ztratí schopnost trvat nepřetržitě.
- Vyhodnotit celkovou prezentaci, členění a obsah účetní závěrky, včetně přílohy a dále to, zda účetní závěrka zobrazuje podkladové transakce a události způsobem, který vede k věrnému zobrazení.

Naší povinností je informovat ředitele mimo jiné o plánovaném rozsahu a načasování auditu a o významných zjištěních, která jsme v jeho průběhu učinili, včetně zjištěných významných nedostatků ve vnitřním kontrolním systému.

Auditorská společnost

NBG, spol. s r. o.
Na Pankráci 1618/30, 140 00 Praha 4
Registrace: MS v Praze - oddíl C, vložka 34055
Číslo oprávnění Komory auditorů ČR 134

Realizační tým:

Statutární auditor: Ing. Tomáš Brumovský
číslo oprávnění KA ČR 0587

Asistent: Ing. Petr Holada

V Praze dne 25. dubna 2019

NBG spol. s r.o.
Na Pankráci 1618/30, 140 00 Praha 4
DIČ: CZ62587358 email: nbg@nbg.cz
Tel.: 234633291 Fax: 2346332[illegible]

NBG, spol. s r.o.
Ing. Tomáš Brumovský
jednatel společnosti

NBG, spol. s r.o. IČO 62587358 NBG č. oprávnění Komory auditorů České republiky 134 Na Pankráci 1618/30, 140 00 Praha 4

Ing. Tomáš Brumovský
statutární auditor

PŘÍLOHY

Sestaveno podle vyhl. Č. 504/2002 Sb. v platném znění

ROZVAHA
v plném rozsahu

(v celých tisících Kč)

ke dni 31.12.2018

IČ
00020711

OKEČ:

Název, sídlo a právní forma účetní jednotky

Výzkumný ústav vodohospodářský T.G.Masaryka, v.v.i.
Podbabská 2582/30
Praha 6

Účetní jednotka doručí:
1x příslušnému finančnímu orgánu

		Stav k prvnímu dni účetního období	Stav k poslednímu dni účetního období
		1	2
AKTIVA	001		
A. Dlouhodobý majetek celkem součet řádků 3+11+22+30	002	317 578	329 610
I. Dlouhodobý nehmotný majetek celkem součet ř. 004 až 010	003	44 718	48 991
1.Nehmot. výsledky výzkumu a vývoje (012)	004		
2.Software (013)	005	41 695	44 549
3.Ocenitelná práva (014)	006	204	204
4.Drobný dlouhodobý nehmotný majetek (018)	007	2 819	2 653
5.Ostatní dlouhodobý nehmotný majetek (019)	008		
6.Nedokončený dlouhodobý nehmotný majetek (041)	009		1 585
7.Poskytnuté zálohy na dlouhodobý nehmotný majetek (051)	010		
II. Dlouhodobý hmotný majetek celkem součet ř. 012 až 021	011	711 842	717 721
1.Pozemky (031)	012	11 802	11 776
2.Umělecká díla, předměty a sbírky (032)	013	100	100
3.Stavby (021)	014	430 900	432 833
4.Hmotné movité věci a jejich soubory (022)	015	236 637	243 572
5.Pěstitelské celky trvalých porostů (025)	016		
6.Dospělá zvířata a jejich skupiny (026)	017		
7.Drobný dlouhodobý hmotný majetek (028)	018	31 339	29 332
8.Ostatní dlouhodobý hmotný majetek (029)	019		
9.Nedokončený dlouhodobý hmotný majetek (042)	020	1 064	108
10.Poskytnuté zálohy na dlouhodobý hmotný (052) majetek	021		
III. Dlouhodobý finanční majetek celkem součet ř. 023 až 028	022		
1.Podíly - ovládaná nebo ovládající osoba (061)	023		
2.Podíly - podstatný vliv (062)	024		
3.Dluhové cenné papíry držené (063) do splatnosti	025		
4.Zápůjčky organizačním složkám (066)	026		
5.Ostatní dlouhodobé zápůjčky (067)	027		
6.Ostatní dlouhodobý finanční majetek (069)	028		
IV. Oprávky k dlouhodobému majetku celkem součet ř. 030 až 040	029	-438 982	-437 102
1.Oprávky k nehmotným výsledkům (-) (072) výzkumu a vývoje	030		
2.Oprávky k softwaru (-) (073)	031	-41 175	-38 679

