JAPAN INTERNATIONAL COOPERATION AGENCY

THE SOFIA GREATER MUNICIPALITY, THE REPUBLIC OF BULGARIA

THE STUDY ON THE SOLID WASTE MANAGEMENT FOR THE TERRITORY OF THE SOFIA GREATER MUNICIPALITY

SUPPORTING REPORT II (ENVIRONMENTAL STUDY)

July 1994

Yachiyo Engineering Co., Ltd.
Tokyo, Japan

JAPAN INTERNATIONAL COOPERATION AGENCY

THE SOFIA GREATER MUNICIPALITY, THE REPUBLIC OF BULGARIA

THE STUDY ON THE SOLID WASTE MANAGEMENT FOR THE TERRITORY OF THE SOFIA GREATER MUNICIPALITY

SUPPORTING REPORT II (ENVIRONMENTAL STUDY)

July 1994

Yachiyo Engineering Co., Ltd.
Tokyo, Japan

PREFACE

SUPPORTING REPORT: ENVIRONMENTAL STUDY

This report contains the results of the environmental surveys conducted during the study's first and second phase. These results are summarized in the main report.

The results, and their analysis are presented in the form of two reports;

(1) Interim Report (pages 1 to 93)
(2) Final Report (pages 94 to 165)

The Interim Report outlines the studies implemented at the existing disposal sites, and at the candidate sites for selection of a disposal site.

The Final Report concentrates on Katina site and discusses the environmental measurements required in the design of a sanitary landfill site there.

STUDY OF THE SOLID WASTE MANAGEMENT FOR THE SOFIA GREATER MINICIPALITY

INTERIM REPORT

Part Ecology

Annex

August 1993

TABLE OF CONTENTS

PAGE

Annex

1 Introduction

With the end of phase 2 the data necessary for the evaluation of the candidate sites as possible future dumping sites has been completed.
The entire data pool will be the base for both, the environmental and the ecological evaluation not only for the different sites but also for the possible technical solutions to be proposed.
The character of this procedure, namely to draw conclusions and decisions for an environmental sustainable development from sound ecological data bases, reduces uncontrolled future impacts to natural systems to a differentiated and thus well-known minimum.

2 Methodology

For reasons of continuity and comparability the same investigation methods for the different surveys, as applied for phase 1, have been used.

In addition, determinations of the wind measurements as well as the 'Index of Saprobie' have been part of the phase 2 investigations.

Wind measurements, methodology

Wind velocity and wind direction have been determined by the aid of anemometer and compass. The data were taken during 16 hours per day (daylight time). The figures presented in the annex represent the maximum values of wind velocity related to their (compass) direction.
In the maps for the investigated sites these data are displayed as 'wind stars' which show along the periphery of a circle (=compass rose) the wind direction and the wind speed given with the unit of m/sec. (cf. pp.73).

Index of Saprobie

The 'Index of Saprobie' represents an ecologic-biological method to evaluate the degree of pollution of natural surface waters (running waters). It uses the biocoenosis of the sampled location - the sensitivity of organisms for pollutants as indicator - to rank the water quality of the creek or river.
Although many attempts have been made in the past to develop this system only two methods are nowadays used world wide : the system of Pantle & Buck and the system of Sladecek.

In principle 4 major Saprobie-Zones are differentiated (SF: short form) :

Saprobic Zone	SF	Definition
oligosaprobic zone	o	slightly polluted
beta-mesosaprobic zone	ßm	medium polluted
alpha-mesosaprobic zone	am	highly polluted
polysaprobic zone	p	very high polluted

Together with the chemical analysis of the waters the determination of the saprobic index of a creek or river leads to a complex characterization of the investigated site.

For the existing and candidate sites in the area of GREATER SOFIA MUNICIPALITY, however, only two locations demanded the determination of the 'index of saprobie'for running waters: Suhodol I and Suhodol II, (cf. pp.79,phase II, maps Suhodol I/II).

Although at Dolni Bogrov, too, a constant water flow has been found, this one was considered not to be natural but artificial with a narrow and short flow distance. Determination of saprobic zones therefore was not advisable.

3 Surveyed Sites (Phase 2)

The investigations of phase 2 were not only directed to additional candidate sites (Novi Iskar, Suhodol II, Rudinata) but also to some of the sites examined in phase 1 (Katina, Suhodol I) as well as locations in close vicinity to Suhodol II (Suhodolska Valley).

3.1 Katina

1) Results of Additional Surveys

In addition to the environmental survey of phase 1, water analysis, traffic noise measurements and determination of wind speed and direction have been part of the investigations of phase 2.

a) Water Samples

At two postions within the site of Katina surface waters were analyzed:

Position 1 : big lake
Position 2 : small pool west of centre lake

The data (cf p.A-3) shows normal concentrations for nearly all of the analyzed substances. National Bulgarian standards of water quality class III are only exceeded by Sulfates and Chlorine (given below as mg/l):

Substance	Pos.1	Pos.2	Nat.Stand.
Sulfate	2279.7	2502	400
Chlorine	695	2824	400

This high amount of ions possibly originates not only in excessive former mining activities but also in washed out elements entering the lake and the pool with rain water.

As the investigations have been made during the warm seasons it is quite obvious that the concentrations in the pool are higher due to the expected high evaporation at this rather enclosed site.

As the waters of the lake and the pool are not used for irrigation or drinking water purposes and the area is only used for recreation there is no health risk at present.

b) Traffic Noise Measurements

The results of the traffic noise survey range within the normal limits of areas similar to Katina (cf. p.31/33). As the region shows various human activities (fruit and vegetable cultivations, cattle breeding, large store for agricultural vehicles and vehicles for road construction) there is a short decrease in the number of vehicles (counts per hour) during noon time.

This decrease, however, does not result in a decrease of noise. This fact can only be explained by the comparatively high groundlevel of noise which has been calculated to a mean of 39.9 (n=6) during the investigation period. The maximum noise level rises up to 63.8/62.3 dB(A).

c) Wind measurements

The data of the wind measurements (cf. pp.73) only shows relatively low wind speed with a maximum of 6 m/sec coming from SE.

Owing to the short investigation period this data can only give a very superficial idea of the wind regime at the site of KATINA. The values have still to be correlated and discussed in accordance with the annual data taken by the SOFIA Institute of Meteorology.

However, the wind stars displayed in the maps show that the winds in KATINA site are changing their direction rapidly and frequently. This alternation in speed and direction mainly derives from the very complex geomorphology of the entire site, where steep downfalls and the hilliness of the surface generate different winds.

3.2 Novi Iskar

1) Results of the Ecological Survey

The excavation area of NOVI ISKAR is characterized by a secondary vegetation. Three zones can be defined:

1: Vegetation of the water bodies, hydrophytic, hygrophyllous and mesophyllous elements

2: Vegetation of zones with accidental water cover, hygromesophyllous and mesophyllous elelments

3: Vegetation of the embankments and slopes, xerophyllous and xeromesophyllous elements

The ecological maps presented (cf. pp.79)display the different areas of succession and recolonization.

Due to the fact, that this site is artificial and has not been in operation since long, intensive succesion activities of the species associations can be observed. This succession reaches the climax stade in some of the investigated places.

Nevertheless, the vegetation elements are natural and ruderals are only slowly penetrating from the arable land areas around the site.
Faunal elements are only found with common species in small numbers. Rare, threatened and endemic species have not been recorded.
The degradation of habitats only occur as destruction of habitats by former excavation activities which subsequently lead to the creation of new habitats and the introduction of untypical floral and faunal elements.
The ecological importance and the ecological potential of the site is estimated to be low.

2) Results of the Environmental Survey

a) Traffic Noise Measurements

The maximum noise level at the two recording positions, which were close to the brick factory, rises up to 65.5/66.8 dB(A) (cf. pp.30).
A decrease of number of vehicles during noon time has only been recorded at position 1 (of NOVI ISKAR). For both recording positions there is a distinct maximum around 6:00 pm, which is obviously coincident with the end of the daily working period.
Throughout the day the noise level has no distinct maximum. Its background level has been calculated to 45.68 dB(A) (n=6).

b) Wind Measurements

The wind regime at the site of NOVI ISKAR is mainly influenced by the mountain range which lies in close vicinity to the site. Thus the main direction is north with winds from NW to NE. The wind velocity has been recorded to a maximum of 4.0 m/sec and 4.5 m/sec respectively.
This data too, has still to be considered in relation to the annual data from the SOFIA Institute of Meteorology.

3.3 Rudinata

1) Results of the Ecological Survey

As the RUDINATA site is a quarry which is still in operation it is obvious that the pastural vegetation typical for this region of the GREATER SOFIA MUNICIPALITY is completely destroyed especially due to stone breaking activities.
The surrounding areas however are of ecological interest. They represent a secondary originated pastural vegetation with typical phytocoenosis' at a location of a former decidous forest. The development of the site led to a selection of certain phytocoenosis' which are estimated not to be intensive.
The zoocoenosis' are represented by only a small number of insects and mammals among these the wolf (*Vulpes vulpes*) has been recorded.

Rare, threatened or endemic species have not been recorded.
The degradation of the habitats mainly derives from the activities in the quarry but is limited to the stone breaking niveaus.
Due to the already degraded habitat and to the negative influences from the KREMTKOVTSI factory nearby, the ecological potential as well as the ecological value range at a comparatively low level.

2) Results of the environmental Survey

a) Traffic Noise Measurements

At the site of RUDINATA two positions which represent the access possiblities to the quarry have been investigated for traffic noise (cf. pp.66).
The presented results (cf. pp.30,31,34) indicate relatively high maxima (67.5/56.1 dB(A)) for both locations with totally different frequency of vehicles.
Near the entrance of the quarry (position 5, cf. table 01, p.31) the numbers of vehicles recorded per hour mounts up to a maximum of 57 vehicles which consist of working traffic to the quarry as well as passing traffic to the villages of BUKOVO and SESLAVTSI.
The second location (side road to the quarry of CHORA) has an extremely low traffic frequency due to the remote recording position.
At both recording places the background level is comparatively high, a fact which may be explained by the goundlevel noise from the nearby factory of KREMITKOVTSI. The mean value has been calculated to 45.32 dB(A) (n=6).

b) Wind measurements

Although the obtained data for the wind regime at RUDINATA ranges at a low level (maximum wind speed 8.9 m/sec from NE) the situation is similar to the site of KATINA.
At both recording positions (cf. pp. 73) wind velocity has been measured between 2.5 and 8.0 m/sec with variable compass direction. Since the site of RUDINATA, too, has a complex geomorphological characteristic, the direction of the wind changes often and rapidly. Obviously the different stone braking levels with their steep downfalls of more than 20 meters height accelerate the winds occuring in the region.
For this site, too, the obtained data has still to be cross-checked with the annual records from the SOFIA Institute of Meteorology.

3.4 Suhodol I

1) Results of Additional Surveys

In addition to the environmental survey of phase 1, water analysis and determination of wind speed and direction have been part of the investigations of phase 2.

a) Ecologoical Survey

The Index of Saprobie has been determined further downstreams from the pumping device (see Progress Report I).
At the sampling position the creek was strongly eutrophicated and the algal associations gave a very poor impression.
The index has been determined to be beta-masosaprobic.

b) Water Samples

The water quality of the river which passes north of the site SUHODOL I has been investigated during the phase 2 (cf. table p.23, map pp.66).
The values of the obtained data lay within the range of the national Bulgarian standards class II and III.
The normal distribution of pollutants in this water system does not give any reasons for concern for health risks for the adjacent settlements in the region close to the sampling point.
The relatively high values of turbidity and coliform bacteria indicate a strong influence of domestic waste waters discharged further upstream.

c) Wind measurements

The position of the recording point for wind velocity and compass direction has been fixed to a location north-west of the actual dumping site.
As the geomorphological characteristics of the entire site are rather monotonous the wind regime appears to be quite uniform.
Thus the winds blew constantly from north with maxima rising up to 6 m/sec.
As it applies for the other site, the wind data for Suhodol I, too, has to be put into relation to the annual data from the SOFIA Institute of Meteorology.

3.5 Suhodol II

As there is a strong influence from the waters of the existing dumpimg ground SUHODOL II across the hill down to SUHODOLSKA VALLEY, the investigations for this site have been split into two different parts :

Investigations for the existing dumping ground SUHODOL II
Investigations for the adjacent SUHODOLSKA VALLEY

1) Results of the Ecological Survey

The dumping ground Suhodol II

The phytocoenosis' at this site range within a broad spectrum due to the geomorphological character of the location being a narrow, nearly enclosed valley at its upper end.

Among these coenosis' are forest communities at the head of the valley, gras communities with typical diversities at the slopes of the site, secondary overgrassed communities with drought-resistent ruderal elements on the bottom of the valley within the area of the actual dumping ground (cf. map pp.79, phase 2).
In total the vegetation gives a natural impression in spite of its secondary origin which is enforced by the untouched tree-, bush- as well as meadow communities which provide optimal conditions for the maintenance of normal phytocoenological structures.

The faunal associations of the site do not differ much from those found at SUHODOL I. However, due to the season (summer) the faunal species composition shifted to a higher concentration of insects (mainly butterflies).

Among the protected species (birds, amphibians; cf. pp.a-21, pp. 57) detected at this site groups of the *Corvus corax* (raven) happen to visit the location.

Other rare, endemic or threatened species have not been recorded.

The degradations of the habitats mainly are due to the changement of the hydrological regime (concrete pipe diverting natural waters), disturbance from dumping activities, intoxication by disposed hazardous substances.

Due to the strong ecological potential of the site deriving from natural communities and active secondary succession processes the ecological value of the entire site is estimated to be rather high. All the more as the site lays in close vicinity to the LJULIN mountains which are known as a location for the Bulgarian endemit *Dianthus urumoffii*.

Suhodolska Valley
As part of the ecological survey for Suhodol II the SUHODOLSKA RIVER has been investigated for its saprobiological characteristics (cf. map pp. 79 phase 2).

