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PROJECT

Development of a project of an ecological trail on the territory of the eco-park belonging to Uarovskiy temple located in the village of of Veshki

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INTRODUCTION

Today, the focus of the entire world community is on environmental education, raising the level of environmental culture and raising environmental awareness of the population. Sustainable development based on balanced environmental management, reducing environmental risk and ensuring environmental safety without these aspects is not possible.

The social significance of the project is determined by the creation of an object, the work on which will contribute to raising the level of ecological culture, which will lead to the development of civil society and important social changes based on a high level of consciousness, including environmental. Today it is necessary to prepare the society for participation in the development and decision-making in the field of environmental safety and sustainable development.

The relevance of the topic of this work is determined by the fact that the development of a project of an ecological trail on the territory of an eco-park belonging to Uarovskiy temple in the village of Veshki and its practical implementation are a contribution to solving the problem of increasing the level of ecological culture of our population, and, as result, it can help reduce the environmental risk for the functioning of natural ecosystems of Moscow region.

So**, the aim** of our project is the development of an ecological trail in order to involve the local pople of Mytishchi and Moscow into ecological, educational and patriotic activities.

For realization of the aim we set the following **objectives:**

1. According to the literature data to analyze the main functions of ecological trails, the ways of their creation in natural areas and the basis for organizing work at such facilities.
2. To conduct a field survey of the forest at the Uarovskiy temple in Veshki village in order to identify the species composition of the flora and fauna, to determine the landscape and ecological features on the studied area of the eco-park.

3. To determine and put on the scheme the route of the ecological trail and the locations of the thematic stations along it, with the further installation of information and interactive stands at these stations.

4. To find out information and thematic content for the informational interactive stands in order to increase the level of environmental education of visitors at each thematic station along the ecological trail.

5. To draw up technical tasks for a designer to create the sections of each station with information stands.

6. To substantiate the possibility of creation of an artificial reservoir in the Devkin stream to demonstrate aquatic ecosystems to visitors of an eco-trail by chemical analysis of samples of its water in different seasons of the year.

7. To purify the waters of the stream, filling an artificial reservoir, develop a draft design of a small sewage treatment plant with a sump, a sorbent and an automatic water flow regulator, which is planned to be installed upstream of the stream.

8. To create a website of the eco-trail and provide it with content.

9. To discuss the developed proposals with specialists and representatives of the customer in order to correct them according to the results of this discussion and pass them to the director of the eco-park.

The object of our project is natural processes that form the ecosystem on the territory of the eco-park.

The subject of our project is flora and fauna features of ecosystems at each station of the projected eco-trail.

While our work on the project different (natural and cameral) **methods of research** were used. In the forest we used the method of visual inspection. The composition of the main water pollutants in the Devkin stream was established by the method of chemical analysis. Experimental measurements of the water characteristics of the Devkin stream were carried out with the help of a portable laboratory and equipment of the Kurchatov project. Comparing, analysis and interpretation of the obtained results were carried out in the school convergent laboratory.

Chapter1. ECOLOGICAL TRAILS AND BASES OF THEIR ORGANIZATION

1.1. Ecological trails, their main functions and role for the development of eco-tourism

On the territory of Moscow and the Moscow region environmental problems are acute because of the increased anthropogenic pressure on natural ecosystems. The degree of environmental risk for the traditional representatives of the flora and fauna of our ecosystems increases every year. It can be explained by the fact that the natural habitats of the flora and fauna are becoming smaller and smaller. Moreover, many of the species have already entered the Red Book.

In conditions of high urbanization, it is really important to organize ecological routes and “ecological trails” to raise public awareness of the objects with high aesthetic value and environmental significance. Nowadays there is an acute need for such objects.

In various sources and countries these objects are called differently: scientific tracks and paths, natural history and didactic paths. In Russia - educational, natural, environmental trails and paths. [5].

The value of the trail for environmental education consists of three interrelated components: recreation, training and education. [3]

If we follow the definitions of “ecological tourism” given below [6], we can consider that environmental education and conservation work on an ecological path is one of its directions.