		Stav k prvnímu dni účetního období	Stav k poslednímu dni účetního období
		1	2
3.Oprávky k ocenitelným právům (-) (074)	032	-204	-204
4.Oprávky k drobnému dlouhodobému nehmotnému majetku (-) (078)	033	-2 819	-2 653
5.Oprávky k ostatnímu dlouhodobému nehmotnému majetku (-) (079)	034		
6.Oprávky ke stavbám (-) (081)	035	-141 913	-150 373
7.Oprávky k samost. hmotným movit. věcem a souborům hmotných movitých věcí (-) (082)	036	-221 532	-215 861
8.Oprávky k pěstitelským celkům trvalých porostů (-) (085)	037		
9.Oprávky k základnímu stádu a tažným zvířatům (-) (086)	038		
10.Opravky k drobnému dlouhodobému hmotnému majetku (-) (088)	039	-31 339	-29 332
11.Oprávky k ostatnímu dlouhodobému hmotnému majetku (-) (089)	040		
B. Krátkodobý majetek celkem součet řádků 42+52+72+80	041	86 981	82 702
I. Zásoby celkem součet ř. 043 až 051	042	58	57
1.Materiál na skladě (112)	043	58	57
2.Materiál na cestě (119)	044		
3.Nedokončená výroba (121)	045		
4.Polotovary vlastní výroby (122)	046		
5.Výrobky (123)	047		
6.Mladá a ostatní zvířata a jejich skupiny(124)	048		
7.Zboží na skladě a v prodejnách (132)	049		
8.Zboží na cestě (139)	050		
9.Poskytnuté zálohy na zásoby (316)	051		
II. Pohledávky celkem součet ř. 053 až 070 + 071	052	9 433	9 721
1.Odběratelé (311)	053	8 683	9 166
2.Směnky k inkasu (312)	054		
3.Pohledávky za eskontované cenné papíry (313)	055		
4.Poskytnuté provozní zálohy (314)	056	727	483
5.Ostatní pohledávky (315)	057		
6.Pohledávky za zaměstnanci (335)	058	23	2
7.Pohledávky za institucemi soc. zab. a veř. zdravot. pojištění (336)	059		
8.Daň z příjmů (341)	060		70
9.Ostatní přímé daně (342)	061		
10.Daň z přidané hodnoty (343)	062		
11.Ostatní daně a poplatky (345)	063		
12.Nároky na dotace a ostatní zúčtování se státním rozpočtem (346)	064		
13.Nároky na dotace a ostatní zúčtování s rozp. orgánů územ. samospr. celků (348)	065		
14.Pohledávky za společníky sdruženými ve společnosti (358)	066		
15.Pohledávky z pevných term. operací a opcí (373)	067		
16.Pohledávky z vydaných dluhopisů (375)	068		
17.Jiné pohledávky (378)	069		

		Stav k prvnímu dni účetního období	Stav k poslednímu dni účetního období
		1	2
18.Dohadné účty aktivní (388)	070		
19.Opravná položka k pohledávkám (-) (391)	071		
III. Krátkodobý finanční majetek celkem součet ř. 073 až 079	072	73 432	49 945
1.Peněžní prostředky v pokladně (211)	073	196	109
2.Ceniny (213)	074	17	22
3.Peněžní prostředky na účtech (221 - 225)	075	73 219	49 814
4.Majetkové cenné papíry k obchodování (251)	076		
5.Dluhové cenné papíry k obchodování (253)	077		
6.Ostatní cenné papíry (256)	078		
7.Peníze na cestě (+/-) (262)	079		
IV. Jiná aktiva celkem součet ř. 081 až 082	080	4 058	2 979
1.Náklady příštích období (381)	081	941	401
2.Příjmy příštích období (385)	082	3 117	2 578
AKTIVA CELKEM ř.002 + 041	083	404 559	392 312
	084		
PASIVA	085		
A. Vlastní zdroje celkem součet řádků 87+91	086	342 340	363 021
I. Jmění celkem součet ř. 088 až 090	087	326 637	355 294
1.Vlastní jmění (901)	088	320 473	332 503
2.Fondy (911)	089	6 164	22 791
3.Oceňovací rozdíly z přecenění (921) finančního majetku a závazků	090		
II. Výsledek hospodaření celkem součet ř. 092 až 094	091	15 703	7 727
1.Účet výsledku hospodaření (+/-) (963)	092		7 727
2.Výsledek hospodaření (+/-) (931) ve schvalovacím řízení	093	15 703	
3.Nerozdělený zisk, neuhrazená (+/-) (932) ztráta minulých let	094		
B. Cizí zdroje celkem součet řádků 96 + 98 + 106 + 130	095	62 219	29 291
I. Rezervy celkem ř. 97	096		
1.Rezervy (941)	097		
II. Dlouhodobé závazky celkem součet ř. 99 až 105	098		
1.Dlouhodobé úvěry (951)	099		
2.Vydané dluhopisy (953)	100		
3.Závazky z pronájmu (954)	101		
4.Přijaté dlouhodobé zálohy (955)	102		
5.Dlouhodobé směnky k úhradě (958)	103		
6.Dohadné účty pasivní (z účtu 389)	104		
7.Ostatní dlouhodobé závazky (959)	105		
III. Krátkodobé závazky celkem součet ř. 107 až 129	106	56 474	28 561
1.Dodavatelé (321)	107	3 321	2 031
2.Směnky k úhradě (322)	108		
3.Přijaté zálohy (324)	109		
4.Ostatní závazky (325)	110		
5.Zaměstnanci (331)	111	4 741	5 358
6.Ostatní závazky vůči zaměstnancům (333)	112		

		Stav k prvnímu dni účetního období	Stav k poslednímu dni účetního období
		1	2
7.Závazky k institucím soc. zabezp. (336) a veř. zdravotního pojištění	113	2 666	3 007
8.Daň z příjmů (341)	114	2 378	
9.Ostatní přímé daně (342)	115	711	834
10.Daň z přidané hodnoty (343)	116	3 937	3 138
11.Ostatní daně a poplatky (345)	117		5
12.Závazky ze vztahu ke státnímu rozpočtu (346)	118	38 600	14 335
13.Závazky ze vztahu k rozpočtu orgánů (348) územních samosprávných celků	119		
14.Závazky z upsaných nesplacených (367) cenných papírů a podílů	120		
15.Závazky ke společníkům (368) sdruženým ve společnosti	121		
16.Závazky z pevných termínovaných (373) operací a opcí	122		
17.Jiné závazky (379)	123	120	-203
18.Krátkodobé úvěry (231)	124		
19.Eskontní úvěry (232)	125		
20.Vydané krátkodobé dluhopisy (241)	126		
21.Vlastní dluhopisy (-) (255)	127		
22.Dohadné účty pasivní (z účtu 389)	128		56
23.Ostatní krátkodobé finanční výpomoci (249)	129		
IV. Jiná pasiva celkem součet ř. 131 až 132	130	5 745	730
1.Výdaje příštích období (383)	131	802	730
2.Výnosy příštích období (384)	132	4 943	
PASIVA CELKEM ř. 086 + 095	133	404 559	392 312