Although the creek system of SUHODOLSKA VALLEY, which in fact consists of four to five smaller tributaries, is severely threatened by various sources of pollution, the self cleaning capacity of SUHODOLSKA RIVER is surprisingly high.
Upstream the Index of Saprobie has been determined to be close to oligo-saprobic (first class of water quality (cf.p.2). Further downstream with the discharge of waters from the dumping site SUHODOL II the quality of the fast running waters decreases to beta-mesosaprobic. Even further downstream this quality class is detectable.
Down to the settlements which border the small river the bottom fauna of the river bed has to be described as optimal and stable. The river is in its optimal natural condition.

2) Results of the Environmental Survey

a) Water samples

For the investigations of the water quality of surface waters at SUHODOL II the survey was again split into two main parts : surface waters of the existing dumping site, surface waters of SUHODOLSKA RIVER.

The dumping ground Suhodol II

The defined positions of water sampling at this site follow the natural water flow which originates in the forest community at the head of the SUHODOL II valley and which is connected to the natural pool as well as the remaining parts of the former reservoir (nowadays covered with floating wastes and the concrete collecting basin (cf.map pp.66, pp.79).

The concrete pipes lead these waters across the eastern hillparts down to SUHODOLSKA VALLEY.

The obtained values (cf.table p.24, diagrams pp.25) indicate an extremely charged water body with values of coliform bacteria rising up to 790.000 (!!!).

The values of other parameters, too, exceed by far national Bulgarian standards: conductivity, BOD, COD.

Although the concentrations for the other substances increase in the old parts of the reservoir (see diagrams), the self cleaning capacity of the water flow within the concrete pipes is incredibly high. Waters which enter the SUHODOLSKA RIVER (in the diagrams on pp. 25 to 27 indicated as positions 5 and 6) almost immediately enter the self cleaning processes of the river and the water shows quite normal concentrations when it reaches the first settlements further downstreams.

Suhodolska River

The influence of the discharge of the dumping ground waters into SUHODOLSKA RIVER becomes evident with the comparison of the water quality upstream and downstream.

The bar-charts displaying the obtained values for the different parameters (cf.pp.21,22) show a prominent bar for nearly all substances at position 4, i.e. after the discharge of polluted waters.

The upstream waters show a normal concentration within the range of the national Bulgarian standards for surface waters class II and III with an increased amount of chlorine obviously deriving from discharges further upstream.

b) Ambient Atmosphere Gas determination

The results of the investigations for ambient atmosphere gases show a normal distribution of the examined gases (cf. pp.28,29).

The two investigated positions have been chosen according to their differences in age and their hydrological characteristics.

Position 1 is older than position 2, which is situated closer to the remaining part of the old reservoir. These differences are reflected in the concentration of the analysed gases.
Position 1 has a higher concentration of Methane whereas at position 1, which is supposed to be an area with a higher underground-humidity, the concentration of Hydrogensulphide exceeds the amount of position 1.

4 Comments on the Results of the different surveys (phase 1, 2)

The results from the various surveys seen as an entity or differentiated for single sites give many reasons for concern. Especially those sites where disposal of waste actually takes place show an urgent need of development and management.
At the same time the collected data is considered to be sufficient to form a sound base for further discussions of the development of candidate disposal sites.

4.1 Dolni Bogrov

The site of DOLNI BOGROV bears an enormous environmental risk. The uncontrolled disposal of all sort of wastes right into the water body of a pool and swamp area creates, already now, severe ecological problems and risks. The fact that the dumping level still proceeds towards the pools implicates at the same time the progress of the analyzed pollutants towards the water areas less affected so far. The circumstances of the multiple use of the waters at DOLNI BOGROV rises the sensitivity of the entire location to any advancing degradation of the natural conditions. The mere assumption that the bottom sediments of the pools are highly charged with toxic pollutants (heavy metals, organic compounds) decreases the number of possible technical solutions for this site.
It has to be repeatedly emphasized that, as far as pollution problems in the aquatic environment are concerned, the resulting final consequences of pollution due to the unknown retardation processes of biological reaction become visible and intelligible only after certain periods of time.
In this respect the aquatic systems at DOLNI BOGROV show biological reactions on events that possibly happened several years ago.
Bearing this fact in mind any technical solution for this site has to consider further medium-term ecological reactions on events happening at present.

4.2 Katina

Within the area of the GREATER SOFIA MUNICIPALITY the site of Katina represents one of the places with a high scenic value. The entire location including the two lakes has constantly been recovering from the excavation activities during the past years. Its remote character contributes to its environmental value.
Unfortunately, the term 'scenic value' does not indicate objective units such as meters or milligrams per litre. Thus the ranking of a site for its 'scenic value' will always be the spectator's subjectivity and discussions on this item will be difficult.
In spite of the high value of KATINA, the sacrifice of its beauty has to be discussed in the context of this project.
The controlled solution for the solid waste disposal system in SOFIA with - among others - the development of a safe disposal site at KATINA which ensures a reduction of negative environmental impacts to a minimum, should be considered a good possibility to protect the scenic value of the site.

4.3 Koriyata

KORIYATA may be taken as an example for a site which is, a priori, not suitable for a development into a disposal site. This does not predominantly refer to the floral and faunal communities which may consist of rare species but rather to its topographical peculiarities namely being an excavation area for fluvial sediments which partly undergoes the level of the nearby RIVER ISKAR. Even if plans were made for digging and sealing the underground in order to develop a safe disposal site, the overall energies necessary for such works would cause an extreme imbalance between effectiveness and costs.

4.4 Novi Iskar

NOVI ISKAR is one of the locations which may be developped into a disposal site. Constraints from the ecological and environmental points of view are de facto non-existent. Besides KATINA, NOVI ISKAR, too, may be a start for a persistent solution, if its technical realisations prove to be sustainable for the environment.

4.5 Rudinata

For the site of RUDINATA, too, environmental and ecological constraints are non-existent.
However, RUDINATA may be taken as a typical example for a peaceful coexistence of economic interests and basic demands of local populations :
As it has been described before (see Progress Report I) the surrounding meadows of the huge quarry are grazing ground for the cattle of several villages in the region. Until now the stone breaking activities of the quarry did not disturb the grazing activities of the farmers.

The maintenance of these balanced interaction between official interests and social demands of the locals should therefore be the superior guideline for the considerations of RUDINATA to be developped into a disposal site.

4.6 Suhodol I

For the existing disposal site of SUHODOL I the situation is defined similar to that of DOLNI BOGROV, yet combined with less severe environmental risks.
The degradation of nature is complete and has already reached a high level connected to possible health risks for the subordinated water systems in the north of the location.
The difference to DOLNI BOGROV, however, is to be seen in a certain development potential of the site towards the extension of the actual dumping level.

It has to be strongly recommended that the future development of this location has to be started with the reorganization of the technical characteristics of the dumping ground, namely to prevent the contact of the leachate with the local environment.
If this necessity is neglected in future, a direct increase of health risks can no longer be excluded.

4.7 Suhodol II

The results of the surveys for this site together with the experience from the other investigated sites are leading to two final conclusions :

1) The development of disposal sites with contact to natural water bodies should be excluded from any future planning.

2) The influences of pollution to adjacent regions may not be evident at first sight but nevertheless they are as existent as in close vicinity to the source of pollution.

These conclusions are valuable for many pollution sources and the arising problems herewith.
Especially for SUHODOLSKA VALLEY these conclusions create a strong demand for a solution of the actual problems. Even if no actual risk could be detected for SUHODOLSKA VALLEY and its river systems, it has again to be stated that nature reacts with an undefinable delay of time to whatsoever event of pollution.
In addition, the source of pollution for SUHODOLSKA VALLEY is in fact the existing dumping ground SUHODOL II and this has been determined to be a very potential pollution source.

5 Ranking of the surveyed sites

The experience from the investigation of the described sites, existing and candidate, creates the necessity of ranking the different sites according to the results of the surveys.

Due to the two main characteristics of the sites - existing and candidate - however, two ranks are proposed:

- ranking of the surveyed existing sites
- ranking of the surveyed candidate sites

5.1 Environmental-ecological Criteria as the Base for the Ranking

Among the criteria which are thought to be essential for a consistent ranking of the sites, one finds biological items like the stade of development of the present floral and faunal communities and the existent degradation of the habitats.

As the result from chemical analysis the danger of arising health risks should be taken into account in combination with the biological features (e.g. Index of Saprobie combined with chemical analysis).

The third group of criteria should aim at the climatological and physical influences (of existing or future character) on the involved local population. Among these are impacts on the air, the water bodies, the traffic (combined with noise).

Based on experiences in other countries with similar development plans for natural sites with impact on the local population, it can be stated that similar to the reaction of nature to any development, the shifting of the social balance in the area in contact to whatsoever development in the region can hardly be forecasted. All the more this criteria should be handled with the utmost sensitivity.

5.2 List of ranked sites

Based on the reported considerations the list of ranked sites has been determined as follows:

For the development of the existing sites as future solid waste disposals:

First rank : SUHODOL I

From the environmental and ecological point of view the further development of DOLNI BOGROV as a future dumping site cannot be recommended (see chapter 6). Therefore this list has only one position.

For the candidate sites as future dumping areas :

First rank : KATINA

Second rank : NOVI ISKAR

Third rank : RUDINATA

Fourth rank : SUHODOL II

The site of KORIYATA has to be excluded from any further development plans.

6 Short abstract of Necessary Priority Projects

Although the ranking of the sites implicates a certain priority for the development of the solid waste system in the area of the GREATER SOFIA MUNICIPALITY, there are several projects which are thought to be of urgent necessity.

DOLNI BOGROV :

The development of DOLNI BOGROV towards the closure of the actual dumping site should start immediately. The planning should aim at the rehabilitation of the entire aquatic system and encompass not only the sealing of the actual dumping ground on land but also and predominantly the further penetration of extremely polluted waters through the waste and into the pools. Special regard should be taken to the sediments of the pools and, combined to possibly necessary earthworks, the resulting quick remobilization of pollutants from the sediments into the waters.

SUHODOL II :

Immediate reaction is required for the interactions of SUHODOL II and SUHODOLSKA VALLEY. The potential of high future health risks for the population of the lower parts of the valley is defined to be extremely high.

SUHODOL I :

Prior to any enlargement of the actual dumping level at SUHODOL I the technical situation of the dumping ground has to be changed to secure technical systems which prevent negative impact on the environment.

KATINA, NOVI ISKAR and RUDINATA :

Parallel to the priority projects defined above the development of these three locations as future dumping sites should start.

Interim Report
Part Ecology

Annex

Analytical Tables
Diagrams

ANALYTICAL TABLES
Specification :
Surface Waters
Site : Katina
Sampling Date : 16.07.1993

Table no.: 01

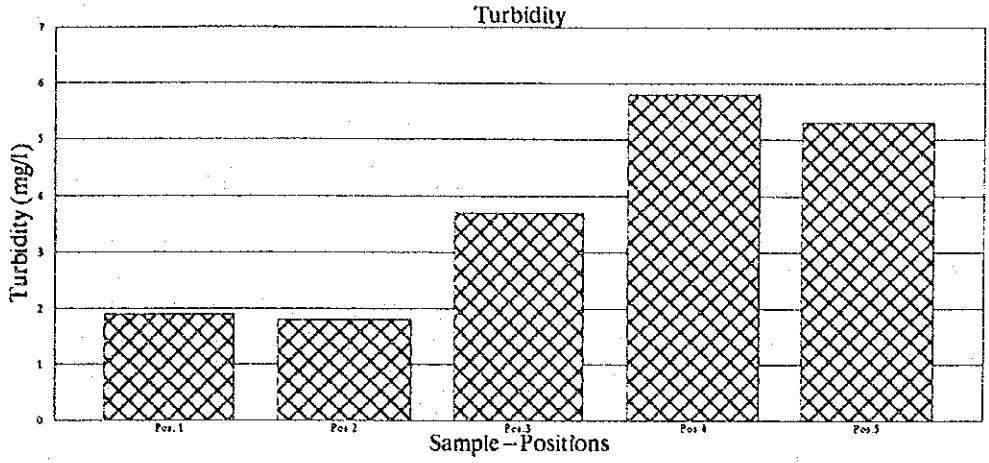
No.	Parameter/Unit	Pos. 1	Pos. 2
1	Time of sampling	10.15	10.25
2	Climate/ see below	sun	sun
3	Temperature Air/ °C	20	20
4	Temperature Water/ °C	20	18
5	Turbidity Water/ mg/l	> 5.0	> 5.0
6	Conductivity/ µS/cm	3800	9800
7	pH/ ./.	8.25	8
8	Dissolved Oxygen/ mg/l	8.5	7.5
9	BOD 5/ mg/l	8	5
10	COD/ mg/l	50.5	44.4
11	Sulfate/ mg/l	2279.7	2502
12	Chlorine/ mg/l	695	2824
13	Total Nitrogen/ mg/l	2.2	2.3
14	Arsenic/ ppm	0.0009	0.001
15	Cadmium/ ppm	0.0003	0.0007
16	Calcium/ ppm	9.4	12.8
17	Cobalt/ ppm	0.002	0.003
18	Copper/ ppm	0.015	0.018
19	Iron/ ppm	0.14	0.26
20	Lead/ ppm	0.008	0.01
21	Manganese/ ppm	0.15	0.125
22	Magnesium/ ppm	6.65	7.3
23	Mercury/ ppm	0.00049	0.0005
24	Potassium/ ppm	2.9	2.3
25	Sodium/ ppm	17.1	63.6
26	Zinc/ ppm	0.019	0.036
27	Coliform Bacteria/ MPN	4	2