1 “Ecotourism is nature-oriented tourism including special programs of environmental education and awareness and it is implemented in accordance with the principles of environmental sustainability” (Commonwealth Department of Tourism 1992, Australian National Ecotourism Strategy, Canberra).

2. “Ecotourism is purposeful travelling to natural territories in order to understand better the local culture and natural environment. Ecotourism does not violate

the integrity of ecosystems while making the protection of natural resources beneficial for local residents" (Ecotourism Society, 1994). [9]

1.2. Creation of ecological trails in natural areas

For the first time the concept of a natural or ecological trail appeared in the United States. At the beginning of the 20th century, a forester Benton McKay proposed the establishment of something like a "reserve for walkers"- to lay a path along the Appalachian Range. By 1922, the footpath through all Appalachians from Maine in the north-west to Georgia in the southeast was ready. Its length was 3300 km. [3].

In Russia, before the revolution, in 1916, in the Crimea, 7 km far from Sudak, a footpath was cut down along the rocks. It is called Golitsyn, as the construction was carried out on the orders of Prince L. S. Golitsyn. The wide distribution of educational trails on the territory of the former USSR began from the beginning of the 60s. [7].

On the basis of the material studied, we've come to the following **conclusions:**

1. "Ecological Trail" is a specially equipped route passing through various ecological systems and other natural objects, architectural monuments of aesthetic, environmental and historical value, where you can receive visual (see), oral (from a guide) or written (stands, signs, etc.) information about these objects.
2. There are different types of ecological trails: educational, recreational, educational and touristic. The types of trails depend on different goals which are possible to realize on these facilities.

Chapter 2. DESIGNING OF AN ECOLOGICAL TRAIL ON THE TERRITORY OF ECO PARK BELONGING TO UAROVSKY TEMPLE LOCATED IN THE VILLAGE OF VESHKI

2.1. Geographical position of the developed ecological trail

We are involved in the development of an ecological trail on the territory of the Eco-park at the Sarov Church of the village of Veshki, which is in the process of formation.

At the first stage of our project, we studied the geographical position of the eco-park. The ecological trail developed by us is located within the southern part of the territory of the urban district Mytishchi of the Moscow Region on the west of Veshki village, on the territory of the urban district Mytishchi. This forest area of 7.3 hectares is a part of the Khlebnikov district forestry. It was handed over to the use of the temple of the Holy Great Martyr Uar[1].

2.2. Natural features of the territory

Mytishchi is located on the territory located in the South-West of the spurs of the klinsko-Dmitrov ridge, i.e. on the watershed between the basins of the Klyazma and Moskva rivers. From the South-East of it stretches Meshcherskaya lowland.

The relief of this territory is a hilly plain. The absolute height above the sea level here ranges from 146 m-in the floodplain of the Yauza river to 175 m- in the elevated parts of the territory.

It is rich in water resources. Open water bodies, including reservoirs, rivers and lakes, occupy a significant part of this territory.

The composition of flora and fauna of forests, including forests of Dmitrov forestry and National Park "Elk Island" is determined here by the fact that they are located in the subzone of broad-leaved spruce forests of the North European taiga province. There are more than 500 species of vascular plants, including 32 species of trees, 37 species of shrubs. The fauna includes more than 230 species of vertebrates,

[1] See appendix 1 pic.1,2

including more than 160 species of birds, 38 species of mammals; 15 species of fish, 10 species of amphibians and 5 species of reptiles.

2.3. Biodiversity and ecosystem characteristics

At the 2nd stage of our work, a visual survey of the forest area was conducted in order to get acquainted with the territory of the study, its natural objects and determine the degree of anthropogenic impact on them in order to assess the state of natural ecosystems.

At the 3rd stage of our work, a more detailed survey was conducted, which allowed to find out the presence of interesting ecological objects (life forms of organisms, ecological groups, phytocenoses, protected species) on the explored area, which allow to organize ecological and educational work here. We were able to determine the biodiversity and frequency of species of flora and fauna[1], to identify some of the characteristics of local ecosystems.