Sestaveno dne: 13.03.2019

Razítko:

Podpis pověřené osoby:

Podpis osoby odpovědné za sestavení:

Telefon:

Orsoft Finanční účetnictví 19.1

ORTEX spol. s r.o. Hradec Králové

Podle souborů: VYR - SRozPO16 (1); VYS - SSRozPO (1); SIR - SRRozvPO (1);

Varianta tisku: 44; Šablona OOMV: SvyXNO5u.

NBG spol. s r.o.
Na Poříčí 1018/30, 110 00 Praha 1
DIČ: CZ26587356, email: nbg@nbg.cz
Tel.: 234633231, Fax: 234633230

VÝKAZ ZISKU A ZTRÁTY

v plném rozsahu

Sestaveno podle vyhl. č. 500/2002 Sb.
v platném znění

31.12.2018

v tisících Kč

Účetní jednotka doručí
ji příslušnému finančnímu úřadu

IČO
00020711

Název, sídlo a právní forma
účetní jednotky

Výzkumný ústav vodohospodářský
T. G. Masaryka, v.v.i.
Podbabská 2582/30
Praha 6

Název ukazatele		Číslo řádku	za účetní období celkem	
a		b	Činnost	
A. NÁKLADY		c	hlav. a další (R)	jiná (R)
I. Spotřebované nákupy a nakupované služby	Součet ř. 002 až 007	1	57 699	3 938
1. Spotřeba materiálu, energie a ostatních neskladovaných dodávek	(501,502,503)	2	17 675	1 332
2. Prodané zboží	(504)	3		
3. Opravy a udržování	(511)	4	6 261	1 002
4. Náklady na cestovné	(512)	5	2 541	73
5. Náklady na reprezentaci	(513)	6	171	7
6. Ostatní služby	(518)	7	31 051	1 524
II. Změny stavu zásob vlastní činnosti a aktivace	Součet ř. 009 až 011	8		
7. Změna stavu zásob vlastní činnosti	(56)	9		
8. Aktivace materiálu, zboží a vnitroorganizačních služeb	(571)	10		
9. Aktivace dlouhodobého majetku	(57)	11		
III. Osobní náklady	Součet ř. 013 až 017	12	115 890	2 524
10. Mzdové náklady	(521)	13	84 002	1 841
11. Zákonné sociální pojištění	(524)	14	27 997	599
12. Ostatní sociální pojištění		15		
13. Zákonné sociální náklady	(525,526,527)	16	3 891	84
14. Ostatní sociální náklady	(528)	17		
IV. Daně a poplatky	ř. 019	18	176	31
15. Daně a poplatky	(531,532,538)	19	176	31
V. Ostatní náklady	Součet ř. 021 až 027	20	4 388	83
16. Smluvní pokuty, úroky z prodlení, ostatní pokuty a penále	(541,542)	21	170	4
17. Odpis nedobytné pohledávky	(543)	22		
18. Nákladové úroky	(544)	23		
19. Kursové ztráty	(545)	24	93	2
20. Dary	(546)	25		
21. Manka a škody	(548)	26		
22. Jiné ostatní náklady	(549)	27	4 125	77
VI. Odpisy, prodaný majetek, tvorba a použití rezerv a opravných položek	Součet ř. 029 až 033	28	13 559	295
23. Odpisy dlouhodobého majetku	(551)	29	13 559	295
24. Prodaný dlouhodobý majetek	(552)	30		
25. Prodané cenné papíry a podíly	(553)	31		
26. Prodaný materiál	(554)	32		
27. Tvorba a použití rezerv a opravných položek	(556,559)	33		
VII. Poskytnuté příspěvky	ř. 035	34	80	
28. Poskytnuté členské příspěvky a příspěvky zúčtované mezi organizačními složkami	(581,582)	35	80	
VIII. Daň z příjmů	ř. 037	36	1 095	24
29. Daň z příjmů	(591,595)	37	1 095	24
Náklady celkem	ř. 001+008+012+018+020+028+034	38	191 792	6 871

