

WATER PROTECTION IN THE PROGRAMMING OF ENVIRONMENTAL PROTECTION IN THE COMMUNE OF NOWOGRODZIEC

Bartosz Jawecki^{*}, Agnieszka Sanetra^{*}, Beata Malczewska^{**}

Wrocław University of Environmental and Life Sciences
Institute of Landscape Architecture, ^{**} Institute of Environmental Engineering
Pl. Grunwaldzki 24a, 50-363 Wrocław, bartosz.jawecki@up.wroc.pl

Summary. The paper presents the problem of water protection in planning documents and municipal policies and other development strategies of Nowogrodziec community. The paper also presents the authors' proposal to update those documents and undertake actions in the field of water protection. General characteristics of Nowogrodziec community, in terms of the water environment, are presented. The analysis of current documents showed that the protection of water in the Nowogrodziec community is mainly focused on aspects related to reorganisation of water and wastewater management. However, this approach solves the problem of surface and ground water pollution only partially. The protection of waters against agricultural sources of pollution is relatively poorly accented, as is the environmental education of the community residents. There is a crucial need for including data concerning water protection in documents related to spatial development. They will assist in water policy assessment and development to contribute ideas and to voice concerns about the best ways to manage our water resources.

Key words: water protection, water management, water policy, water management strategies, Nowogrodziec commune

INTRODUCTION

Water is one of the most important elements in human life. It is extremely important to look after qualitative and quantitative water status in order to ensure an adequate level that will preserve the ecological equilibrium and satisfy the need for this raw material, for both current and future generations. Hence, today we are grappling with a problem of water protection which should be solved urgently, for example through appropriate means of appeal and administrative measures developed at the local level, and linked to the programming of activi-

ties on the environment. All actions of water protection programmed at the lowest level of public administration should focus not only on the environmental aspect, but also on the needs of the society and on the economic development of our country in order to find an optimal solution for each of them, because they have to meet requirements of sustainable development principles. Despite the fact that sustainable development involves global phenomena, it is an idea that can be implemented at the local level [Sanetra 2009].

The aim of this paper is to update guidelines for action of water protection in Nowogrodziec community. Proposed changes in water protection policy can help to improve the functioning of aquatic ecosystems, which in turn will allow them to achieve good status and ecological potential.

MATERIAL AND METHODS

The paper presents a review and analysis of strategy documents, planning and study, which deal with environmental issues of the Nowogrodziec community. The following documents have been analysed: the Environmental Agenda [Uchwała nr XLIII/321/05], the Study of Conditions and Directions of Regional Planning [Uchwała nr XXXV/247/08], the Land Use Planning [Uchwały nr: XXI/225/96, XXI/226/96, XXI/227/96, XXI/228/96, XXI/229/96, XXI/230/96, XXI/231/96, XXI/232/96, XXI / 233/96, XXI/234/96, XXI/235/96, XXI/236/96, XXI/237/96, XXI/238/96, VII/69/99, VII/70/99, XXVII/228/04, XXXIII/273/05, XLIII/326/05, XLVII/353/06, XLVII/354/06, XII/66/07, XVII/144/07, XLVII/182/08, XXXIX/263/08, XXXIX/264/08], the Multi-year Investment Plan [Uchwały nr: XXXII/215/08, XXXVI/257/08,] Community Development Strategy [Uchwały nr: XXXI/285/01, XIV/93/07], the Local Development Plan [Uchwała nr XXVII/226/04], the Recovery Plan for the Community in terms of Protection of Groundwater Action [Uchwała nr XXXVII/260/08].

Nowogrodziec commune is situated in the province of Lower Silesia, in the western part of the district of Bolesławiec. It consists of Nowogrodziec town and 13 rural localities. It covers an area of 176 km², of which 63.3% is arable land (75% arable land), 26.1% is forests and forest land, and 10.5% of the commune is the other areas (e.g. built-up areas, roads, etc.) [Sanetra 2009]. According to Kondracki [2001] physical geography of Poland, the regional situation of Nowogrodziec community is on the borders of the regions of Central Lowlands and the Bohemian Massif, Lower Silesia, Lower Silesian Forests (317.74) and the Foothills Mountains (332.26).