To demonstrate the inhabitants of aquatic ecosystems to visitors, we propose to create an artificial reservoir in the valley of the Devkin stream, which flows along the eastern border of the eco-park, with a mini-sewage treatment plant. **It was the next stage of our project.** In order to identify the possibility to use this reservoir with the water of the Devkin stream, monitoring of the chemical composition of its waters in different seasons of the year was organized. The water samples that we selected on 07.06.2018 and 10.08.2018 were transferred by V.A .Volkov to the laboratory of MGOU for chemical analysis. Also some researches of this water sample were made in the laboratory of our school.

Consideration of the results of chemical analysis of water from the Devkin stream[2], together with the chemist of MGOU Dmitry Borisovich Petrenko, made it possible to find out that the water is not suitable for drinking, but it can be used for irrigation. To bring the quality of water to be suitable to the fishery, we have devel-

[1] See Appendix 2 table 1
[2] See Appendix 2 table 2,3

oped a mini-sewage treatment plant with the help of some students from an engineering class of our school.

2.4. Designing of the ecological trail.

On the basis of the received data and the analysis of ecosystems in the territory of eco-park the placement of educational thematic stations on the ecological trail are offered, according to requirements (attractiveness, information, and accessibility for visitors) the scheme of its route is made.[1] **The length of the route is 1.5 km.**

Each of the 10 stations on the ecological trail has its own thematic focus, according to which different ecological and educational tasks are solved. The description of these 10 ecological stations is presented in the form of a table.[2]

The first station is the start of the trail. To get acquainted with the territory and route we suggest installing a large information stand with a map of the ecological trail at the very beginning of the ecological trail, next to the bridge.

The second station of the ecological trail is **the Devkin stream**. The point is located 10 meters far from the bridge. There is a good access to the reservoir. With the help of test systems, everyone can study the physicochemical parameters of water or, using the simple and universal Mayer method, quickly assess the state of the reservoir. A small information stand about the stream is appropriate here, as well as about the inhabitants of the aquatic and coastal ecosystems that can be seen here.

The third station is **"The trees of our forest".** Here you can vertically post fragments of tree trunks and shrubs with a length of 1.5 m. (5 - 8 pieces) so that visitors can recognize trees and shrubs by the characteristics of their bark. At this observation point, we can lay a test area of 10x10m on which it would be possible to describe the state of the trees.

The fourth station is called **"Feathered architects".** This is the place on the trail where heels of woodpecker can be found. Here we suggest installing an interac-

[1] See Appendix 1 pic.2, 3
[2] See Appendix 2 table 4

tive stand with 5 small nests of birds dwelling in the area, with a brief description of the birds in order to determine the belonging of the nest to the birds.

The fifth station called **“Forest pharmacy”** is located next to the raspberries. An information stand about beneficial pharmacy properties of raspberry, birch, spruce, oak, etc. may be set here.

The sixth station is **“Who left a trace?”** We believe that an interactive stand is needed here to determine the traces of mammals. At the same station, we want to make a special house with squirrel feeder.

The seventh station called **"Underground Inhabitants"** is located on the site of mole potholes. Here we offer to establish an information stand with photos and descriptions of underground inhabitants. Also we can entertain visitors with a quiz "Underground Inhabitants" at this station.

The eighth station is “Ecological Succession”. This point is located next to the spruce. A small information stand about succession, succession changes and information about spruce and birch is appropriate here. Also at this station we can describe the succession changes that occur at this area, as well as carry out the ecological game "Succession".

The ninth station is called "Epiphytic mosses." An information stand with photographs and description of epiphytic mosses ,which are found here in the trees, is appropriate. The epiphytic mosses at this station as indicators of air purity will be studied.

The tenth station of the trail is called **“Young Meteorologist”.** It is located next to the workshop. Here you we set the weather vane and anemometer to determine meteorological indicators.

In spring it is planned to adjust the project of the eco-trail in order to add a few more stations – a Lily meadow, the hazel, etc. On the Central clearing it is planned to organize the special area for a tent camping that is going to be placed there on time for special ecological and educational events.

Conclusion

During the preliminary design stage of our project, it was necessary to explore the territory of the eco-park because without the data from this exploration, it would not have been possible to design an eco-trail.