Název ukazatele		Číslo řádku	za účetní období celkem	
a		b	Činnost	
B. VÝNOSY		x	hlav. a další (8)	jiná (9)
I. Provozní dotace	**ř. 040**	39	130 154	
1. Provozní dotace	(691)	40	130 154	
II. Přijaté příspěvky	**Součet ř. 042 až 044**	41		
2. Přijaté příspěvky zúčtovované mezi org. složkami	(681)	42		
3. Přijaté příspěvky (dary)	(682)	43		
4. Přijaté členské příspěvky	(684)	44		
III. Tržby za vlastní výkony a za zboží	**(601,602,604)**	45	48 768	13 031
IV. Ostatní výnosy	**Součet ř. 047 až 052**	46	15 236	320
5. Smluvní pokuty, úroky z prodlení, ostatní pokuty a penále	(641,642)	47		
6. Platby za odepsané pohledávky	(643)	48		
7. Výnosové úroky	(644)	49	26	1
8. Kursové zisky	(645)	50		
9. Zúčtování fondů	(648)	51	2 121	34
10. Jiné ostatní výnosy	(649)	52	13 089	285
V. Tržby z prodeje majetku	**Součet ř. 054 až 058**	53		
11. Tržby z prodeje dlouhodobého nehmot. a hmot. majetku	(951)	54		
12. Tržby z prodeje cenných papírů a podílů	(653)	55		
13. Tržby z prodeje materiálu	(654)	56		
14. Výnosy z krátkodobého finančního majetku	(655)	57		
15. Výnosy z dlouhodobého finančního majetku	(952)	58		
Výnosy celkem	**ř. 039+041+045+046+053**	59	194 158	13 351
C. Výsledek hospodaření před zdaněním (+/-)	**ř.059 - ř.038**	60	2 366	6 480
D. Výsledek hospodaření po zdanění (+/-)	**ř.060 - ř.036**	61	1 271	6 456

Odesláno dne:

Razítko:

Podpis osoby odpovědné za schválení:
Ing. Tomáš Urban

Podpis osoby odpovědné za sestavení:
Ing. Jiří Fiala

Telefon:
220197459

Email:
jiri.fiala@vuv.cz

Okamžik schválení:
14.3.2019 8:00

Okamžik sestavení:
13.03.2019, 08:51:14

NBG spol. s r.o.
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VÚV TGM Výzkumný ústav vodohospodářský T. G. Masaryka veřejná výzkumná instituce

Příloha k účetní závěrce za rok 2018

I. Obecné údaje

Popis účetní jednotky

název účetní jednotky: Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce

a) sídlo: Podbabská 2582/30, Praha 6, Česká republika
b) IČ: 00020711
c) právní forma: veřejná výzkumná instituce
d) rozvahový den: 31.12.2018
e) zřizovatel: Ministerstvo životního prostředí České republiky se sídlem Vršovická 65, Praha 10, 100 100, ČR
f) účel zřízení:
   - výzkum stavu, užívání a změn ekosystémů a jejich vazeb v krajině a souvisejících environmentálních rizik, hospodaření s odpady a obaly
   - odborná podpora ochrany vod, protipovodňové prevence a hospodaření s odpady a obaly, založená na uvedeném výzkumu

Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, je zapsána v rejstříku veřejných výzkumných institucí vedeném Ministerstvem školství, mládeže a tělovýchovy ČR ke dni 1. ledna 2007.

Orgány účetní jednotky ke dni 31.12.2018

a) Ing. Tomáš Urban, ředitel

   Je statutárním orgánem a rozhoduje ve všech věcech veřejné výzkumné instituce, pokud nejsou zákonem svěřeny působnosti rady instituce, dozorčí rady nebo zřizovatele.

b) Rada VÚV T. G. Masaryka, v.v.i. ve složení:

Ing. Anna Hrabánková – interní členka a předsedkyně
Výzkumný ústav vodohospodářský T.G. Masaryka, veřejná výzkumná instituce Praha
Ing. Petr tušil, Ph.D, MBA. – interní člen a místopředseda
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, pobočka Ostrava
Ing. Miriam Dzuráková – interní členka
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, pobočka Brno
Ing. Jiří Kučera – interní člen
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce,
Ing. Adam Vizina, Ph.D. – interní člen
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce,

Ing. Jaroslav Beneš – externí člen
Povodí Vltavy, s.p.
Doc. Ing. Aleš Havlík, CSc. – externí člen
České vysoké učení technické, fakulta stavební, Praha
Ing. Jaroslav Kinkor – externí člen
Český hydrometeorologický ústav, Praha
Mg. Vít Kodeš, Ph.D. – externí člen
Český hydrometeorologický ústav, Praha

c) dozorčí rada VÚV T. G. Masaryka, v.v.i. ve složení:

Ing. Jan Landa – předseda,
Ministerstvo životního prostředí ČR, 1.náměstek ministra – ředitel sekce úřadu ministerstva
Ing. Berenika Peštová Ph. D.,
Ministerstvo životního prostředí ČR
Ing. Vladimír Sassman,
Ministerstvo životního prostředí ČR
Mgr. Ladislav Faigl
Ministerstvo životního prostředí ČR
RNDr. Jan Daňhelka, Ph. D.
Český hydrometeorologický ústav
Ing. Roman Dvořák,
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce,

Osobní náklady

		Běžné účetní období v Kč, není-li uvedeno jinak
Zaměstnanci	průměrný evidenční přepočtený počet zaměstnanců	190,15
	z toho řídících pracovníků	14
Mzdové náklady	mzdové náklady celkem (bez OON)	85 842 646
	z toho řídících pracovníků	10 394 956
	OON	1 653 275
Sociální a zdravotní pojištění	sociální a zdravotní pojištění celkem	28 595 881
	z toho řídících pracovníků	3 465 726
Příděl sociálního fondu		1 681 086
Ostatní sociální náklady		792 751
Rada VÚV T. G. Masaryka, v.v.i.	odměny členům Rady VÚV T. G. Masaryka, v.v.i.	---
	sociální a zdravotní pojištění	---
Dozorčí rada VÚV T. G. Masaryka, v.v.i.	odměny členům Dozorčí rady VÚV T. G. Masaryka	---
	sociální a zdravotní pojištění	---
Bývalé statutární orgány a dozorčí orgány	vzniklé či sjednané penzijní závazky bývalých členů vyjmenovaných orgánů	---
	sociální náklady	---

Účetní jednotka neposkytla v roce 2018, které jsou statutárním orgánem, členům statutárních či jiných řídících dozorčích orgánů žádné půjčky, úvěry, zajištění jak v peněžní, tak nepeněžní formě.