RESULTS AND DISCUSSION

The main hydrographical axis of Nowogrodziec commune is river Kwisa which is a left tributary of river Bóbr. The water level of river Bobr is characterised

by annual and long-term fluctuation. Surface waters in Nowogrodziec commune are former mine reservoirs and ponds, mainly manorial estate. The quality assessment from the Operational Monitoring of river Kwisa in 2005 and 2006 at the section below Nowogrodziec revealed poor water quality. The permissible load exceeded the limit values for class V (surface water classification) in 2005 and 2006 in the case of total suspended solids (TSS), and the limit values for class IV class in the case of BOD₅.

In the commune there are two main reservoirs: Chocianow-Gozdnica (GZWP No. 315) and Basin Zewnątrz-Sudecka Bolesławiec (GZWP No. 317). The quality analysis of groundwater which supplies the population with drinking water has shown that, after initial raw water treatment, it is suitable for human consumption in terms of physicochemical and bacteriological parameters. The raw water is characterised by elevated pollutant level in the case of manganese and iron concentrations, and a small but still elevated amount of aggressive carbon dioxide [Feasibility study ... 2008, Sanetra 2009].

The main sources of water pollution are municipal sewage and industrial pollution as well as surface runoff water from agriculture. Sewerage system exists only in Nowogrodziec and receives wastewater from approximately 48% of town residents. Wastewater from the remaining (approximately) 800 residents is supplied to a sewage system and, along with rainwater, to the Kwisa. Wastewater from municipalities without sewerage (approximately 20–25% of the total volume of the waste) is delivered by waste removal cars to water treatment plants. The rest of the waste is discharged in an uncontrolled way directly into roadside ditches, drainage ditches, streams or the ground [Studium wykonalności... 2008, Sanetra 2009].

The basic document in the matter of environment protection is the Nowogrodziec Town and Community Environmental Program for 2005–2012. The activities included result from the sustainable development inscribed in the community development strategy, the aim of which is to maintain high quality of natural environment (especially water and forest). The high quality of the environment, improvement of spatial order and aesthetics, as well as revitalisation of buildings and established water-sewage management are the major impulse of economic development including tourism and recreational features and non-offensive eco-production function. Modernisation and municipal infrastructure development (including water supply, sewerage and sewage treatment) will eventually include all of the district's communes, and small eco-friendly household sewage treatment installations will provide a complementary element of water and wastewater management [Uchwały... 2001, 2007, Sanetra 2009].

Medium-term objectives for 2011 and the policy of water protection, which are presented in the Nowogrodziec environmental protection program, are contained in 4 subject fields:

1. Water quality.

Aims: Providing second class of surface water, maintenance and protection of groundwater quality, and rationalising their use for public water supply for drinking.

Directions of action:

- sewerage system coverage of all the built-up areas in the community or, where it is not economically viable, constructing individual wastewater treatments,
- gradual modernisation of old sewage and water systems,
- inventory of illegal collectors or ditches for wastewater discharge,
- monitoring of implementation of the provisions relating to water permits
- monitoring of wells (used as septic tanks) and their proper liquidation,
- promoting and enforcing the programs of rational waste-water treatment in industrial plants,
- promoting pro-environmental principles of farming, breeding and production
- rational dosage and agro-meteorological deadlines compliance in use of fertilisers and pesticides

2. Waste sludge.

Aims: Increasing the degree of control on municipal sewage sludge in order to ensure maximum safety and environmental health. Increasing the degree of processing of municipal sewage sludge. Maximising the utilisation of nutrients contained in the sediments, while meeting all health and chemical safety requirements.

Directions of action:

- the use of sludge for agricultural purposes,
- use for levelling and reclamation of land for agricultural purposes,
- blending with other materials, including waste, and then using for levelling and reclamation of land,
- composting and then using for agricultural purposes or for levelling and reclamation of land,
- chemical stability, in order to further recover or dispose,
- drying and granulation,
- storage in properly adapted facilities.

3. The development of water and flood protection.

Aims: Reducing flood risk through the rational use of natural water storage capacity of the catchment.