During our geo-ecological exploration of the territory of the eco-park:

-15 species of trees and shrub vegetation, 49 species of herbaceous vegetation, 2 species of mosses have been identified;

- the route of an eco-trail has been developed, it has been marked on a sketch map, observation stations of the eco-trail have been marked on the satellite map (see appendix)[1];

- 10 thematic stations along the eco-trail have been identified; at these stations visitors can learn the peculiarities of the Park's ecosystems, practice in the description of the composition and state of forest stand and undergrowth, learn how to distinguish trees by the bark, to make a botanical description of plants, etc.

- the developed eco- trail is considered to be an ecological and educational type.

INFERENCE

All the objectives set at the beginning of the project have been solved:

1. On the basis of the analysis of literary and other information sources, including international documents on ecotourism, the following facts are established:

- the importance of ecological trails and their place in the international classification of tourism activity was revealed;

- the main functions of ecological trails are defined: eco- education, education, upbringing.

- the relevance of the organization of ecological and educational activities on ecological trails have been confirmed and features of ecological and educational activities on these trails have been identified;

[1] See Appendix 1 pic.3

- the history of the creation of ecological trails and the development of ecotourism in Russia and abroad has been determined.

2. Our environmental exploration of the forest area at the UAR temple in the village of Veshki allowed us to identify the species composition of flora and fauna, and the analysis of the data showed that the species diversity and conditions in the eco-park allowed to develop an eco-trail with the following 10 thematic stations: "The beginning of the route", "Devkin stream", "Trees of our forest", "Feathered architects", "Forest pharmacy", "Who left a trace?", "Underground inhabitants", "Ecological succession", "Epiphytic mosses", "Young meteorologist".

3. Chemical analysis of water samples taken by us from the Devkin stream flowing through the eco-park was carried out in the MSU laboratory. The data obtained allowed us to conclude that due to the high hardness, mineralization and high content of iron, ammonium and phosphates, water from the stream can be used only for irrigation, and in the presence of our proposed mini-treatment plant with a sump[1], it is possible to bring its quality good enough to the fishery.

4. The route of the ecological trail and the placement of thematic stations have been defined and marked on the scheme.

5. Information and thematic content for each station of the ecological trail has been developed. Some information is encrypted and is represented on the stands in the form of QR codes; tasks to design the information stands for each station are being compiled and transmitted to the designer. The first meeting with the designer was held 08.12.2018.

7. To inform the population about environmental and other socially significant events organized on the eco-park and its eco-trail **the website** has been created https://www.ecoparkedition.com/ and its information content is provided.

8. The developed proposals were discussed with experts and representatives of the customer. In accordance to the results of this discussion the adjustment of the pro-

[1] See Appendix 1 pic. 4

ject eco-trail have been carried out. All materials have been transferred to the eco-park management.

9. The project received the feedback from the manager of the creation and arrangement of the eco-park - the abbot of the Uarovskiy church in the village of Veshki, the candidate of theology, archpriest Oleg Mumrikov[1], who notes that the project was conducted at a high professional level, the project has been accepted for implementation, after which the authors were invited to work on the eco-trail with visitors of the eco-park.

The practical implementation of the eco-trail project, as well as the work on the environmental arrangement of the entire eco-park, is carried out mainly **on a volunteer basis** by attracted volunteers: regularly by the parishioners of the church (local people) and local schoolchildren who formed the Forest Squad, as well as occasional visitors, including students from Moscow and Moscow region schools.

The next stages of our work on the implementation of the project will be the equipment of some new stations of the eco-trail: interactive, informational stands are going to be set; bird feeders and squirrel houses are going to be put up; it is planned to develop and issue additional themed stations on the eco-trail: "Lily valley", "Hazel wood", "Ferns".