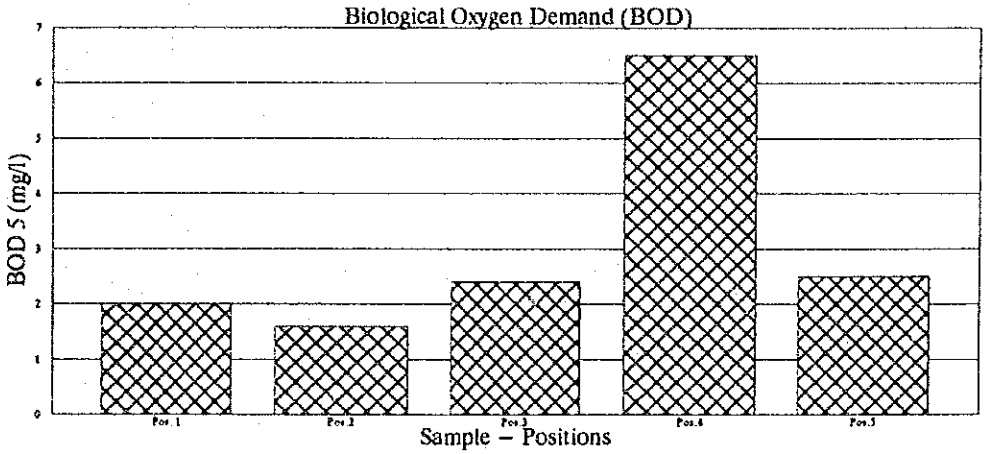
Climate : % : percentage of cloud cover
sun : sunny
rai : rainy
gre : grey

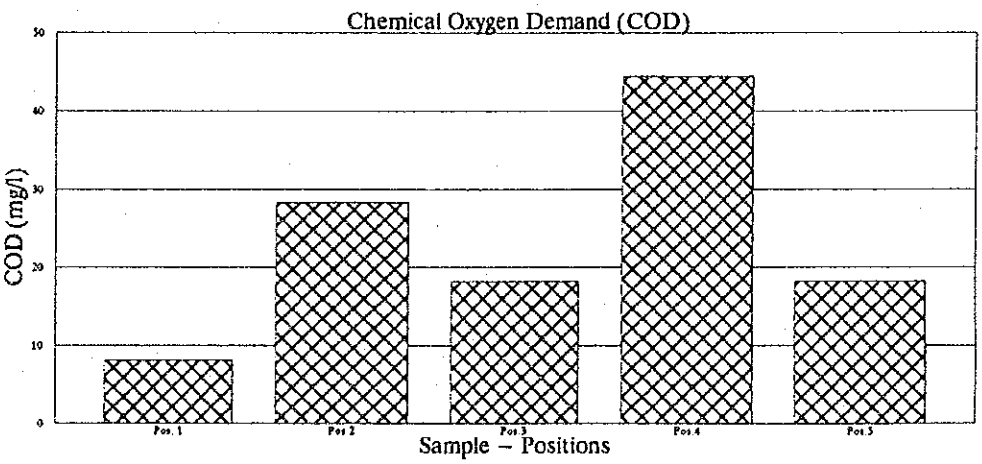
ANALYTICAL TABLES
Specification :
Surface Waters
Table no.: 01
Site : Suhodolska Valley
Sampling Date : 15.07.1993

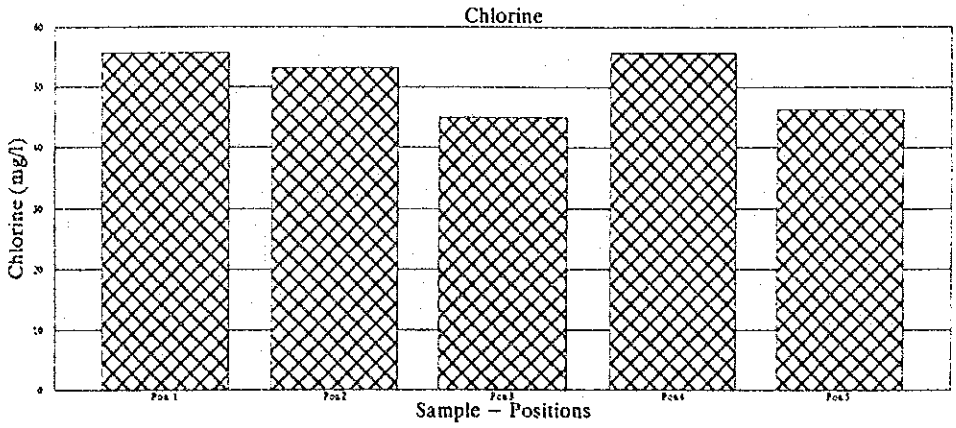
No.	Parameter/Unit	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5
1	Time of sampling	11.31	11.41	11.55	12.05	12.21
2	Climate/ see below	sun	sun	10	10	15
3	Temperature Air/ °C	19.5	13.8	18	18	22.8
4	Temperature Water/ °C	12.5	10.8	12.7	12.8	18
5	Turbidity Water/ mg/l	1.9	1.8	3.7	> 5.0	> 5.0
6	Conductivity/ µS/cm	324	500	428	435	402
7	pH/ ./.	8.51	8.47	8.45	8.27	8.54
8	Dissolved Oxygen/ mg/l	9.3	8.6	8.5	7.7	9.4
9	BOD 5/ mg/l	2	1.6	2.4	6.5	2.5
10	COD/ mg/l	8.1	28.3	18.2	44.4	18.2
11	Sulfate/ mg/l	15.2	21.8	19.1	24.1	23.9
12	Chlorine/ mg/l	55.6	53.2	45	55.6	46.3
13	Total Nitrogen/ mg/l	1.3	1.1	2.2	1.5	1.8
14	Arsenic/ ppm	0.0006	0.0008	0.0005	0.0005	0.0004
15	Cadmium/ ppm	0.0015	0.0005	0.0003	0.0004	0.0005
16	Calcium/ ppm	1.5	2.1	1.8	1.4	1.6
17	Cobalt/ ppm	0.001	0.002	0.005	0.008	0.002
18	Copper/ ppm	0.004	0.007	0.005	0.008	0.009
19	Iron/ ppm	0.42	0.12	0.54	0.21	0.75
20	Lead/ ppm	0.004	0.004	0.005	0.007	0.016
21	Manganese/ ppm	0.042	0.026	0.028	0.017	0.04
22	Magnesium/ ppm	1.45	1.95	1.5	1.55	1.6
23	Mercury/ ppm	0.00049	0.00049	0.00049	0.00049	0.00049
24	Potassium/ ppm	0.3	0.7	1.2	0.7	0.5
25	Sodium/ ppm	1.8	2.1	2.7	2.3	1.7
26	Zinc/ ppm	0.016	0.014	0.011	0.01	0.012
27	Coliform Bacteria/ MPN	790	1100	490	3300	1300

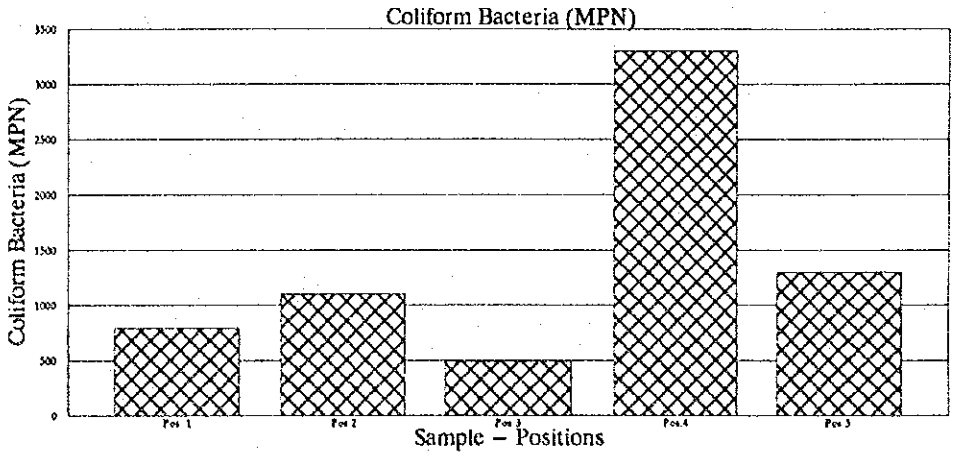
Climate : % : percentage of cloud cover
sun : sunny
rai : rainy
gre : grey


Turbidity
Turbidity (mg/l)
Pos. 1
Pos. 2
Pos. 3
Pos. 4
Pos. 5
Sample – Positions


Biological Oxygen Demand (BOD)
BOD 5 (mg/l)
Pos. 1
Pos. 2
Pos. 3
Pos. 4
Pos. 5
Sample – Positions


Chemical Oxygen Demand (COD)
COD (mg/l)
Pos. 1
Pos. 2
Pos. 3
Pos. 4
Pos. 5
Sample – Positions


Chlorine
Chlorine (mg/l)
Sample – Positions


Coliform Bacteria (MPN)
Coliform Bacteria (MPN)
Sample – Positions

ANALYTICAL TABLES
Specification :
Surface Waters
Site : Suhodol I
Sampling Date : 15.07.1993

Table no.: 01

No.	Parameter/Unit	Pos. 1
1	Time of sampling	9.15
2	Climate/ see below	sun
3	Temperature Air/ °C	13.6
4	Temperature Water/ °C	> 5.0
5	Turbidity Water/ mg/l	308
6	Conductivity/ µS/cm	8.11
7	pH/ ./.	7.9
8	Dissolved Oxygen/ mg/l	10
9	BOD 5/ mg/l	56.61
10	COD/ mg/l	56.6
11	Sulfate/ mg/l	14.8
12	Chlorine/ mg/l	60.2
13	Total Nitrogen/ mg/l	6.7
14	Arsenic/ ppm	0.001
15	Cadmium/ ppm	0.0005
16	Calcium/ ppm	1.1
17	Cobalt/ ppm	0.008
18	Copper/ ppm	0.008
19	Iron/ ppm	1.68
20	Lead/ ppm	0.007
21	Manganese/ ppm	0.228
22	Magnesium/ ppm	1.15
23	Mercury/ ppm	0.00049
24	Potassium/ ppm	0.4
25	Sodium/ ppm	1.6
26	Zinc/ ppm	0.025
27	Coliform Bacteria/ MPN	7900

Climate : % : percentage of cloud cover
sun : sunny
rai : rainy
gre : grey

ANALYTICAL TABLES

Specification :
Surface Waters
Site : Suhodol II
Sampling Date : 15.07.1993

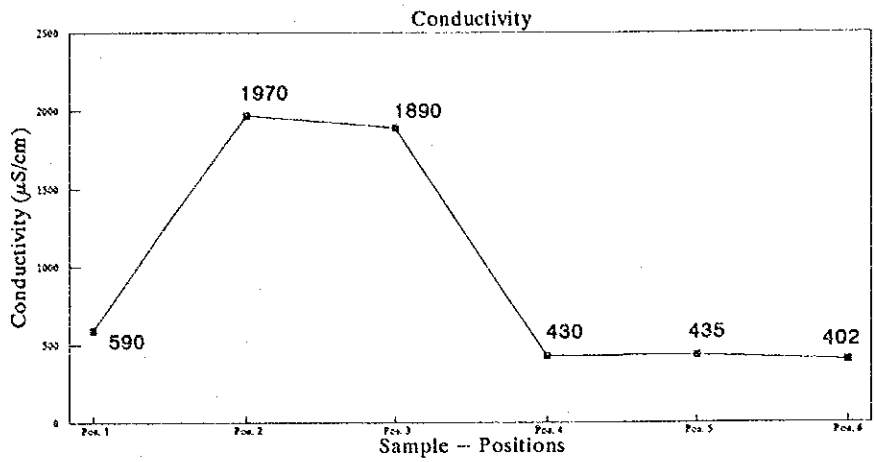
Table no.: 01

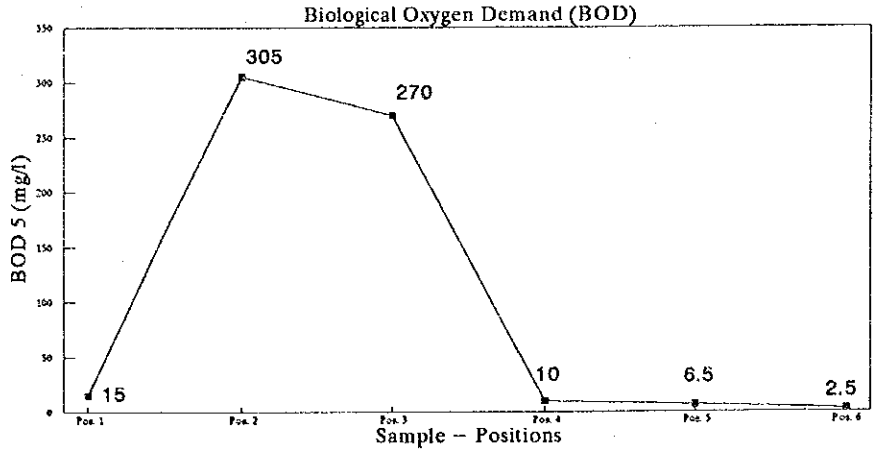
No.	Parameter/Unit	Pos. 1	Pos. 2	Pos. 3	Pos. 4
1	Time of sampling	9.38	10.01	10.11	10.31
2	Climate/ see below	sun	sun	sun	sun
3	Temperature Air/ °C	14.5	15.5	15.5	17.2
4	Temperature Water/ °C	12	11.2	11.5	11.5
5	Turbidity Water/ mg/l	3.5	> 5.0	> 5.0	> 5.0
6	Conductivity/ µS/cm	590	1970	1890	430
7	pH/ ./.	7.89	7.47	7.45	8.01
8	Dissolved Oxygen/ mg/l	0.2	-	-	6.3
9	BOD 5/ mg/l	15	305	270	10
10	COD/ mg/l	30.3	606.3	552	39.4
11	Sulfate/ mg/l	3.8	44.2	46.3	23.9
12	Chlorine/ mg/l	55.6	324.1	293	50.9
13	Total Nitrogen/ mg/l	4.1	17.2	19.5	6.9
14	Arsenic/ ppm	0.0011	0.0027	0.0029	0.0007
15	Cadmium/ ppm	0.0004	0.0003	0.0005	0.0014
16	Calcium/ ppm	2.8	10.8	8.6	1.9
17	Cobalt/ ppm	0.003	0.007	0.009	0.001
18	Copper/ ppm	0.007	0.018	0.016	0.006
19	Iron/ ppm	0.8	2.62	2.59	0.76
20	Lead/ ppm	0.012	0.019	0.036	0.009
21	Manganese/ ppm	4.01	6.13	4.15	0.84
22	Magnesium/ ppm	2	4	3.85	1.65
23	Mercury/ ppm	0.00049	0.0005	0.0005	0.00049
24	Potassium/ ppm	0.6	3.5	4.3	1
25	Sodium/ ppm	2.2	9.6	18.2	4.3
26	Zinc/ ppm	0.018	0.132	0.115	0.02
27	Coliform Bacteria/ MPN	130	790000	49000	13000