Nejsou známy žádné skutečnosti o účasti členů statutárních, kontrolních nebo jiných orgánů účetní jednotky a jejich rodinných příslušníků v osobách, s nimiž účetní jednotka uzavřela ve vykazovaném období obchodní smlouvy nebo jiné smluvní vztahy.
Účetní jednotka ke dni účetní závěrky nevykazuje žádné závazky a pohledávky vůči propojeným osobám.
Výzkumný ústav vodohospodářský T. G. Masaryka, v.v.i, je plátcem daně z přidané hodnoty s měsíčním zdaňovacím obdobím.
Příloha je zpracována v souladu se zákonem č. 563/1991 Sb. o účetnictví, v platném znění, a vyhláškou č. 504/2002 Sb., kterou se stanoví obsah účetní závěrky pro účetní jednotky, u kterých hlavním předmětem činnosti není podnikání, pokud účtují v soustavě podvojného účetnictví, v platném znění. Údaje vycházejí z účetních písemností účetní jednotky (účetní doklady, účetní knihy a ostatní účetní písemnosti) a z dalších podkladů, které má účetní jednotka k dispozici. Hodnotové údaje jsou vykázány v celých korunách českých, pokud není uvedeno jinak.

II. Informace o použitých účetních metodách, obecných účetních zásadách a způsobech oceňování

Předkládaná účetní závěrka byla zpracována v souladu se zákonem č. 563/1991 Sb. o účetnictví, v platném znění, a s vyhláškou č. 504/2002 Sb., kterou se stanoví obsah účetní závěrky pro účetní jednotky, u kterých hlavním předmětem činnosti není podnikání, pokud účtují v soustavě podvojného účetnictví, v platném znění.

Při stanovení rozsahu a způsobů vedení účetnictví se účetní jednotka řídí zákonem č. 563/1991 sb., kterou se stanoví obsah účetní závěrky pro účetní jednotky, u kterých hlavním předmětem činnosti není podnikání, pokud účtují v soustavě podvojného účetnictví, v platném znění.

Obecné informace
Účetní jednotka vede podvojné účetnictví v plném rozsahu. Účetním obdobím je kalendářní rok.
V souladu § 29 zákona č. 341/2005 Sb. a § 20 zákona č. 563/1991 Sb. o účetnictví, v platném znění je VÚV T. G. Masaryka, v.v.i., povinen mít účetní závěrku ověřenou auditorem.
Účetní data se zpracovávají s použitím účetního programu ORSOFT firmy ORTEX, spol. s r.o., se sídlem Hradec Králové, Resslova 935/3, PSČ 500 02.
Účetní záznamy se uchovávají v sídle účetní jednotky.

Změny v účetní metodice
Ve sledovaném účetním období nedošlo k podstatným změnám způsobu oceňování, postupu odpisování a postupu účtování oproti předcházejícímu účetnímu období.
Účetní jednotka plně respektuje účetní metody a nedošlo k odchýlení od těchto metod ve smyslu §7 odst. 5 zákona č. 563/1991 Sb., o účetnictví v platném znění.

Účtování a ocenění zásob
Pořízení a úbytek zásob se účtuje: pracoviště Praha – způsobem A,
pracoviště Brno a Ostrava – způsobem B.

Způsob ocenění zásob:

- pořízení od jiných subjektů – pořizovací cenou
- vytvořených vlastní činností – vlastními náklady
- pořízených bezúplatně, nalezených zásob, přebytků – reprodukční cenou

Zásoby stejného druhu jsou vedeny v ceně zjištěné váženým aritmetickým průměrem z pořizovacích cen nebo vlastních nákladů. Vyskladnění zásob se oceňuje v cenách, v nichž jsou zásoby oceněny na skladě.

Ocenění dlouhodobého hmotného a nehmotného majetku

Dlouhodobým hmotným majetkem se rozumí majetek, jehož cena je vyšší než 40.000 Kč a doba použitelnosti delší než 1 rok.
Dlouhodobým nehmotným majetkem se rozumí majetek, jehož cena je vyšší než 60.000 Kč a doba použitelnosti delší než 1 rok.
Způsob ocenění dlouhodobého hmotného a nehmotného majetku:

- pořízeného od jiných subjektů – pořizovací cenou
- vytvořeného vlastní činností – vlastními náklady
- pořízeného bezúplatně, nalezeného – reprodukční cenou

Ocenění podílů a cenných papírů

Podíly a cenné papíry nejsou evidovány

Odpisování

a) v r. 2018 drobný hmotný majetek s pořizovací cenou do 40.000 Kč při jeho zařazení do užívání byl jednorázově účtován do nákladů na účet 501 – Spotřeba materiálu. Drobný hmotný majetek s pořizovací cenou do 1.000 Kč a majetek s pohyblivým el. přívodem pod 1.000 Kč byl po předchozím zaevidování v operativní evidenci veden na podrozvahových účtech
b) v r. 2018 drobný nehmotný majetek s pořizovací cenou do 60.000 Kč při jeho zařazení do užívání byl jednorázově účtován do nákladů na účet 518 – Ostatní služby. Drobný nehmotný majetek s pořizovací cenou od 1.000 Kč byl po předchozím zaevidování v operativní evidenci veden na podrozvahových účtech
c) v r. 2018 účetní jednotka pokračovala v účetním odepisování dlouhodobého hmotného a nehmotného majetku, převedeného na ni zřizovatelem, způsobem započatým příspěvkovou organizací