[1] See Appendix 3 Doc.1

Resources

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6. http://www.ecosystema.ru

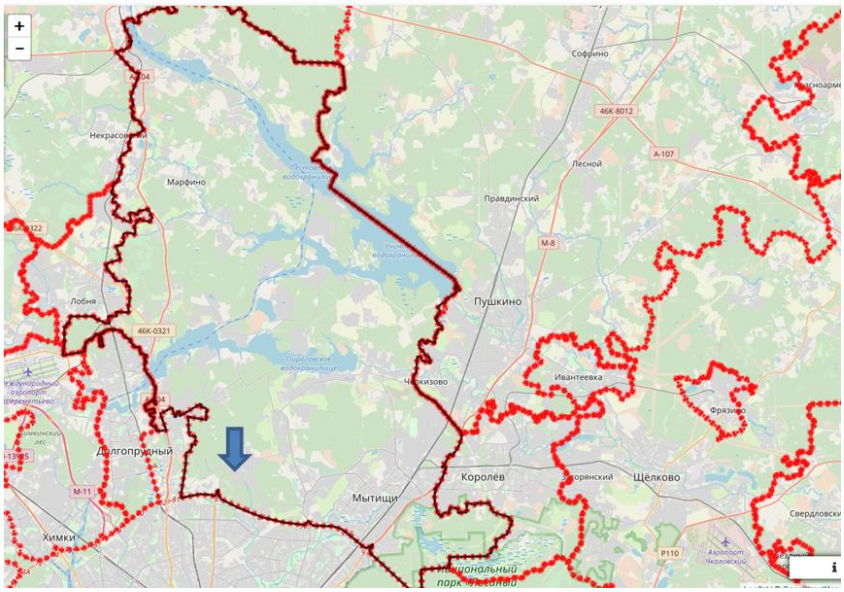
7. http://www.apartment.ru

8. http://www.esosedi.ru

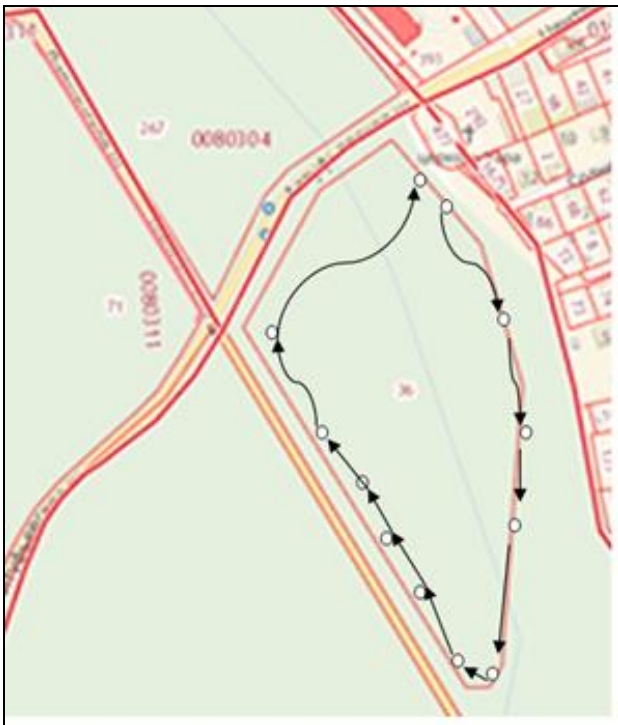
9.https://ecodelo.org/329012_chto_takoe_ekoturizm_sovremennaya_kontseptsiya_ekoturizma-ekologicheskii_turizm_kak_sovremen