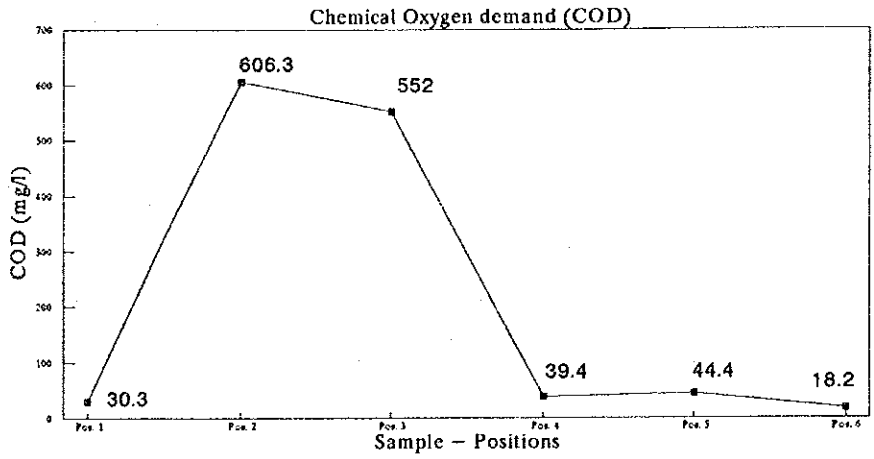
Climate : % : percentage of cloud cover
sun : sunny
rai : rainy
gre : grey

SUHODOL II – Water Analysis – Diagrams 01

(Positions 1 to 4 : Suhodol II
Positions 5,6 : Suhodolska Valley)

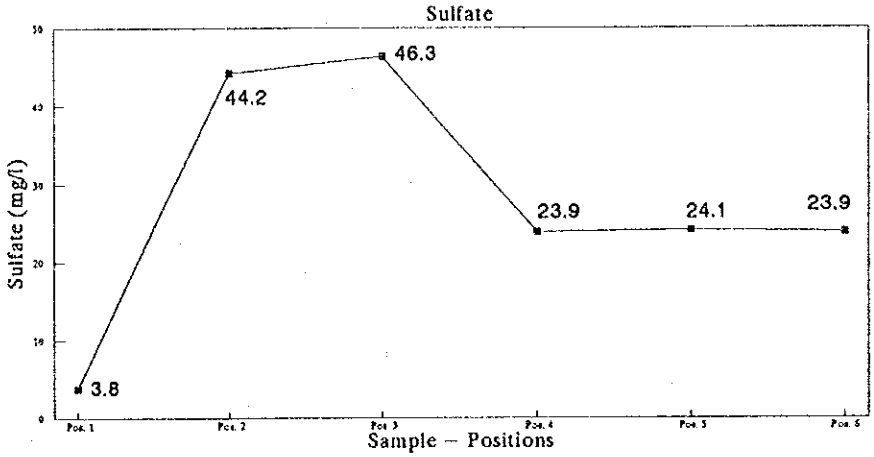


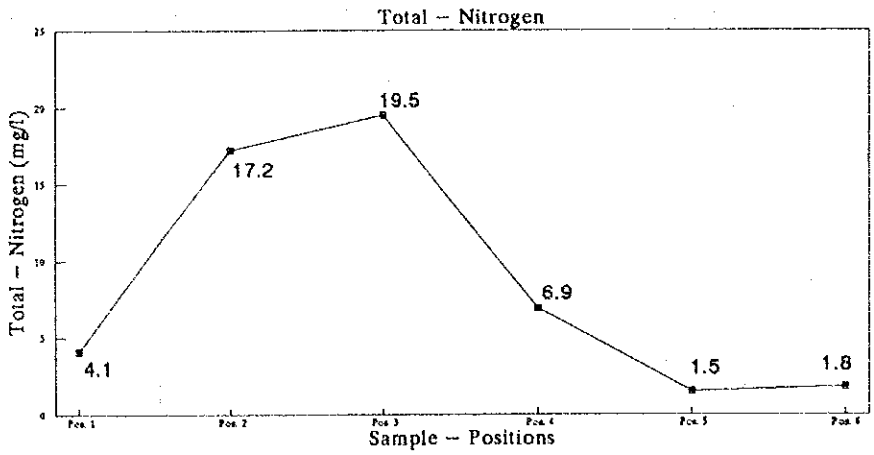


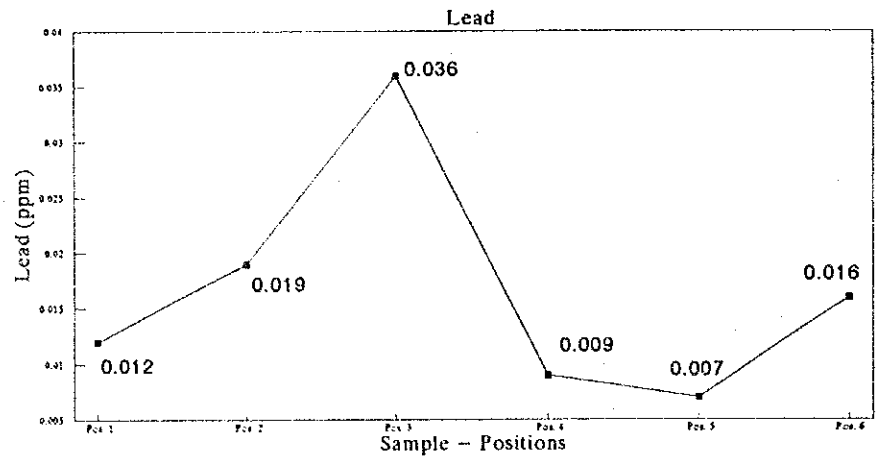


SUHODOL II – Water Analysis – Diagrams 02

(Positions 1 to 4 : Suhodol II
Positions 5,6 : Suhodolska Valley)

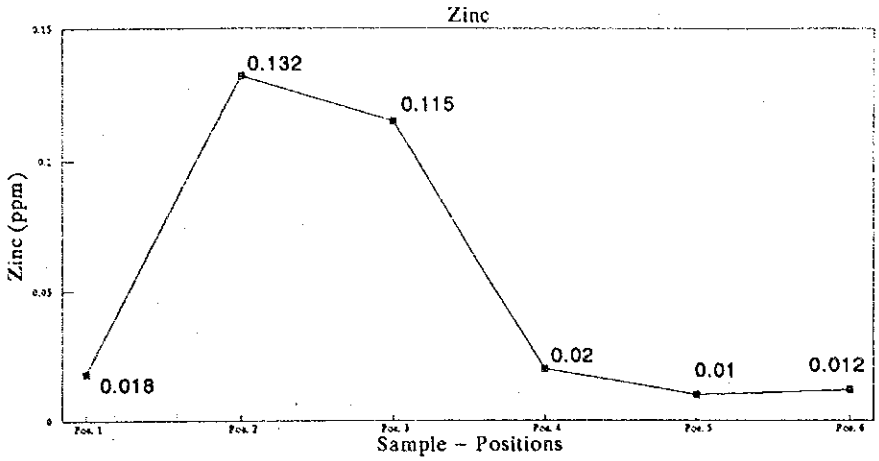


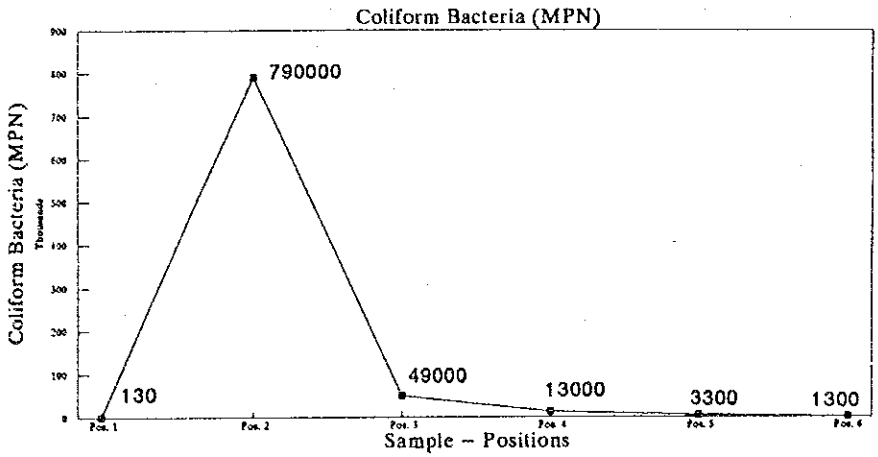




SUHODOL II – Water Analysis – Diagrams 03

(Positions 1 to 4 : Suhodol II
Positions 5,6 : Suhodolska Valley)





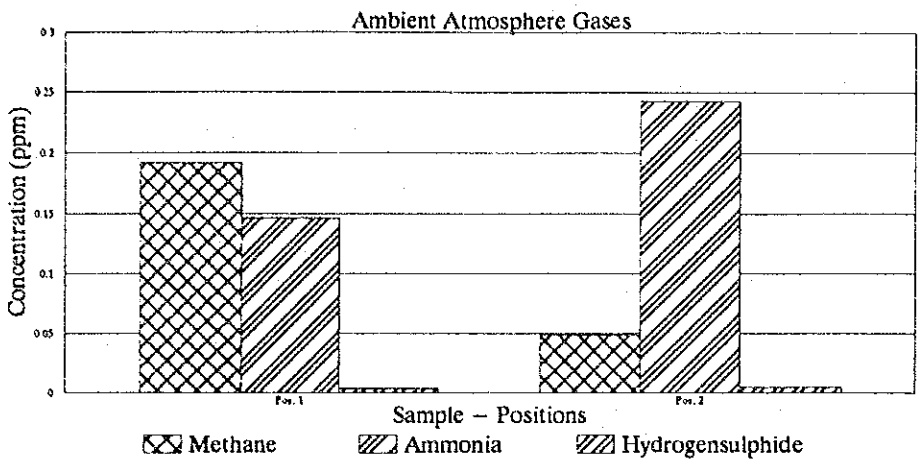
ANALYTICAL TABLES

Specifications :
Ambient Atmosphere Gases Table no.: 01
Site : Suhodol II
Sampling Date : 22.07.1993

No.	Parameter/Unit	Pos. 1	Pos. 2
1	Time of sampling	10.01	11.01
2	Climate/ see below	sun	sun
3	Wind speed/ m/sec.	2.8	2.4
4	Wind direction/ compass	N	N
5	Relative humidity/ %	59	52
6	Temperature Air/ °C	21.2	23
7	Temperature Surface/ °C	24.6	29
8	Height of sampling/ m	1	1
9	Odour/ see below	unp	unp
10	Methane/ ppm	0.192	0.049
11	Ammonia/ ppm	0.146	0.243
12	Hydrogensulfade/ ppm	0.004	0.005

Abbreviations and Notes :

Climate : % : percentage of cloud cover
sun : sunny
rai : rainy
gre : grey
Odour : unp : unpleasant
non : none


Ambient Atmosphere Gases
Concentration (ppm)
0.3
0.25
0.2
0.15
0.1
0.05
0
Pos. 1
Pos. 2
Sample – Positions
Methane
Ammonia
Hydrogensulphide

ANALYTICAL TABLES

Specification :
Traffic - Noise Table no.: 01
Site : Novi Iskar; Katina; Rudinata
Recording Date : July 1993
Parameter : Equivalent traffic noise given as dB(A)

Time	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Pos. 6
6.15	52.9	53.6	50.2	49.6	54.7	39.8
7.15	58.3	59.2	53.5	54.3	64.5	44.3
8.15	65.1	65.5	58.3	58.9	63.4	53.9
9.15	63.9	63.4	59.7	60.5	65.4	54.2
10.15	64.4	64	61.4	62.3	65.7	55.9
11.15	62.9	63.7	63.8	61.2	66.7	54.8
12.15	63.7	64.6	60.1	58.3	66.9	55
13.15	64.2	65	62.2	59.7	67.5	56.1
14.15	63.3	62.1	61.2	58.8	66.1	55.7
15.15	63.4	63.3	62.4	60.2	65.9	54.4
16.15	62.7	62.9	61.7	60.9	66.3	56
17.15	62.1	62.3	60.1	61.5	66.7	51.2
18.15	65.5	66.8	59.3	60.4	66.1	50.9
19.15	64.8	65	58.4	59	65.9	50.1
20.15	62.4	63.5	55.5	57.9	60.4	47.2
21.15	59.9	60.2	50.2	53.3	58.3	42.7
22.15	53.1	55.7	47.3	48.6	55.9	40.1
23.15	45.9	46.3	38	39.4	42.4	36.6