Directions of action:

- regulation of watercourses according to their natural course,
- assessment of drainage facilities,
- ongoing maintenance of surface watercourses, embankments and hydro-technical equipment for flood protection,
- flood plains inclusion in land use planning,
- restoring of drainage of agricultural land,
- increasing retention basin storage capacity through small retention reservoirs, afforestation, proper agrotechnical and drainage actions.

4. Environmental education.

Aims: Raising environmental awareness and responsibility for the condition and protection of the environment among local residents.

Directions of action:

- development of training courses covering environmental issues, including science, government officials and professionals and teachers,
- implementation of training for farmers, particularly in the context of agro-environmental programmes,
- developing and implementing, based on public records, interactive databases on the environment in electronic form, accessible via the Internet,
- education on waste management,
- raising eco-awareness of promoters of tourism and agro-tourism,
- promotion, through the mass media, of environmentally friendly lifestyle behaviour.

The objectives and directions presented in this paper will be realised through the implementation of investment and non-investment projects involving, among others: further water supply system and sewage system development and building sewage treatment plants, expansion and modernisation of the hydraulic engineering system, conducting competitions on ecology and education of farmers on sustainable rural development.

The land use planning instruments are an important though underestimated tool in protecting the environment. The main fields of actions contained in the Study of conditions and directions of land use planning in Nowogrodziec are municipal water conservation, development of water and wastewater system, limiting edifices which are located in the proximity of water and reservoirs, arable land diversion into permanent pasture near water and reservoir, as well as banks and the area off the shore bio-strengthening and protection of river channels against erosion by plant-growing. The groundwater protection (GZWP No. 315 and 317) is assured by regulations which are limiting investments location, which may have bad impact on resources of these waters.

Analysis of land use planning has shown that the main emphasis concerning the protection of surface water and groundwater has been placed on the sewage management. This goal is to be ensured by building and upgrading the sewage and storm system, and sewage treatment plants construction. Moreover, water conservation includes: the construction of storm drainage settlers and petroleum separators which are going to drain sewage from sites and roads, as well as a ban on sewage discharging into surface watercourses, and creation of water intakes protective zones. There are also regulations which prohibit locating objects like edifices within Kwisa flood-plain area, Iwisa and Czerna river valleys and streams protection by creating areas like permanent pasture, and employ solutions which prevent pollution of groundwater in GZWP areas.

The strong points of both documents (the strategic plan for local development and recovery plan of the Nowogrodziec town) in the field of water protection are the Kwisa river rich natural resources and realistic program for the modernisation of water and sewage. The weaknesses of Nowogrodziec town are underdeveloped sewage system, poor quality of drinking water (which is the effect of obsolete water system), inadequate flood protection – regular local

flooding caused by rivers Kwisa and Iwnica. These documents, as the operational objectives of the Nowogrodziec commune development, relating to the protection of waters show the modernisation and development of technical infrastructure (mainly sewage and transport) and environmental protection. Nowogrodziec Investment Plan sets out tasks related to community investment, modernisation and investment purchases planned by the Community and Nowogrodziec town. For the protection of water it focuses on actions to regulate water and wastewater. Currently started task „The solution of water and sewage in the community of Nowogrodziec” is carried out under the National Program for Municipal Wastewater Treatment [Krajowy program... 2003] and co-financed by the Cohesion Fund. The environmental protection program is a fundamental tool to achieve national environmental policy at the local level. It is not an act of local law, described in the article 87, paragraph 2, of the Polish Constitution. The action program applies within the administration and therefore it should not produce direct legal effects in the sphere of rights and obligations of entities external to the administration [Jendrońska and Bar 2001, Wyrok... 2005]. Therefore programs, studies and strategies passed by Nowogrodziec community show only the directions that the local authority wants to pursue, while avoiding any direct legal effect in the sphere of rights and obligations of other entities. The land use planning is an exception. This document allows to take legal action – in the sphere of administrative rights and entities obligations in area covered by the local plan. This gives great potential for the environmental policy of community development, but this mechanism is very often underestimated by the local government.