Pro odpisování dlouhodobého investičního majetku jak převedeného zřizovatelem, tak i nabytého od r. 2007 se používal způsob rovnoměrného odpisování. Účetní odpisy se účtovaly měsíčně.
Daňové odpisy účetní jednotka uplatňuje pouze z dlouhodobého investičního majetku pořízeného od 1. 1. 2007 z vlastních zdrojů. Majetek je zatříděn do odpisových skupin dle přílohy č. 1 k zákonu č. 586/1992 Sb., o daních z příjmů, v platném znění.

d) Drobný dlouhodobý hmotný a nehmotný majetek evidovaný k 1. 1. 2007 na účtech 028 a 018 se účtuje na těchto účtech i nadále až do jeho vyřazení

Přepočet údajů v cizí měně na českou měnu

Pro přepočet údajů v cizích měnách na českou měnu se používal denní kurz ČNB. Pro přepočet pohledávek vyjádřených v cizí měně a evidovaných k rozvahovému dni byl použit kurz ČNB k 31. 12. 2018.

NBG spol. s r.o.
Na Poříčí 1618/30, 140 00 Praha 4
DIČ: CZ60697358, email: nbg@nbg.cz
Tel. 234633201, Fax: 234633100

Opravné položky
Účetní jednotka netvořila v r. 2018 opravné položky.

III. Doplňující informace k rozvaze a k výkazu zisku a ztráty

Významné položky aktiv a pasiv

Rozpis položky Samostatné movité věci a soubory movitých věcí

Skupina	Běžné účetní období		Minulé účetní období	
	PC (účet 022)	Oprávky (účet 082)	PC (účet 022)	Oprávky (účet 082)
Stroje, přístroje a zařízení	199 863 686	180 270 286	196 276 340	185 531 222
Výpočetní technika	18 836 921	15 801 096	18082242	16569489
Dopravní prostředky	10 802 006	7 872 885	8192301	7495318
Inventář	11 919 258	11 919 258	11935728	11935728
Předměty z drahých kovů	2 149 998	---	2 149 998	---
CELKEM	**243 571 869**	**215 860 524**	**236636609**	**221531757**

V běžném účetním období účetní jednotka uvedla do provozu dlouhodobý hmotný a nehmotný majetek v celkové pořizovací ceně **25 692 506 Kč**. Z evidence byl likvidací vyřazen dlouhodobý hmotný a nehmotný majetek v celkové pořizovací ceně **13 994 956 Kč**.

Významné položky výkazu zisku a ztráty
Jelikož dlouhodobý hmotný a nehmotný majetek pořízený z vlastních zdrojů používá účetní jednotka pro všechny své činnosti, byly odpisy tohoto majetku zahrnuty do režijních nákladů a rozpuštěny mezi všemi činnostmi níže popsaným způsobem.

Rozpouštění režijních nákladů
Jako rozvrhová základna pro rozdělení režijních nákladů mezi jednotlivými činnostmi pro účely zpracování účetní závěrky za rok 2018 posloužily přímé osobní náklady.
Ve výsledku byly režijní náklady rozpuštěny v poměru:

- hlavní činnost: 82,84%
- další činnost: 15,03%
- jiná činnost: 2,13%

NBG, spol. s r.o.
Na Příkopě 1618/30, 140 00 Praha 4
DIČ: CZ62567368, email: nbg@nbg.cz
Tel.: 234633231, Fax: 234633230

Rozpis provozních a investičních dotací z veřejného rozpočtu

Účel dotace	Poskytovatel	Druh dotace (provozní/investiční)	Běžné účetní období v Kč	Minulé účetní období v Kč
Institucionální podpora na dlouhodobý koncepční rozvoj výzkumné organizace	MŽP ČR	neinvestiční	46 098 671	19 884 067
Účelová na VVaI	MZe, TA ČR, MV ČR, Min. kultury, GA ČR, ČRA, MŽP	neinvestiční	29 075 027	31 365 180
Ostatní	Interreg, MHMP, OPŽP, NF aj.	neinvestiční	54 980 291	19 473 379
Dotace provozní celkem			**130 153 990**	**70 722 626**
Institucionální podpora na dlouhodobý koncepční rozvoj výzkumné organizace	MŽP	investiční	24 000 000	2 700 000
Účelová na VVaI, ostatní		investiční	70 000	500 000
Dotace investiční celkem			**24 070 000**	**3 200 000**

Rozpis majetku zatíženého zástavním právem

Účetní jednotka nemá k datu závěrky hmotný a nehmotný majetek zatížený zástavním právem, popř. u nemovitostí věcným břemenem.

Přehled majetku s výrazně rozdílným tržním a účetním ohodnocením

Hodnota majetku je vyjádřena v historických cenách, jelikož k tržnímu ocenění majetku v r. 2018 nedošlo. Tržní ohodnocené se zjišťuje vždy při prodeji majetku.

Rezervy

V uplynulém účetním období nebyly čerpány a tvořeny rezervy.

Rozpis dlouhodobých bankovních úvěrů

Účetní jednotka neměla v účetním období dlouhodobé bankovní úvěry.