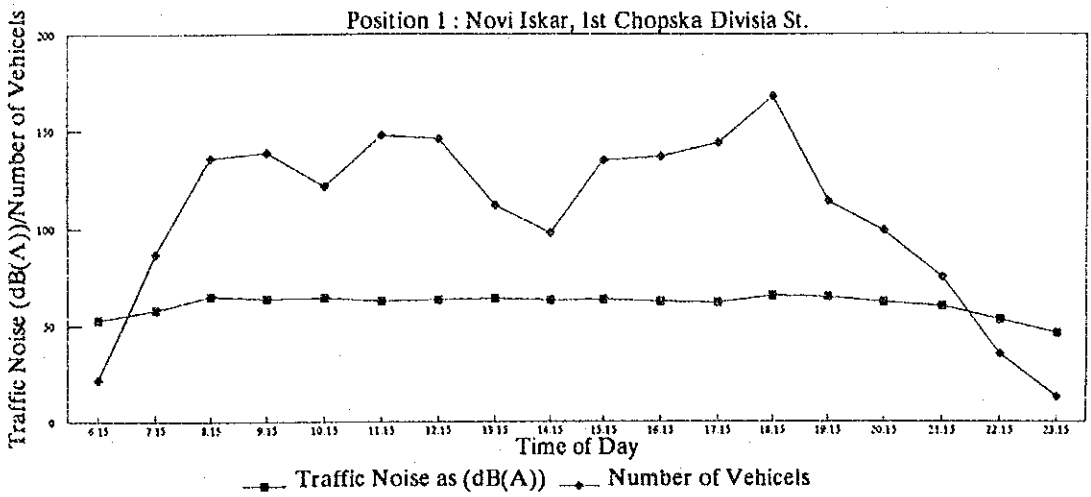
Recording positions :
Position 1 : Novi Iskar : 1st Chopska Divisia brick factory; direction Sofia
Position 2 : Novi Iskar : Koznitza St./Momina Salza St., direction Sofia
Position 3 : Katina : Main road to Katina, near power station
Position 4 : Katina : Main road to Katina, near pig-farm
Position 5 : Rudinata : Near entrance to quarry buildings, direction Seslavtzy
Position 6 : Rudinata : Side road to the quarry CHORA, direction quarry

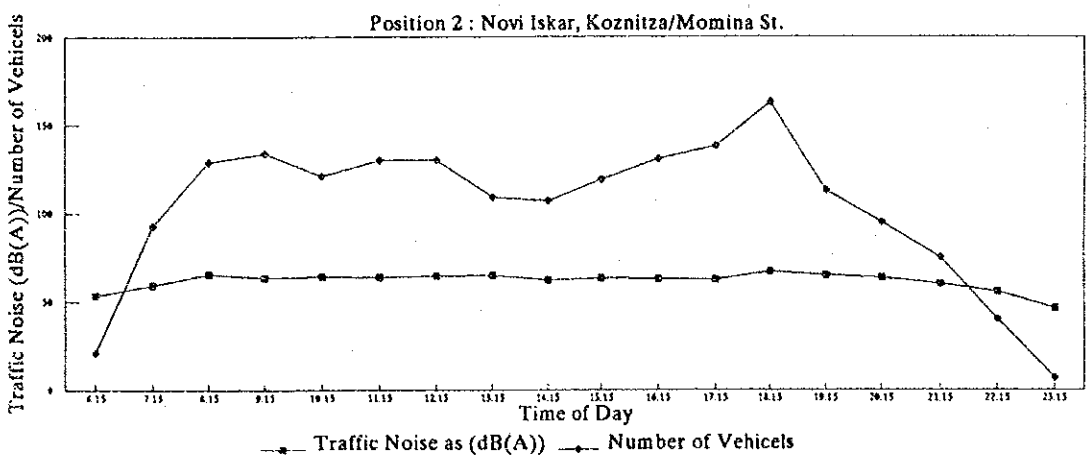
ANALYTICAL TABLES

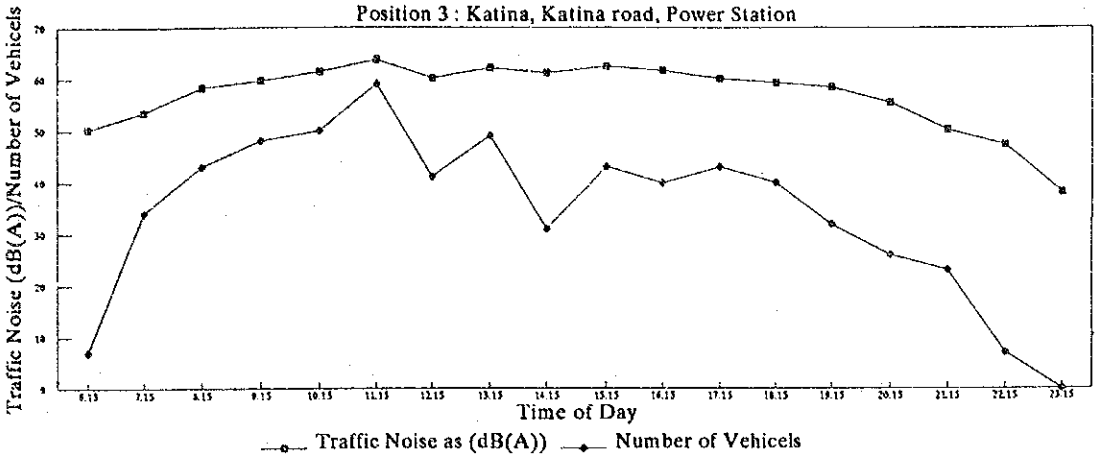
Specification :
Traffic - Noise Table no.: 02
Site : Novi Iskar; Katina; Rudinata
Recording Date : July 1993
Parameter : Number of vehicels per recording position

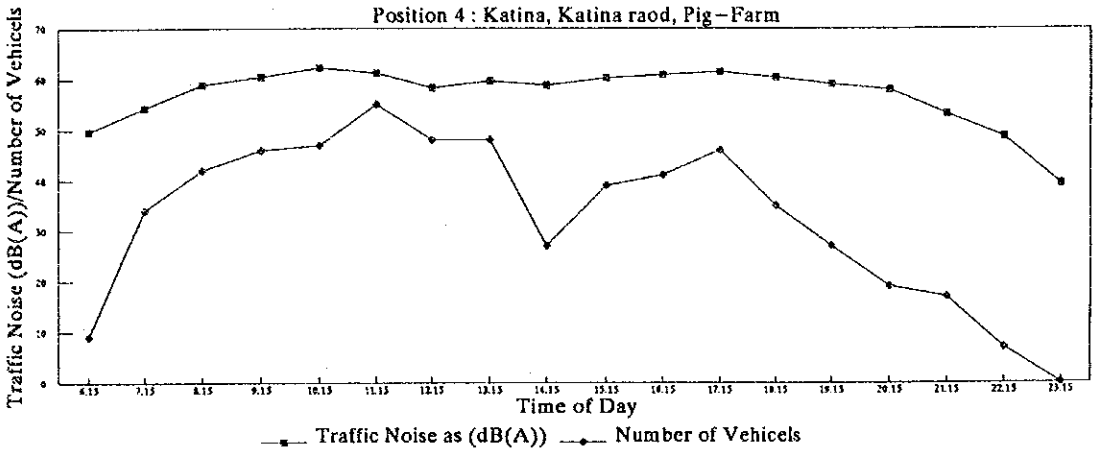
Time	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Pos. 6
6.15	22	21	7	9	15	0
7.15	87	93	34	34	42	0
8.15	136	129	43	42	30	1
9.15	139	134	48	46	38	2
10.15	122	121	50	47	41	2
11.15	148	130	59	55	52	2
12.15	146	130	41	48	53	0
13.15	112	109	49	48	57	1
14.15	98	107	31	27	51	1
15.15	135	119	43	39	50	1
16.15	137	131	40	41	42	2
17.15	144	138	43	46	37	0
18.15	168	163	40	35	32	0
19.15	114	113	32	27	28	0
20.15	99	95	25	19	23	0
21.15	75	75	23	17	20	0
22.15	35	40	7	7	7	0
23.15	13	7	0	0	2	0

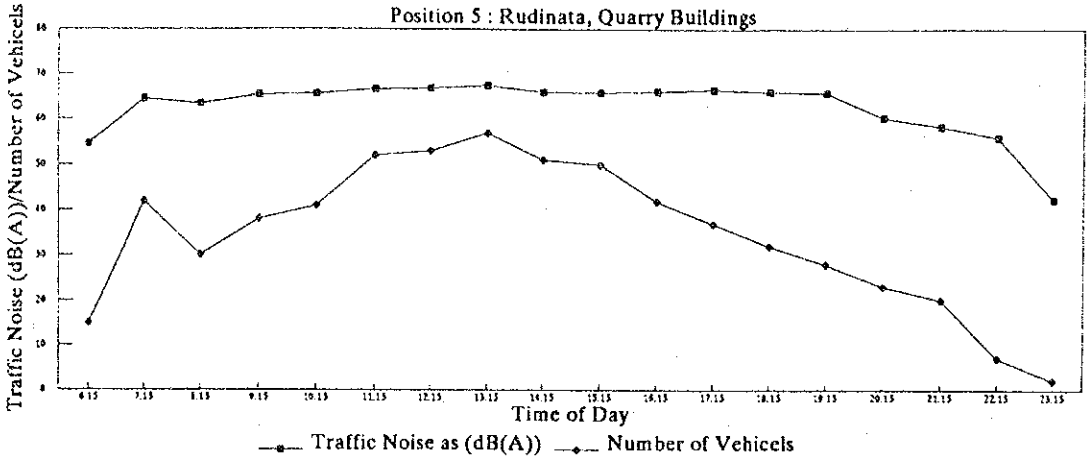
Recording positions :
Position 1 : Novi Iskar : 1st Chopska Divisia St., close to brick factory; direction Sofia
Position 2 : Novi Iskar : Koznitza St./Momina Salza St., direction Sofia
Position 3 : Katina : Main road to Katina, near power station
Position 4 : Katina : Main road to Katina, near pig-farm
Position 5 : Rudinata : Near entrance to quarry buildings, direction Seslavtzy
Position 6 : Rudinata : Side road to the quarry CHORA, direction quarry

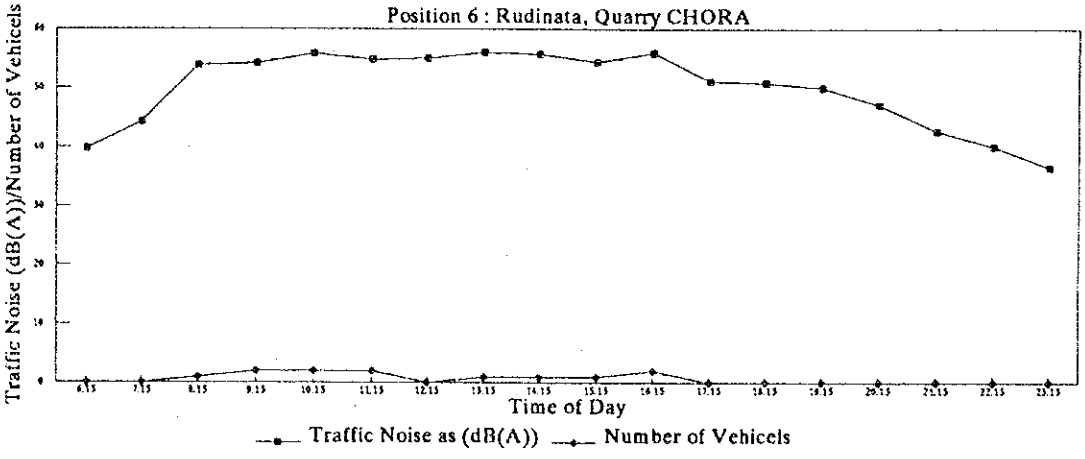

Position 1 : Novi Iskar, Ist Chopska Divisia St.
Traffic Noise (dB(A))/Number of Vehicels
Time of Day
Traffic Noise as (dB(A))
Number of Vehicels


Position 2 : Novi Iskar, Koznitza/Momina St.
Traffic Noise (dB(A))/Number of Vehicels
Time of Day
Traffic Noise as (dB(A))
Number of Vehicels


Position 3 : Katina, Katina road, Power Station
Traffic Noise (dB(A))/Number of Vehicels
Time of Day
Traffic Noise as (dB(A))
Number of Vehicels


Position 4 : Katina, Katina raod, Pig–Farm
Traffic Noise (dB(A))/Number of Vehicels
Time of Day
Traffic Noise as (dB(A))
Number of Vehicels


Position 5 : Rudinata, Quarry Buildings
Traffic Noise (dB(A))/Number of Vehicels
Time of Day
Traffic Noise as (dB(A))
Number of Vehicels


Position 6 : Rudinata, Quarry CHORA
Traffic Noise (dB(A))/Number of Vehicels
Time of Day
Traffic Noise as (dB(A))
Number of Vehicels

List of Species

Species List for the investigated sites; Phase I , Phase II
(sorted by main taxa, species listed alphabetically)

Abbreviations
Prot. : Status of Protection
blank : no protection
x : protected
xx : Bulgarian Red Data species
xxx : Globally threatened species

\+ : Recorded for the site
– : No record

Sites : DB : Dolni Bogrov
KA : Katina
KO : Koriyata
NI : Novi Iskar
RU : Rudinata
SI : Suhodol I
SII : Suhodol II

MYCOTA FUNGI – GABI

No	Prot.	Scientific Name / Taxon	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Calvatia utriformis		–	–	–	–	–	+	–
2		Fomes fomentarius	prahanova gaba	–	–	–	–	–	+	–
3		Marasmius oreades	tcheljadinka	+	+	+	–	–	–	–
4		Polyporus sp.		–	–	–	–	–	+	–
5		Species indet.		–	–	–	–	–	+	–
			Species total	1	1	1	–	–	4	–

ALGAE ALGAE – VODORASLI
Phytoplankton

No	Prot.	Scientific Name / Taxon	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Ankistrodesmus fusiformis		–	–	+	–	–	–	–
2		Aphanothece clathrata		–	–	–	–	–	+	–
3		Aulacosira sp.		–	–	–	+	–	–	–
4		Carteria globulosa		–	–	+	–	–	–	–
5		Clamydomonas spp.		+	+	–	+	–	–	–
6		Closterium spp.		+	–	–	–	–	–	–
7		Coelastrum microporum		+	–	+	+	–	–	–
8		C. pseudomicroporum		+	–	–	–	–	–	–
10		Cosmarium rectangulare		–	–	+	–	–	–	–
11		C. venustrum		–	–	+	+	–	–	–
12		Cosmarium sp.		–	–	–	+	–	–	–
13		Cosmastrum spp.		–	–	+	+	–	–	–
14		Cyclotella sp.		–	+	–	+	–	–	–