The paper by Sanetra [2009] presented detailed analysis of proposed courses of action for the protection of waters, whose introduction in the Nowogrodziec community should be considered when developing the updated program to protect the environment, the study of conditions and directions of spatial development, local development plans, long-term investment plan, strategy municipalities, local development plan and recovery plan for the village. These directions should include activities such as:

1. Systematic groundwater and surface area monitoring in order to assess their quality in Nowogrodziec community.
2. Increasing the small water retention in the municipal area (e.g. by building a dry reservoir „Gościszów”).
3. Educational activities to promote behaviour conducing to water saving.
4. Implementation of measures to enable the development of natural drainage of surface water in the catchment area by eliminating the hydromorphological transformations of flowing water that prevent from achieving a good ecological status of waters and affect the habitats associated with water.
5. Equipping farms with slurry tanks and dung plates to limit the release of nitrogen pollution to the groundwater from agriculture, and promotion of the Code of Good Agricultural Practice.

6. Elimination of the use of groundwater for industrial purposes, particularly through implementation of best available techniques (BAT) – water efficiency.

7. Placing buffers along watercourses in the form of turf, shrub or tree belts in order to protect surface waters from pollution by surface runoff from agricultural sources.

8. Increasing the role of environmental protection, including protection of water in community planning. The introduction of specific provisions in local zoning plans, limiting the economic (industrial and agricultural) use of the land that is the most valuable and important from the standpoint of both quantity and quality of surface water and groundwater (e.g. development of buffer zones along waterways and reservoirs in local plans).

It should be noted that submissions are universal and can be used by other local governments in implementing measures to protect groundwater.

CONCLUSIONS

1. Water protection in the commune of Nowogrodziec is focused on the regulation of water and wastewater utilities, paying little attention to other aspects of water protection, so that in planning documents and strategies there is a need to pay more attention to the problem of pollution of surface water and groundwater from agricultural sources.

2. No water permits concerning rainwater discharge from the town and a poor condition of storm sewers, which in turn require urgent action in order to reduce the risk of pollution of the river Kwisa, including petroleum compounds.

3. There is a need of comprehensive environmental education of Nowogrodziec residents in the field of waters protection, in particular of encouraging residents to proper maintenance of septic tanks, and construction of connections to the sewage or domestic sewage treatment installations and their proper maintenance.

4. It is necessary to continue the environmental education of farmers in the application of the Code of Good Agricultural Practice, and particularly proper organic and mineral fertilisation and use of plant protection products, as well as the construction of manure and slurry tanks.

5. In the land use planning the Nowogrodziec commune should pay more attention to measures of environmental protection, including protection of water such as through the creation of areas excluded from use in the form of buffer zones along waterways and reservoirs.

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OCHRONA WÓD W PROGRAMOWANIU OCHRONY ŚRODOWISKA
GMINY NOWOGRODZIEC

Streszczenie. W pracy poddano analizie problematykę ochrony wód w dokumentach planistycznych, strategiach i programach gminy Nowogrodziec oraz zaproponowano aktualizację i propozycję kierunków działań w zakresie ochrony wód. Przedstawiono ogólną charakterystykę gminy Nowogrodziec, ze szczególnym uwzględnieniem środowiska wodnego gminy. Wykonana analiza dokumentów wskazuje, że ochrona wód w gminie Nowogrodziec skupia się głównie na aspektach związanych z uporządkowaniem gospodarki wodno-ściekowej. Takie podejście częściowo rozwiązuje problem zanieczyszczenia wód powierzchniowych i podziemnych. Pozostałe problemy ochrony wód, m.in. zanieczyszczenia wód powierzchniowych i podziemnych pochodzące ze źródeł rolniczych, są stosunkowo słabo akcentowane, podobnie jak edukacja ekologiczna mieszkańców gminy. Zwrócono również uwagę na potrzebę włączenia zapisów dotyczących ochrony wód (jako elementu ochrony środowiska) do dokumentów związanych z gospodarką przestrzenną w gminie.

Słowa kluczowe: zarządzanie i ochrona wód, polityka wodna, strategia zarządzania wodami, gmina Nowogrodziec