Pohledávky z obchodního styku po lhůtě splatnosti

Počet dnů	Běžné účetní období/z obchodního styku/Kč		Minulé účetní období/z obchodního styku/Kč	
	tuzemské	zahraniční	tuzemské	zahraniční
do 90 dnů	---	---	45 134	---
91 – 180 dnů	---	---	---	---
181 – 360 dnů	---	---	---	---
nad 360 dnů	104 658	---	49 849	---

VÚV TGM
Výzkumný ústav vodohospodářský T. G. Masaryka
veřejná výzkumná instituce

Závazky po lhůtě splatnosti

Počet dnů	Běžné účetní období/z obchodního styku/Kč		Minulé účetní období/z obchodního styku/Kč	
	tuzemské	zahraniční	tuzemské	zahraniční
do 90 dnů	0	---	15 517	---
91 – 180 dnů	---	---	---	---
181 – 360 dnů	---	---	---	---
nad 360 dnů	---	---	---	---

Splatné závazky pojistného na sociální zabezpečení a příspěvku na státní politiku zaměstnanosti, veřejného zdravotního pojištění a evidované daňové nedoplatky u místně příslušných finančních orgánů

POJISTNÉ NA SOCIÁLNÍ ZABEZPEČENÍ A PŘÍSPĚVKU NA STÁTNÍ POLITIKU ZAMĚSTNANOSTI			
Závazek vůči	**Částka v Kč**	**Datum vzniku**	**Splatnost**
ČSSZ	2 101 577	31. 12. 2018	8. 1. 2019

POJISTNÉ NA VEŘEJNÉ ZDRAVOTNÍ POJIŠTĚNÍ			
Závazek vůči	**Částka v Kč**	**Datum vzniku**	**Splatnost**
VZP ČR	524 901	31. 12. 2018	8. 1. 2019
VoZP ČR	50 783	31. 12. 2018	8. 1. 2019
OZP	154 916	31. 12. 2018	8. 1. 2019
Česká průmyslová ZP	38 959	31. 12. 2018	8. 1. 2019
Revírní bratrská pokladna	31 937	31. 12. 2018	8. 1. 2019
ZPMV ČR	103 997	31. 12. 2018	8. 1. 2019

DAŇOVÉ ZÁVAZKY VŮČI MÍSTNĚ PŘÍSLUŠNÝM FINANČNÍM ORGÁNŮM			
Závazek vůči	**Částka v Kč**	**Datum vzniku**	**Splatnost**
Daň vybíraná srážkou podle zvláštní sazby z příjmů fyzických osob	26 841	31. 12. 2018	8. 1. 2019
Daň z příjmů fyzických osob ze závislé činnosti a funkčních požitků	806 697	31. 12. 2018	8. 1. 2019
DPH, vlastní daňová povinnost	3 138 443	31. 12. 2018	24. 1. 2019
Daň z příjmu právnické osoby	1 119 500	31. 12. 2018	1. 7. 2019

Všechny uvedené závazky byly zaplaceny v r. 2019 ve lhůtě splatnosti.

Pohledávky a závazky, které vznikly v r. 2018 a u kterých zbytková doba splatnosti k 31. 12. 2018 přesahuje 5 let

Pohledávky a závazky, které vznikly v r. 2018 a u kterých zbytková doba splatnosti k 31. 12. 2018 přesahuje 5 let, nejsou k rozvahovému dni evidovány.

Závazky, které nejsou obsaženy v rozvaze
Účetní jednotka neeviduje závazky, které nejsou obsaženy v rozvaze.

Poskytnuté záruky
Účetní jednotkou nebyly poskytnuty žádné záruky.

Pronajatý majetek (vlastní) uvedený v rozvaze
Není evidován.

Pronajatý majetek (cizí) uvedený v rozvaze
Není evidován.

Drobný majetek neuvedený v rozvaze
Hodnota drobného majetku neuvedeného v rozvaze a evidovaného v operativní evidenci ke dni 31. 12. 2018 tvoří **40 457 535 Kč**.

Leasingy – finanční pronájem
Účetní jednotka neevidovala v účetním období smlouvy o finančním pronájmu (leasingové smlouvy).

Dary přijaté a poskytnuté
Účetní jednotka nepřijala a neposkytla ve sledovaném účetním období žádné dary.

Odložený daňový závazek nebo pohledávka
Účetní jednotka dle platné legislativy není povinná účtovat o odložené dani.

Výsledek hospodaření

Výsledek hospodaření za rok 2018 celkem		7 726 992
Z toho	hlavní činnost	-20 568 958
	vedlejší činnost	21 839 300
	jiná činnost	6 456 835

Vlastní kapitál

	Stav k 31. 12. 2018	Stav k 31. 12. 2017
Vlastní jmění	332 504 739	320 471 878
Nerozdělený zisk/neuhrazená ztráta minulých let	---	---
Rezervní fond	19 419 978	3 716 578
Fond reprodukce majetku	2 134 970	1 642 202
Fond účelově určených prostředků	843 718	564 448
Sociální fond	391 920	241 003
Hospodářský výsledek běžného období po zdanění	7 726 992	15 703 401
Vlastní kapitál celkem	**363 022 317**	**342 339 510**

Vlastní jmění

Vlastní jmění účetní jednotky tvoří:

- majetek, který přešel na VÚV T. G. Masaryka, v.v.i. podle § 31 zákona č. 341/2005 Sb., o veřejných výzkumných institucích, snížený o závazky související s tímto majetkem a převedené na účetní jednotku zřizovatelem podle výše zmíněného zákona
- dlouhodobý majetek pořízený od 1. 1. 2007 z dotací
- dlouhodobý majetek pořízený od 1. 1. 2007 z vlastních zdrojů

Hodnotu vlastního jmění snižují účetní odpisy majetku pořízeného z vlastních zdrojů, které zároveň zvyšují fond reprodukce majetku a účetní odpisy majetku pořízeného z dotací, které současně zvyšují výnosy.