ALGAE, Phytoplancton cont'd

15		Diatoma spp.		+	+	–	+	–	–	+
16		Dinobryon divergens var. angulatum		–	–	+	–	–	–	–
17		Euastrum spp.		–	–	+	+	–	–	–
18		Euglena sp.		+	–	–	+	–	–	–
19		Fragilaria spp.		+	–	–	–	–	–	+
20		Gomphosphaeria aponina		–	–	+	+	–	–	–
21		Lepocynclis sp.		–	+	+	–	–	–	–
22		Merismopedia glauca		+	–	–	+	–	–	–
23		Microcystis aeruginosa		–	–	–	–	–	+	–
24		Monoraphidium arcuatum		+	–	–	+	–	–	–
25		M. contortum		+	–	–	+	–	–	–
26		Navicula spp.		+	–	+	–	–	–	+
27		Oocystis lacustris		+	–	–	–	–	–	–
28		Pediastrum boryanum		+	–	–	+	–	–	–
29		Peridinium sp.		–	+	+	–	–	–	–
30		Pinnularia spp.		–	–	+	+	–	–	+
31		Phacus pleuronectes		–	+	+	–	–	–	–
32		Phacotus coccifer		+	–	–	–	–	–	–
33		Pleuroraenium cf. trabecula		–	–	+	–	–	–	–
34		Scenedesmus acutus		–	+	+	+	–	–	–
35		S. arcuatus		+	–	+	–	–	–	–
36		S. communis		+	–	–	+	–	–	–
37		S. ecornis		+	–	–	–	–	–	–
38		S. pectinatus		–	–	+	+	–	–	–
39		S. pleiomorphus		–	–	+	+	–	–	–
40		Spirogyra sp.st.		–	–	–	+	–	–	–
41		Spirulina major		+	–	+	+	–	–	–
42		Staurastrum cf. inflexum		+	–	–	–	–	–	–
43		S. sp.		–	–	–	+	–	–	–
44		Staurodesmus spp.		–	–	+	+	–	–	–
45		Tabellaria flocculosa		–	–	+	–	–	–	–
46		Tetraedron minimum		–	–	+	–	–	–	–
47		Tetrastrum komarekii		+	–	+	+	–	–	–
48		Trahelomonas hispida		–	+	–	–	–	–	–
49		T. intermedia		–	+	+	–	–	–	–
50		T. volvocina		+	–	–	–	–	–	–
51		T. volvocina var. subglobosa		+	–	–	–	–	–	–
52		Xanthidium sp.		–	–	+	–	–	–	–
			Species total	22	9	26	25	–	2	4

ALGAE — ALGAE – VODORASLI
Phytobenthos

No	Prot.	Scientific Name / Taxon	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Bulbochaete sp. st.		–	+	–	–	–	–	–
2		Chara cf. vulgaris		–	–	–	+	–	–	+
3		Chara sp.		+	–	+	–	–	–	–
4		Cladophora glomerata		–	–	+	–	–	–	–
5		Cylindrospermum sp.		–	+	–	+	–	–	–
6		Epithemia spp.		+	–	–	–	–	–	–
7		Gomphonema spp.		+	–	+	–	–	+	+
8		Mougeotia sp. st.		–	–	+	–	–	–	–
9		Oedogonium sp. st.		–	+	–	–	–	–	–
10		Oscillatoria cf. chlorina		–	–	–	–	–	+	–
11		O. princeps		–	+	–	–	–	–	–
12		Pinnularia sp.		–	–	+	–	–	–	–
13		Plectonema sp.		–	+	–	+	–	–	+
14		Spirogyra sp.st.		+	+	+	+	–	–	–
15		Stigeoclonium cf. tenue		–	–	+	+	–	–	–
16		Surrirela sp.		–	–	+	+	–	–	–
17		Vaucheria sp.st.		–	–	–	–	–	–	+
18		Ulothrix zonata		–	–	–	–	–	+	–
			Species total	4	6	8	6	–	3	7

LICHENOPHYTA — LICHENS – LISHEI

No	Prot.	Scientific Name / Taxon	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Parmelia sp.		–	–	–	–	–	+	+
			Species total	–	–	–	–	–	1	1

PLANTAE — HIGHER PLANTS

No	Prot.	Scientific Name / Taxon	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Acer campestre	klen	–	–	–	–	–	–	+
2		A. tataricum	mekish	–	–	–	–	–	+	+
3		Achillea millefolium	bjal ravnets	+	+	+	+	+	+	+
4		Adonis vernalis	gorocvet	–	–	–	+	+	–	+
5		Aegilops cylindrica	cilindrichen egilops	–	–	–	+	+	–	–
6		Agrimonia eupatoria	lecheben kamshik	–	–	–	–	+	–	+
7		Agropyrum repens	palzjascht repei	–	–	–	+	+	–	+
8		Agrostis capillaris	obiknovena polevitsa	–	–	–	–	–	+	–
9		Alium flavescens	zhaltenikav luk	–	–	–	+	–	–	–
10		A. sphaerocephalum	kragloglavest luk	–	–	–	–	+	–	–
11		Alnus glutinosa	techerna elsha	+	–	+	–	–	–	–
12		Alopecurus pratensis	livadna klasitsa	+	–	–	–	–	+	–
13		Alyssum alyssnides	tchashkov iglovrah	–	–	–	–	+	–	+
14		Amaranthus retroflexus	schtir	–	–	–	–	+	–	–
15		Andropogon ischernum	belizma	–	–	–	–	+	–	+
16		Anemone nemorosa	bjala sasenka	–	–	–	–	–	–	+

PLANTAE, HIGHER PLANTS, contin'd

17		Anthemis tinctoria	podrumitche	–	–	–	+	+	–	+
18		Arabis hirsuta	vlaknesta gasharka	–	–	–	–	+	–	+
19		Artemisia scoparia	pelin	–	–	–	+	+	–	+
20		Arum orientale	iztochen zmijarnik	–	–	–	–	–	–	+
21		Asperula cynanhica	lazarkinja	–	–	–	+	+	–	–
22		Berberis vulgaris	kissel tran	–	–	–	–	+	–	–
23		Betula pendula	breza	–	–	+	–	–	+	–
24		Brassica rapa	rapitsa	+	+	+	+	+	+	+
25		Briza media	sredna salzitsa	–	–	–	+	–	–	+
26		Bromus arvensis	polska ovsiga	–	–	–	+	+	–	+
27		B. erectus	izpravena	–	–	–	+	+	–	+
28		B. mollis	meka ovsiga	–	–	–	+	–	–	+
29		B. sterilis	dalgoosilesta ovsiga	–	–	–	+	+	–	+
30		Capsella bursa–pastoris	ovtcharska torbitchka	–	–	–	+	+	–	+
31		Carduus nutans	magareshki bodil	–	–	–	+	+	–	+
32		Carlina acanthifolia	reshetka	–	–	–	–	–	–	+
33		Carpinus betulus	obiknoven gabar	–	–	–	–	–	–	+
34		C. orientalis	iztotchen gabar	–	–	–	–	+	+	+
35		Cerastium arvense	polski rozhets	–	–	–	–	–	–	+
36		Chenopodium album	bjala kutcha loboda	+	+	+	–	–	+	–
37		Clematis integrifolia	tselolisten povet	–	–	–	–	–	+	+
38		C. vitalba	povet	–	–	–	–	+	–	+
39		Chrysopygon gryllus	techerna sadina	+	+	+	–	+	+	+
40		Convolvulus arvensis	polska povetitsa	+	+	+	+	+	+	+
41		Consolida regalis	ralitsa	–	–	–	+	+	–	+
42		Cornus mas	drjan	–	–	–	–	+	+	+
43		C. sanguineus	kucheshki grijan	–	–	–	–	+	–	+
44		Coronilla varia	pastra zaltchina	–	–	–	+	+	–	+
45		Corylus avellana	leska	–	–	–	–	–	+	+
46		Crataegus monogyna	glog	+	+	+	+	+	+	+
47		Crocus aureus	zlatist minzuhar	–	–	–	–	–	–	+
48		Cynosurus cristatus		–	–	–	+	–	–	+
49		Dactilylis glomerata	sborna glavitsa	+	+	+	–	–	+	–
50		Dactylorhiza maculata	petnist salep	–	–	–	–	–	–	+
51		Datura stramonium	tatul	–	–	–	+	+	–	+
52		Dianthus armeria	armeroviden karamfil	–	–	–	–	+	–	+
53		Digitalis lanata	naprastnik	–	–	–	–	+	–	+
54		Dipsacus lacinatus	lugatchka	–	–	–	+	–	–	+
55		Equisetum palustre	hvoscht	–	+	–	–	–	–	+
56		Erodium cicutarium	tchasovnitche	+	+	+	+	+	+	+
57		Eryngium campestre	vetrogon	–	–	–	+	+	–	+
58		Erythonium dens–canis	samodivsko tsvete	–	–	–	–	–	–	+
59		Euphorbia amygdaloides	gorska mletchka	–	–	–	+	+	–	+
60		E. cyparissias	mletchka	+	+	+	+	+	+	+
61		Evonimus verrucosus	bradavichest tchashkodrjan	–	–	–	–	+	–	+
62		Festuca pseudovina	lazhevlasatka	+	+	+	+	+	+	+
63		Fleum pratense	livadna timoteika	+	+	+	–	–	+	–

PLANTAE, HIGHER PLANTS, contin'd

64		Filipendula hexapetala	livadno oretche	+	+	+	+	+	+	+
65		Fragaria vesca	jagoda	–	–	–	–	–	+	–
66		Fraxinus ornus	mazhdrjan	–	–	–	–	–	–	+
67		Juncus conglomeratus	sborna dzuka	+	–	+	–	–	+	+
68		Gagea pratensis	livaden pachi krak	–	–	–	+	+	–	–
69		Galium verum	enjovtche	–	–	–	–	+	–	+
70		Galnthus nivalis	kokiche	–	–	–	–	–	–	+
71		Genista ovata	gorska zhaltuga	–	–	–	+	+	–	+
72		Geranium pyrenaicum	pirineiski zdravets	–	–	–	–	–	–	+
73		G. rotundifolium	kragolisten zdravets	–	–	–	–	+	–	+
74		G. sanguineum	tcherven zdravets	–	–	–	–	–	–	+
75		Geum urbanum	gradsko omainitche	–	–	–	+	+	–	+
76		Heleborus odorus	kukurjak	–	–	–	+	+	–	+
77		Holcus lanatus	valnesta medovina	–	–	–	–	–	+	–
78		Hordeum murinum	mishi echemik	–	–	–	–	–	–	+
79		Hypericum perforatum	zhalt kantarion	–	–	–	+	+	–	+
80		Iris graminea	trevolistna perunika	–	–	–	–	+	–	+
81		I. variegata	pastra perunika	–	–	–	–	+	–	+
82		Juncus conglomeratus	sborna dzuka	+	–	+	–	–	+	–
83		Lathyrus cicera	nahutovo sekirtche	–	–	–	+	+	–	–
84		Lemna minor	vodna leschta	–	+	–	–	–	–	–
85		Leocanthemum vulgare	margarita	–	–	–	+	+	–	+
86		Linum hirsutum	vlaknest len	–	–	–	–	+	–	–
87		Lolium perenne	pasischten rajgrass	–	–	–	–	–	–	+
88		Lotus corniculatus	zvezdan	–	–	–	+	+	–	+
89		Matricaria chamomilla	laikutchka	+	+	+	+	+	+	+
90		Malus silvestris	kisselitsa	–	–	–	–	+	–	–
91		Medicago falcata	sarpovidna ljutcerna	–	–	–	–	–	–	+
92		Melica ciliata	resnichesta biserka	–	–	–	+	+	–	–
93		Melissa officinalis	matochina	–	–	–	–	+	–	+
94		Mentha piperita	dzhodzhan	–	–	–	–	+	–	+
95		Minuartia caespitosa	tufesta mishovka	–	–	–	+	+	–	+
96		Myosotis callina	nezabravka	–	–	–	+	+	–	+
97		Myriophyllum spicatum	chiljadolistnik	+	+	+	+	–	–	–
98		Nigella arvensis	polska tcheljabitka	–	–	–	+	+	–	+
99		Orchis ustulata	oparlen salep	–	–	–	–	–	–	+
101		Ornithogalum nanum	nisak garvanski luk	–	–	–	+	+	–	+
102		Phragmites australis	trastika	+	+	–	+	–	–	–
103		Plantago lanceolata	tesnolisten zhilovlek	–	–	–	+	+	–	+
104		P. major	zhilovlek	–	–	–	–	–	–	+
105		Poa bulbosa	lukovitchna livadina	–	–	–	+	+	–	–
106		P. compressa	spleskana livadina	–	–	–	+	+	–	+
107		P. pratensis	livadna livadina	–	–	–	+	+	–	+
108		Polygonum hydropiper	vodno piperitche	+	+	+	–	–	–	–
109		Populus canadiensis	kanadska topola	+	–	–	–	–	–	–
110		P. nigra	tcherna topola	+	–	+	–	–	–	+
111		P. tremula	trepetlika	–	–	–	–	–	+	+
112		Potamogeton crispus	kadravrazjdavets	+	–	–	–	–	–	–
113		P. pectinatus	grebenoviden razjdavet	+	–	–	–	–	–	–
114		Prunus cerasifera	dzhanka	–	–	–	–	+	–	+