Appendix 1

Illustrative material

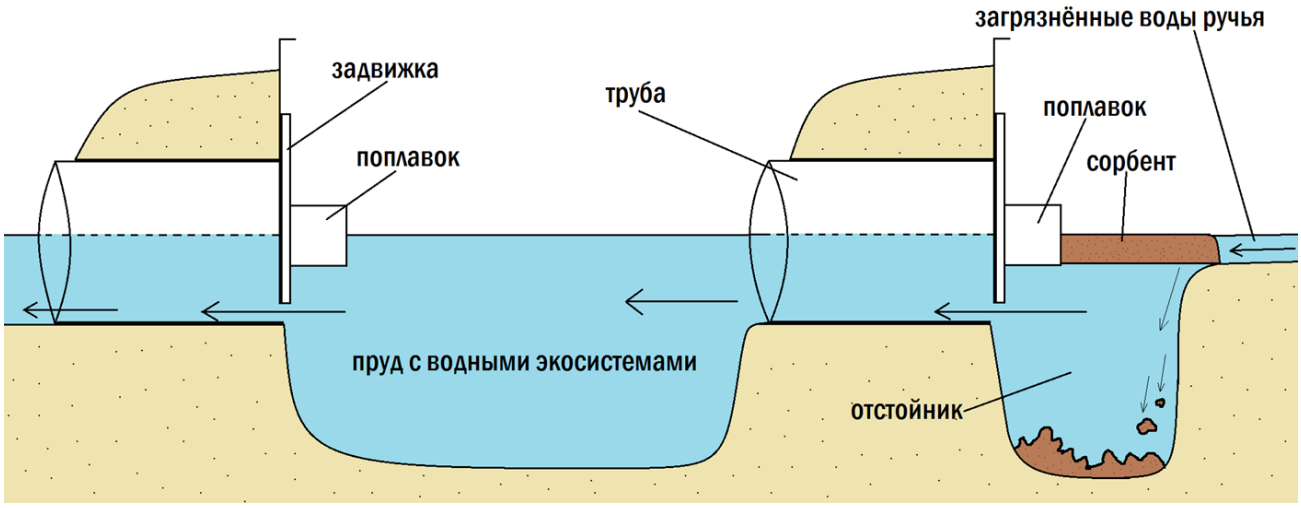


Pic. 1. Map of Mytishchi with the location of the Eco-park (shown by the arrow).



Pic. 2. Map-scheme of the ecological trail with thematic stations and the direction of movement along it.

Pic. 3. The territory of the ECOPARK on a fragment of a space map with thematic stations on the ecological trail.



Pic. 4. Scheme of the proposed mini-treatment plant with a sump

Appendix 2

Table 1.
Species composition of the vegetation on the territory of eco-park.

Wood-shrubby vegetation	- Scots pine (Pinus Sylvestris) - European spruce (Picea Abies) - silver birch (betula pendula) - basswood (Tilia Cordata) - English oak (quercus robur) - aspen ordinary (populus tremula) - Norway maple (Acer Platanoides) - ash-leaved maple (Acer Negundo) - poplar trembling (Populus tremula) - common bird cherry (Padus Avium) - mountain ash (Sorbus Aucuparia) - forest Apple (Malus Sylvestris) - speckled alder (Alnus Incana) - goat willow (Salix Caprea) - raspberries (Rubus Idaeus)
Grassy vegetation	- lily of the valley (Convallaria Majalis) -willow-herb tea angustifolium (Chamaenerion Angustifolium) - dandelion (Taraxacum Officinale) - stinging nettle (Urtica Dioica) - plantain (Plantago Major) - sorrel (Rumex Confertus) - mother-and-stepmother (Tussilago Farfara) - Swan drooping (Atriplex Patula) - the vegetable garden sow - Thistle (Sonchus

	Oleraceus) - burdock spider (Arctium Tomentosum) - strawberries (Fragaria Vesca) - forest clover () - clover meadow (Trifolium Pratense) - sagebrush tarragon (Artemisia Dracunculus) - mouse peas (Vicia Cracca) - meadow bluegrass (Poa Pratensis) - the meadow knapweed (Centaurea Jacea) - ordinary tansy (Tanacetum Vulgare) -yarrow (Achillea Millefolium) - male fern (Dryopteris Filix-Mas) - chickweed (Stellaria Media) - the ordinary sorrel (Oxalis Acetosella) - acrid Buttercup (Ranunculus Acris) - creeping Buttercup (Ranunculus Repens) - cinquefoil goose (Potentilla Erecta) - white sticking (Nardus stricta) - ordinary dream (Aegopodium Podagraria) - chickweed (Stellaria Media) - rank meadow (Lathyrus Pratensis) - knotweed (Polygonum Aviculare) - hedgehog team (Dactylis Glomerata) - cuff ordinary (Alchemilla Vulgaris) - the river avens (Geum Rivale) - kupyr forest (Anthriscus Sylvestris) - plaun club-shaped (clavatum lycopodum) - autumn hawkbit (Leontodon Autumnalis) - meadow geranium (Geranium Pratense) - Primula (Primula) - Veronica Oakwood (Veronica Chamaedrys) - Chistyakov spring (Ficaria Verna) - ovary hairy (Luzulea Pilosa) - kislak catecory (Naumburgia Thyrsiflora) - dribnokvitkovi Impatiens (Impatiens Parviflora) - thin bentgrass (Agrostis Tenius) - spreading rush (Juncus Effusus) - bark fence (calystegia sepium Calyctegia) - awnless brome (Bromopsis Inermis) - the white pigweed (Chenopodium Album) - common bladderwort (Utricularia Vulgaris
Mosses	- the sphagnum bog (Sphagnum palustre) - sphagnum of Magellan (Sphagnum magellanicum)