Fondy

V souladu se zákonem č. 341/2005 Sb., o veřejných výzkumných institucích, v platném znění tvoří účetní jednotka tyto fondy:

- rezervní fond
- fond účelové určených prostředků
- fond sociální
- fond reprodukce majetku

V roce 2018 se fond reprodukce majetku tvořil z účetních odpisů dlouhodobého majetku. Prostředky fondu se používaly na pořízení majetku, jeho technické zhodnocení, k financování oprav a udržování majetku.

V roce 2018 nedošlo k použití prostředků rezervního fondu.

Zdrojem sociálního fondu je základní příděl na vrub nákladů účetní jednotky ve výši 2% z ročního objemu nákladů zúčtovaných na mzdy, náhrada mzdy a odměny za pracovní pohotovost.

Významné události po datu účetní závěrky

U účetní jednotky nedošlo k významným událostem po datu vzniku účetní závěrky.

VÚV TGM
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veřejná výzkumná instituce

Zjištění základu daně z příjmu právnických osob a daňové povinnosti

V souladu s ustanovením zákona č. 586/1992 Sb., o daních z příjmu, ve znění pozdějších předpisů byly provedeny úpravy účetního výsledku hospodaření na základ daně z příjmu a byla zjištěna výsledná daňová povinnost za rok 2018.
Tato daňová povinnost byla následně zaúčtována jako účetní případ roku 2018 a bude vypořádána ve stanoveném termínu v roce 2019.

Způsob vypořádání výsledku hospodaření za rok 2017
Kladný hospodářský výsledek za rok 2017 ve výši 15 703 400,59 Kč byl v plné výši použit na naplnění rezervního fondu.

Návrh na vypořádání hospodářského výsledku roku 2018
Navrhuje se převod kladného hospodářského výsledku za rok 2018 ve výši 7 726 992 Kč po zdanění do rezervního fondu. O hospodářském výsledku za rok 2018 nebylo ke dni účetní závěrky příslušnými orgány účetní jednotky definitivně rozhodnuto.

V Praze dne: 13. března 2019

Přílohu sestavil:

Ing. Jiří Fiala
vedoucí odboru ekonomiky

Statutární orgán účetní jednotky:

Ing. Tomáš Urban
ředitel

STATEMENT OF TGM WRI, P. R. I., COUNCIL ON THE ANNUAL REPORT 2018

Dozorčí rada
Výzkumného ústavu vodohospodářského T. G. Masaryka,
veřejné výzkumné instituce
Podbabská 30, 160 00 Praha 6

Vyjádření

Dozorčí rady Výzkumného ústavu vodohospodářského T. G. Masaryka, veřejné výzkumné instituce,

k návrhu Výroční zprávy 2018

(ve smyslu § 19 odst. (1) písm. i) zákona č. 341/2005 Sb., o veřejných výzkumných institucích, ve znění pozdějších předpisů)

a k hospodaření VÚV TGM, v. v. i., v roce 2018

(ve smyslu § 19 odst. (1) písm. g) zákona č. 341/2005 Sb., o veřejných výzkumných institucích, ve znění pozdějších předpisů).

Dozorčí rada VÚV TGM, v. v. i., bere po projednání předložený **návrh Výroční zprávy 2018** na vědomí a předkládá jej Radě VÚV TGM, v. v. i. Všechny věcné dotazy byly uspokojivě zodpovězeny.

Dozorčí rada VÚV TGM, v. v. i., bere po projednání bez připomínek na vědomí **výsledky hospodaření VÚV TGM, v. v. i., v roce 2018** obsažené ve Výroční zprávě 2018. Všechny věcné dotazy byly uspokojivě zodpovězeny.

V Praze dne 5. června 2019

Ing. Jan Landa
předseda Dozorčí rady VÚV TGM, v. v. i.

Rada VÚV TGM., v. v. i.
zde

Vážený pan
Ing. Tomáš Urban
ředitel VÚV TGM, v. v. i.
zde

STATEMENT OF TGM WRI, P. R. I., SUPERVISORY BOARD ON THE ANNUAL REPORT 2018

Rada
Výzkumného ústavu vodohospodářského T. G. Masaryka,
veřejné výzkumné instituce

V Praze dne 28. 5. 2019
Č.j.: VÚV – 2019/01382

USNESENÍ RU/55/1

ve věci projednané na 55. zasedání Rady VÚV TGM, v. v. i.,
které se konalo dne 28. května 2019 v Praze.

Rada Výzkumného ústavu vodohospodářského T. G. Masaryka, v. v. i. schvaluje v souladu s § 18, odst. (2) písmene e) zákona č. 341/2005 Sb., ve znění pozdějších předpisů Výroční zprávu za rok 2018 a účetní závěrku za rok 2018.

Hlasovali: Hrabánková, Dzuráková, Vizina, Kučera, Beneš, Kinkor
Pro: 6 Proti 0 Zdržel se: 0

Ing Anna Hrabánková
předsedkyně Rady VÚV TGM, v. v. i.

Usnesení ze zasedání Rady VÚV TGM, v. v. i.
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