PLANTAE, HIGHER PLANTS, contin'd

115		P. divaricata	dzhanka	–	–	–	–	–	+	+
116		P. spinosa	tranka	–	–	–	–	+	+	+
117		Pulsatilla vernalis	proletno kotence	–	–	–	–	–	–	+
118		Quercus cerris	tser	–	–	–	–	+	+	+
119		Q. daleschampii	gorun	–	–	–	–	–	–	+
120		Q.frainetto	blagun	–	–	–	–	–	+	+
121		Ranunculus acris	obiknoveno ljutiche	–	–	–	–	–	–	+
122		R. polyanthemus	mnogocvetno ljutiche	–	–	–	–	+	–	+
123		R. repens	palzjachto ljutiche	–	–	–	–	–	–	+
124		Rhinanthus major	klopatchka	+	–	+	+	+	+	+
125		Rosa canina	shipka	+	+	+	+	+	+	+
126		Rubus idaeus	kapina	+	–	+	–	+	+	+
127		Rumex acetosa	kisselets	–	–	–	–	–	–	+
128		Salix alba	bjala varba	+	+	+	–	–	+	–
129		S.caprea	iva	+	+	+	–	+	+	+
130		S. cynerea	siva varba	+	–	–	–	+	+	+
131		Salvia sclarea	konski bossilek	–	–	–	+	+	–	+
132		Sambucus ebulus	baz	+	+	+	+	+	+	+
133		S. nigra		+	–	–	–	–	+	–
134		Saponaria officinalis	lechebno sapuntche	–	–	–	+	+	–	–
135		Saxifrga trydactylites	tripastna kamenolomka	–	–	–	+	+	–	–
136		Scilla automnalis	essenen sinchets	–	–	–	+	+	–	+
137		S. bifolia	obiknoven sinchets	–	–	–	+	+	–	+
138		Sedum acre	ljutiva tlastiga	–	–	–	+	+	–	–
139		S. album	bjala tlastiga	–	–	–	+	+	–	–
140		S. caespitosum	tufesta tlastiga	–	–	–	–	+	–	–
141		Senecio jacobea		–	–	–	–	–	–	+
142		Sessleria latifolia	gazhva	–	–	–	–	+	–	–
143		Sorbus torminalis	brekinja	–	–	–	–	–	+	+
144		Stachys officinalis	ranilist	–	–	–	+	+	–	+
145		Stellaria graminea	trevna zvezditsa	–	–	–	+	+	+	–
146		Teucrium hamamaedis	poddabitche	–	–	–	–	–	+	–
147		Thalictrum minus	drebno obichnitche	–	–	–	–	–	–	+
148		Thymus marschalleanus	machterka	–	–	–	+	+	–	+
149		Trifolium pratensis	livadna detelina	–	–	–	–	–	–	+
150		Tussilago farfara	podbel	+	+	+	+	+	+	+
151		Typha angustifolia	tesnolisten papur	+	+	+	–	–	–	+
152		T. latifolia	shiroklisten papur	–	–	–	–	–	–	+
153		T. pectinatus		–	+	+	–	–	+	–
154		Urtica dioica	obiknovena kopriva	–	–	–	+	+	+	–
155	**	Urticularia vulgaris		–	–	+	–	–	–	–
156		Veratrum lobelianum	lobelieva tchemerika	–	–	–	–	–	+	–
157		Verbascum blattaria	lopen	–	–	–	+	+	–	+
158		V. foeniceum	lopen	+	+	–	–	–	+	–
159		Veronika spicata	velikdenche	–	–	–	–	+	–	+
160		Viburnum lantana	zlaten dazhd	–	–	–	–	–	+	–
161		Vicia lutea	zhulta glushina	–	–	–	+	+	–	+
162		Viola ambigua	temenuga	–	–	–	+	+	–	–
163		V. tricolor	tricvetna temenuga	–	–	–	+	+	–	+

PLANTAE, HIGHER PLANTS, contin'd

164		Viscaria vulgaris	lepka	–	–	–	–	–	+	–
165		Xeranthemum annuum	bezsmartnitche	–	–	–	+	+	–	–
			Species total	35	26	30	69	97	47	117

ANIMALIA ANIMALS
Insecta Insects – Nasekomi

No	Prot.	Scientific Name / Taxon	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Apis melifera	domashna ptchela	+	+	+	+	+	+	+
2		Argymis lathonia	obiknovena sedefka	–	–	+	–	+	+	+
3		Bombus terrestris	zemna ptchela	–	–	–	+	+	+	+
4		Coenonympha pamphilus	obiknovena sennitsa	–	–	–	–	–	+	–
5		Epinefela jurtina	livadna ochanka	–	–	–	–	+	–	+
6		Erebia medusa	kadifjana medusa	–	+	–	+	+	+	+
7		Formica rufa	techervena gorska mravka	–	–	–	–	–	+	+
8		F. spp.		+	+	+	+	+	+	+
9		Gryllus campestris	polski schturests	+	–	–	+	+	+	+
10		Ischnura imperator		+	+	+	+	+	+	+
11		Libellula depressa		+	+	+	–	–	–	–
12		Lucanus cervus		–	–	–	–	+	–	–
13		Lycaena argus	slantcheva sedefka	–	–	–	–	–	+	+
14		Melanargia galathea	zebrova peperuda	+	–	+	+	+	+	+
15		Orthetrum albistylum		–	–	–	–	–	+	+
16		Papilio podalirius		–	–	–	–	+	–	+
17		Pieris rapae	rapitchna beljanka	+	–	–	–	+	+	+
18		Tetrix depressa	obiknoven skakalets	–	–	–	–	–	+	+
19		Tettigonia viridissima	Obiknoven zelen skakalets	+	+	+	+	+	+	+
			Species total	8	6	7	8	13	15	16

ANIMALIA ANIMALS
Pisces Fish – Ribi

No	Prot.	Scientific Name / Taxon	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Abramis brama	platika	+	–	+	–	–	–	–
2		Alburnus alburnus	uklej	+	+	+	+	–	–	–
3		Carassius carassius	karakuda	+	+	+	+	–	–	–
4		Cyprinus carpio	div sharan	+	+	+	–	–	–	–
5		Esox lucius	schtuka	+	+	–	–	–	–	–
6		Gobio gobio	krotushka	+	+	+	–	–	–	–
7		Lucioperca lucioperca	bjala riba	+	–	+	–	–	–	–
8		Perca fluviatilis	kostur	+	+	+	–	–	–	–
			Species total	8	6	7	2	–	–	–

ANIMALIA ANIMALS
Amphibia Amphibs – Zemnovodni

No	Prot.	Scientific Name	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1	*	Bombina variegata	zhultokorema bumka	–	–	–	+	–	+	+
2		Rana radibunda	obiknovena vodna zhaba	+	+	+	+	–	–	+
			Species total	1	1	1	2	–	1	2

ANIMALIA ANIMALS
Reptilia Reptils – Vletchugi

No	Prot.	Scientific Name	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1	***	Elaphe longissima	smok–mishkar	–	+	–	–	–	–	–
2		Lacerta muralis	stenen guschter	+	–	+	+	+	+	+
3		L. viridis	zelen guschter	+	–	–	+	+	+	+
			Species total	2	1	1	2	2	2	2

ANIMALIA ANIMALS
Aves Birds – Ptitsi

No	Prot.	Scientific Name	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1	*	Acrocephalus arundinaceus	trastikovo shavartche	+	+	+	+	–	–	–
2	*	A. palustris	motchurno shavartche	+	–	–	–	–	–	–
3	*	A. schoenabenus	kraibrezhno shavartche	+	–	–	–	–	+	–
4	*	A. scirpaceus	blatnoshavartche	+	–	–	–	–	–	–
5	*	Alauda arvensis	polska tchutchuliga	–	–	–	+	+	+	+
6		Anas platyrhynchos	zelenoglavka	+	–	–	–	–	–	–
7	*	Ardea cinerea	siva tchalpa	–	+	+	–	–	–	–
8	**	A. purpurea	tchervena tchalpa	–	+	–	–	–	–	–
9	*	Buteo buteo	obiknoven mischelov	–	+	–	+	+	–	–
10		B. rufinus	beloopashat mishelov	–	–	–	+	–	–	–
11	*	Calidris minuta	malak bregobegatch	–	–	+	–	–	–	–
12	*	Carduelis carduelis	shtiglets	–	–	+	+	+	–	–
13	*	Charadrius dubius	retchen dazhdosvirets	–	–	+	–	–	–	–
14	**	Chlidonias hybrida	belobrada ribarka	+	–	–	–	–	–	–
15	*	Ciconia ciconia	bjal schturkel	+	+	+	+	–	–	–
16		Columba palumbus	grivjak	–	–	–	+	+	+	+
17		Coleus monedula	tchavka	+	–	–	+	+	–	+
18	*	Corvus corax	garvan	–	–	–	–	–	+	+
19		C. corone	siva vrana	+	–	–	+	+	–	+
20		C. frugilegus	polska vrana	+	–	–	+	+	–	+
21		Coturnix coturnix	padpadak	–	–	–	–	–	+	–
22	*	Cuculus canorus	obiknovena kukuvitsa	+	+	–	+	+	–	+
23	*	Delichon urbica	gradska ljastovitsa	+	+	+	+	+	–	+
24	*	Egretta garzetta	malka bjala tchalpa	–	–	+	–	–	–	–
25	*	Emberiza calandra	siva ovesarka	+	+	–	–	–	+	+
26	*	E. cia	sivoglava ovesarka	–	–	–	–	–	+	+
27	*	E. cirlus	zelenogusha ovesarka	–	–	–	–	–	+	+

AVES, BIRDS, contin'd

28	*	E. hortulana	gradinska ovesarka	–	+	–	–	–	+	+
29	*	Erithacus megarynchos	juzhen slavei	+	+	+	–	–	+	+
30	*	Falco tinunculus	obiknovena vetrushka	+	–	+	+	+	–	+
31		Fulica atra	liska	+	–	–	–	–	–	–
32	*	Gallinula chloropus	zelenonozhka	+	–	+	–	–	–	–
33		Garrulus glandarius	soika	–	–	+	+	+	+	+
34	***	Halietor pygmeus		+	–	–	–	–	–	–
35	*	Hirundo rustica	selska ljastovitsa	–	+	+	+	+	–	+
36	*	Ixobrychus minutus	malak voden bik	+	+	+	+	–	–	–
37	*	Lanius collurio	tchervenoglava svratshka	–	–	+	+	+	+	+
38	*	L. senator	svratshka	–	–	–	–	+	–	–
39	*	Larus ridibundus	retchna tchaika	+	–	–	–	–	–	–
40	***	Locustella luscinioides	trastikov shavartche	+	–	–	–	–	–	–
41	*	Merops apiaster	ptechelojad	+	+	+	+	–	–	–
42	*	Motacilla alba	bjala startchiopashka	–	+	–	+	+	–	+
43	*	M. flava	zhulta startchiopashka	+	–	–	–	–	–	+
44	*	Oenanthe oenanthe	sivo kamenartche	–	+	+	+	+	–	+
45	*	Parus major	goljam siniger	+	–	+	–	–	–	–
46		Passer domesticus	domashno vrabtche	+	+	+	+	+	+	+
47		P. montanus	polsko vrabtche	+	+	+	+	+	+	+
48	**	Pelecanus onocrotalus	rozov pelikan	+	–	–	–	–	–	–
49		Pica pica	svraka	+	+	+	+	+	+	+
50	*	Picoides syriacus	siriiski pastar	–	–	+	–	–	+	+
51	*	Picus canus	siv kalvatch	–	–	–	–	–	+	+
52	*	Podiceps cristatus	goljam gmurets	+	–	–	–	–	–	–
53	*	Remiz pendulinus	torbognezden siniger	+	–	–	–	–	–	–
54	*	Riparia riparia	bregova ljastovitsa	+	–	+	–	+	–	–
55	*	Sterna hirundo	retchna ribarka	+	–	–	–	–	–	–
56		Streptopelia decaocto	gugutka	+	–	–	+	+	–	+
57		S. turtur	obiknovena gurgulitsa	–	+	–	+	+	–	+
58	*	Sylvia nisoria	jastrebogusho koprivartche	–	–	–	–	–	+	–
59	*	Tringa ochropus	goljam gorski vodobegatch	–	–	+	–	–	–	–
60	*	Turdus merula	kos	–	–	–	+	+	+	+
61	*	Upupa epops	papunjak	+	–	–	+	–	–	–
			Species total	34	19	19	29	25	19	29

ANIMALIA — ANIMALS
Mammalia — Mammals – Bozainitsi

No	Prot.	Scientific Name	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1	*	Arvicola terrestris	voden plah	+	–	+	–	–	–	–
2		Citellus citellus	laluger	–	–	–	–	+	–	–
3	***	Lutra lutra	vidra	+	–	+	–	–	–	–
4	*	Talpa europea	kartitsa	+	–	+	+	+	+	+
5		Vulpes vulpes	lisitsa	–	–	–	–	+	–	–
			Species total	3	–	3	1	3	1	1

ANIMALIA — ANIMALS
Zooplankton

Crustacea — Cancers

No	Prot.	Scientific Name	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Alona sp.		+	–	+	+	–	–	–
2		Argulus foliaceus		–	–	+	–	–	–	–
3		Bosmina coregoni		–	–	+	+	–	–	–
4		B. longirostris		+	–	+	–	–	–	–
5		Ceriodaphnia sp.		–	–	+	–	–	–	–
6		Chidorus sphaericus		+	–	+	+	–	–	–
7		Cyclops strenus		+	+	+	+	–	–	–
8		C. af. vicinus		–	–	+	–	–	–	–
9		C. sp.		–	+	+	–	–	–	–
10		Daphnia cuculata		+	–	+	+	–	–	–
11		Daphnia magna		–	–	–	+	–	–	–
12		Diaphanosoma sp.		–	–	+	–	–	–	–
13		Eudiaptomus vulgaris		+	+	+	+	–	–	–
14		Mesocyclops sp.		+	+	+	+	–	–	–
15		Div. nauplii		+	+	+	–	–	–	–
			Species total	8	5	14	8	–	–	–

ANIMALIA — ANIMALS
Zooplankton

Rotatoria — Rotifers

No	Prot.	Scientific Name	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Asplanchna priodonta		–	–	+	–	–	–	–
2		Brachionus calyciflorus		–	+	–	–	–	–	–
3		Synchaeta sp.		–	+	–	–	–	–	–
			Species total	–	2	1	–	–	–	–