Tables 2-3

Results of chemical analysis of water samples from the Devkin stream

June 7, 2018 and August 10, 2018

Indicator	units of measurement	Maximum allowable concentration	Sample from the Devkin stream
Total mineralization	mg / l	<1000	388
Total hardness	mmol-eq / l	<7	4,6
Total alkalinity	mmol-eq / l	6,5	5,6
pH	-	6.5-7.5	7,8
Fe total	mg / l	<0,3	1,1
Chloride ion	mg / l	350	25
Phosphate ion	mg / l	3,5	<0,05
Fluoride ion	mg / l	1,2	0,27
Ammonium ion	mg / l	2	0,9
Nitrate ion	mg / l	45	8
Na	mg / l	200	15,1
K	mg / l	не уст.	7,8
Ca	mg / l	не уст.	23
Li	mcg / l	30	7,2
Be	mcg / l	0,2	<0,002
Al	mcg / l	500	<10
Cr	mcg / l	20	<1
Mn	mcg / l	100	2
Co	mcg / l	100	0,37
Ni	mcg / l	100	4,17
Cu	mcg / l	1000	<1
Zn	mcg / l	50	10
Sr	mcg / l	7000	477
Ag	mcg / l	50	<0,1
Cd	mcg / l	1	<0,05
Pb	mcg / l	30	<1
Th	mcg / l	не уст.	<0,5
U	mcg / l	не уст.	0,73

№ п/п	Единицы измерения	Показатель	Норматив (САНИТАРНО-ЭПИДЕМИОЛОГИЧЕСКИЕ ПРАВИЛА И НОРМАТИВЫ СанПиН 2.1.4.1074-01)	Образец ВА Волкова
1		pH (водородный показатель)	6.5-8.5	7,26
2	ммоль/л	Жесткость общая	7	10
3	мг/л	Общая минерализация	1000	865
4	мг/л	NO3- (нитрат-ион)	45	7,0
5	мг/л	Cl- (хлорид-ион)	300	7
6	мг/л	NO2- (нитрит-ион)	3	<ПО
7	мг/л	F- (фторид-ион)	1,5	0,34
8	град.	цветность	20	20
9	мг/л	NH4+ (аммоний)	3,5	4,2
10	мг/л	PO43-(фосфат-ион)	3,5	9,3
11	мг/л	Fe (железо общее)	0,3	1,50
12	мкг/л	Бериллий (Be)	0,2	<ПО
13	мкг/л	Ванадий (V)	100*	10
14	мкг/л	Хром (Cr)	500	20
15	мкг/л	Марганец (Mn)	100	70
16	мкг/л	Кобальт (Co)	100*	5
17	мкг/л	Никель (Ni)	100	2
18	мкг/л	Медь (Cu)	1000	100
19	мкг/л	Цинк (Zn)	5000	150
20	мкг/л	Мышьяк (As)	50	<ПО
21	мкг/л	Кадмий (Cd)	1	0,10
22	мкг/л	Свинец (Pb)	30	2,00
23	мкг/л	Торий (Th)	не установлен	0,10
24	мкг/л	Уран (U)	не установлен	0,10

окращений и аббревиатур
<ПО - ниже предела обнаружения (не обнаружено)
мкг/Л - микрограмм в литре
мг/л - миллиграмм в литре

Table 4.

Name and equipment of thematic stations on the ecological trail

№	Name of the thematic station	Equipment of thematic stations	What to observe and explore
1	**The start of the trail**	A large information stand with a map of the ecological trail	The start of the route
2	**the Devkin stream**	An information stand on the physics-chemical characteristics of the water of the stream, including information on where it originates and where it flows; with information about the representatives of aquatic and coastal eco-systems, which can be observed here.	Representatives of aquatic and coastal ecosystems, physical and chemical characteristics of the water of the stream.
3	**The trees of our forest**	5 - 8 fragments of tree trunks of various species with a length of 1.5 m. A test area of 10 x 10 m.	Recognition of tree species according to the peculiarities of their bark, determination of the species composition of species of trees, underbrush, grassy plants.
4	**Feathered architects**	Feeders for birds, an interactive stand with 5 small nests of birds living in the area, with photographs of birds and a brief description, which allows to determine the belonging of nests to various birds	Ornithological observations, traces of the activity of feathered forest dwellers, including heft of a woodpecker.
5	**Forest pharmacy**	An information stand	Healing forest plants (raspberries, birch, spruce, oak, etc.)
6	**Who left a trace?**	An interactive stand, a special house for squirrels	Traces of common in this area mammals, squirrels
7	**Underground Inhabitants**	An information stand with photos and descriptions of underground inhabitants common in this ecopark	Mole Potholes
8	**Ecological Succession**	An information stand about succession	Succession changes
9	**Epiphytic mosses**	An information stand	Epiphytic mosses as indicators of air
10	**Young Meteorologist**	A meteorological station	Monitoring of weather changes and observations of atmosphere processes

Appendix 3 Documents

ОТЗЫВ

на исследовательский проект

РАЗРАБОТКА ПРОЕКТА ЭКОЛОГИЧЕСКОЙ ТРОПЫ НА ТЕРРИТОРИИ ЭКОПАРКА ПРИ УАРОВСКОМ ХРАМЕ ПОСЕЛКА ВЁШКИ

Работа учащихся ГБОУ города Москвы «Многопрофильной школы №1449 им. М.В.Водопьянова» посвящена разработке эскизного проекта экологической тропы на территории Экопарка при Уаровском храме поселка Вёшки, практическая реализация которого будет способствовать организации здесь эколого-образовательной и духовно-просветительской деятельности. Такая работа приобретает в последние годы особую актуальность, в силу возрастающего антропогенного воздействия на окружающую среду и повышения внимания государства и общественности к обеспечению экологической безопасности.

Авторами проекта проделана большая предварительная работа, включая анализ эколого-образовательных, просветительских и воспитательных функций экологических троп и определение особенностей их создания на территориях ООПТ, включая «Экопарки».

Совместно с заказчиками этого проекта и специалистами авторы провели комплексное экологическое обследование лесного массива «Экопарка», результаты которого позволили: выявить видовой состав флоры и фауны; определить качество воды в Девкином ручье, протекающем по «Экопарку»; наметить трассу экотропы и предложить организовать на ней тематические станции («Особенности экологической тропы», «Девкин ручей», «Деревья нашего леса», «Пернатые архитекторы», «Лесная аптека», «Кто оставил след?», «Подземные обитатели», «Экологическая сукцессия», «Эпифитные мхи», «Юный метеоролог», «Интродуценты нашего края»); разработать информационное содержание оформления каждой из них, что было предметом обсуждения с дизайнером на встрече 8.12.2018 г..

Проект доложен авторами на заседания круглого стола "Экологическое образование и воспитание: перспективы соработничества Церкви, государства и общественных организаций", которое состоялось 29.11.2018 г. в духовно-просветительском центре им. священномученика Георгия

практической просветительской работе на экотропе с посетителями «Экопарка».

Настоятель Уаровского храма поселка Вёшки Мытищинского г.о., кандидат богословия, доцент кафедры Педагогики и методики начального образования Педагогического факультета Свято-Тихоновского гуманитарного университета, Ответственный за экологическую работу в Московской областной епархии, протоиерей Олег Александрович Мумриков

9.12.2018 г. прот. Олег Мумриков