ANIMALIA — ANIMALS
Zoobenthos

Oligochaeta — Worms

No	Prot.	Scientific Name	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Limnodrilus udekemianus		+	+	+	–	–	–	–
2		L. sp.		–	–	+	–	–	–	–
3		Naididae g. sp. various		+	+	+	–	–	–	–
4		Tubifex tubifex		+	+	+	–	–	–	–
			Species total	3	3	4	–	–	–	–

ANIMALIA — ANIMALS
Zoobenthos
Insecta — Insects – Nasekomi

No	Prot.	Scientific Name	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Chaoborus crystallinus		+	–	+	–	–	–	–
2		Chironomus plumosus		+	+	+	+	–	–	–
3		Eudochironomus tendens		–	–	–	+	–	–	–
4		Gryptochironomus defectus		–	+	+	+	–	–	–
5		Procladius horeus		+	–	+	+	–	–	–
6		Prodiamesa olivacea		–	–	+	+	–	–	–
7		Sindiamesa wirosa		–	–	–	+	–	–	–
			Species total	3	2	5	6	–	–	–

ANIMALIA — ANIMALS
Zoobenthos
Mollusca — Molluscs

No	Prot.	Scientific Name	Bulgarian Name	DB	KA	KO	NI	RU	SI	SII
1		Acroloxus lacustris		–	–	+	–	–	–	–
2		Planorbis planorbis		+	–	–	–	–	–	–
3		Unio pictorum		+	–	+	–	–	–	–
			Species total	2	–	2	–	–	–	–

Species Lists, Phase I, II, sorted by main taxonomic groups and by the taxon 'family'

Abbreviations :

Status of Protection

blank : no protection
* : protected
** : protected by the Bulgarian Red Data Book
*** : globally threatened species

TAXONOMICAL GROUPS, Phase 1

P L A N T A E

ALGAE - VODORASLI

See below the lists for phytoplankton
and phytobenthos

MYCOTA - GABI

BASIDIOMYCETES
HOMOBASIDIOMYCETIDAE
Gr. HYMENOMYCETES
POLYPORALES
Fomes fomentarius - prahanova gaba
Polyporus sp.
AGARICALES
Marasmius oreades - tcheljadinka
Gr. GASTROMYCETES
LYCOPERDALES
Calvatia utriformis

TELIOBASIDIOMYCETIDAE
species of UREDINALES
species of USTILLAGINALES

DEUTEROMYCETES
Alternaria sp.

LICHENOPHYTA - LISHEI

ASCOLICHENES
LECANORALES
Parmelia sp.

MAGNOLIOPHYTA

EQUISETACEAE
Equisetum palustre - hvoscht
TYPHACEAE
Typha angustifolia - tesnolisten papur
T. latifolia - shirokolisten papur
POTAMOGETONACEAE
Potamogeton crispus - kadrav razjdavets
P. pectinatus - grebenoviden razjdavets
POACEAE
Agrostis capillaris - obiknovena polevitsa
Alopecurus pratensis - livadna klasitsa
Chrysopogon gryllus - tcherna sadina
Dactylis glomerata - sborna glavitsa
Festuca pseudovina - lazhevlasatka
Holcus lanatus - valnesta medovina
Phleum pratense - livadna timoteika
Phragmites australis - trastika
LEMNACEAE
Lemna minor - vodna leschta

MAGNOLIOPHYTA, contin'd

JUNCACEAE
- Juncus conglomeratus - sborna dzuka

LILIACEAE
- Veratrum lobelianum - lobelieva tchemerika

SALICACEAE
- Populus canadensis - kanadska topola
- P. nigra - tcherna topola
- P. tremula - trepetlika
- Salix alba -bjala varba
- S. caprea - iva
- S. cynerea - siva varba

BETULACEAE
- Alnus glutinosa - tcherna elsha
- Betula pendula - breza
- Carpinus orientalis - iztotchen gabar
- Corylus avellana - leska

FAGACEAE
- Quercus cerris - tser
- Q. frainetto - blagun

POLYGONACEAE
- Polygonum hydropiper - vodno piperitche

CARYOPHYLLACEAE
- Viscaria vulgaris - lepka

CHENOPODIACEAE
- Chenopodium album - bjala kutcha loboda

RANUNCULACEAE
- Clematis integrifolia - tselolisten povet

BRASSICACEAE
- Brassica rapa - rapitsa

ROSACEAE
- Crataegus monogyna - glog
- Filipendula hexapetala - livadno orehtche
- Fragaria vesca - jagoda
- Prunus divaricata - dzhanka
- Pr. spinosa - tranka
- Rosa canina - shipka
- Rubus idaeus - kapina
- Sorbus torminalis - brekinja

GERANIACEAE
- Erodium cicutarium - tchasovnitche

EUPHORBIACEAE
- Euphorbia cyparissias - mletchka

ACERACEAE
- Acer tataricum - mekish

HALORAGACEA
- Myriophyllum spicatum - chiljadolistnik

CONVOLVULACEAE
- Convolvulus arvensis - polska povetitsa

LAMIACEAE
- Teucrium hamamaedris - poddabitche

SCROPHULARIACEAE
- Rhinanthus major - klopatchka
- Verbascum foeniceum - lopen

MAGNOLIOPHYTA, contin'd

CAPRIFOLIACEAE
Sambucus ebulis - baz
S. nigra
Viburnum lantana - zlaten dazhd
CORNACEAE
Cornus mas - drjan
ASTERACEAE
Achillea millefolium - bjal ravnets
Matricaria chamomilla - laikutchka
Tussilago farfara - podbel
LENTIBULARIACEAE
** Urticularia vulgaris

A N I M A L I A

INSECTA - NASEKOMI

ODONATA - VODNI KONTCHETA
LIBELLULIDAE
Libellula depressa
Ortethrum albistylum
AESHNIDAE
Ischnura imperator

HYMENOPTERA - TSIPOKRILI
APIDAE
Apis melifera - domashna ptchela
Bombus terrestris - zemna ptchela
FORMICIDAE - MRAVKOVI
Formica rufa - tchervena gorska mravka
Formica spp.

LEPIDOPTERA - PEPERUDI
PIERIDAE - BELJANKOVI
Pieris rapae - rapitchna beljanka
NYMPHALIDAE - NIMFALIDOVI
Argynnis lathnia - obiknovena sedefka
SATURIDAE - KADIFJANKOVI
Coenonympha pamphilus -obiknovena sennitsa
Erebia medusa - kadifjana medusa
Melanargia galathea - zebrova peperuda
LYCAENIDAE - SINEVKI
Lycaena argus - slantcheva sedefka

SALTATORIA - PRAVOKRILI
TETTIGONIIDAE
Tettigonia viridissima - obiknoven
zelen skakalets
TETRIGIDAE
Tetrix depressa - obiknoven skakalets
GRYLLIDAE
Gryllus campestris - polski schturets

PISCES - RIBI

ESOCIDAE - SCHTUKOVI
Esox lucius - schtuka
CYPRINIDAE - SHARANOVI
Abramis brama - platika
Alburnus alburnus - uklej
Carassius carassius - karakuda
Cyprinus carpio - div sharan
Gobio gobio - krotushka
PERCIDAE - KOSTUROVI
Lucioperca lucioperca - bjala riba
Perca fluviatilis - kostur

AMPHIBIA - ZEMNOVODNI

DISCOGLOSSIDAE - BUMKOVI
* Bombina variegata - zhultokoremna bumka

RANIDAE - VODNI ZHABI
Rana ridibunda - obiknovena vodna zhaba

REPTILIA - VLETCHUGI

LACERTIDAE - GUSCHTEROVI
Lacerta muralis - stenen guschter
L. viridis - zelen guschter
COLUBRIDAE - SMOKOVI
*** Elaphe longissima - smok-mishkar

AVES - PTITSI

PODICEPIDIDAE - GMURETSOVI
* Podiceps cristatus - goljam gmurets
PELECANIDAE - PELIKANOVI
** Pelecanus onocrotalus - rozov pelikan
PHALACROCORACIDAE - KORMORANOVI
*** Halietor pygmeus
ARDEIDAE - TCHAPLOVI
* Ardea cinerea - siva tchapla
** A. purpurea - tchervena tchapla
* Egretta garzetta - malka bjala tchapla
* Ixobrychus minutus - malak voden bik
CICONIIDAE - SCHTURKELOVI
* Ciconia ciconia - bjal schturkel
ANATIDAE - PATITSOVI
Anas platyrhynchos - zelenoglavka
ACCIPITRIDAE - JASTREBOVI
* Buteo buteo - obiknoven mischelov
FALCONIDAE - SOKOLOVI
* Falco tinunculus - obiknovena vetrushka

AVES, contin'd

PHASIANIDAE - FAZANOVI
Coturnix coturnix - padpadak
RALLIDAE - DARDAVTSOVI
Fulica atra - liska
* Gallinula chloropus - zelenonozhka
CHARADRIIDAE - DAZHDOSVIRTSOVI
* Charadrius dubius - retchen dazhdosvirets
SCOLOPACIDAE - BEKASOVI
* Calidris minuta - malak bregobegatch
* Tringa ochropus -goljam gorski vodobegatch
LARIDAE - TCHAIKOVI
** Chlidonias hybrida - belobrada ribarka
** Larus ridibundus - retchna tchaika
* Sterna hirundo - retchna ribarka
COLUMBIDAE - GALABOVI
Columba palumbus - grivjak
Streptopelia decaocto - gugutka
Str. turtur - obiknovena gurgulitsa
CUCULIDAE - KUKUVITSOVI
* Cuculus canorus - obiknovena kukuvitsa
MEROPIDAE - PTCHELOJADOVI
* Merops apiaster - ptchelojad
UPUPIDAE - PAPUNJAKOVI
* Upupa epops - papunjak
PICIDAE - KALVATCHOVI
* Picoides syriacus - siriiski pastar kalvatch
* Picus canus - siv kalvatch
ALAUDIDAE - TCHUTCHULIGOVI
* Alauda arvensis - polska tchutchuliga
HIRUNDINIDAE - LJASTOVITCHOVI
* Delichon urbica - gradska ljastovitsa
* Hirundo rustica - selska ljastovitsa
* Riparia riparia - bregova ljastovitsa
MOTACILLIDAE - STARTCHIOPASHKOVI
* Motacilla alba - bjala startchiopashka
* M. flava - zhulta startchiopashka
LANIIDAE - SVRATCHKOVI
* Lanius collurio -tchervenoglava svratchka
MUSCICAPIDAE - MUHOLOVKI
* Acrocephalus arundinaceus - trastikovo shavartche
* A. palustris - motchurno shavartche
* A. schoenabenus - kraibrezhno shavartche
* A. scirpaceus - blatno shavartche
* Erithacus megarhynchos - juzhen slavei
*** Locustella luscinioides - trastikov tsvarkatch
* Oenanthe oenanthe - sivo kamenartche
* Sylvia nisoria - jastrebogusho koprivartche
* Turdus merula - kos
REMISIDAE - TORBOGNEZDNI SINIGERI
* Remiz pendulinus - torbognezden siniger

AVES, contin'd

PARIDAE - SINIGEROVI
* Parus major - goljam siniger
EMBERIZIDAE - OVESARKOVI
* Emberiza calandra - siva ovesarka
* E. cia - sivoglava ovesarka
* E. cirlus - zelenogusha ovesarka
* E. hortulana - gradinska ovesarka
FRINGILLIDAE - TCHINKOVI
* Carduelis carduelis - shtiglets
PLOCEIDAE - TAKATCHOVI
Passer domesticus - domashno vrabtche
P. montanus - polsko vrabtche
CORVIDAE - VRANOVI
Coleus monedula - tchavka
* Corvus corax - garvan
C. corone - siva vrana
C. frugilegus - polska vrana
Garrulus glandarius - soika
Pica pica - svraka

MAMMALIA - BOZAINITSI

INSECTIVORA
TALPIDAE
* Talpa europea - kartitsa
GLIRES
MURIDAE
Arvicola terrestris - voden plah*
CARNIVORA
MUSTELIDAE
*** Lutra lutra - vidra

ECOLOGICAL GROUPS

P H Y T O P L A N K T O N

CYANOPHYTA
Aphanothece clathrata
Gomphosphaeria aponina
Merismopedia glauca
Spirulina major
EUGLENOPHYTA
Euglena sp.
Lepocynclis sp.
Phacus pleuronectes
Trahelomonas hispida
Tr. intermadia
Tr. volvocina
Tr. volvocina var. subglobosa
PYRRHOPHYTA
Peridinium sp. div.

PHYTOPLANCTON, contin'd

CHRYSOPHYTA
 CHRYSOPHYTINA
  Dinobryon divergens var. angulatum
 BACILLARIOPHYTINA
  Cyclotella sp.
  Diatoma spp.
  Fragillaria spp.
  Navicula spp.
  Pinnularia spp.
  Tabellaria flocculosa
CHLOROPHYTA
 EUCHLOROPHYTINA
  Carteria globulosa
  Chlamydomonas spp.
  Phacotus coccifer
  CHLOROCOCCALES
  Ankistrodesmus fusiformis
  Coelastrum microporum
  C. pseudomicroporum
  Monoraphidium arcuatum
  M. contortum
  Oocystis lacustris
  Pediastrum boryanum
  Scenedesmus acutus
  Sc. arcuatus
  Sc. ecornis
  Sc. communis
  Sc. pectinatus
  Sc. pleiomorphus
  Tetraedron minimum
  Tetrastrum komarekii
 ZYGNEMAPHYTINA
  Closterium spp.
  Cosmarium rectangulare
  C. venustum
  Cosmoastrum spp.
  Euastrum spp.
  Pleurotaenium cf. trabecula
  Staurastrum cf. inflexum
  Staurodesmus spp.
  Xanthidium sp.

P H Y T O B E N T H O S

CYANOPHYTA
  Cylindrospermum sp. juv.
  Oscillatoria cf. chlorina
  O. princeps
  Pletonema sp.

PHYTOBENTHOS, contin'd

CHRYSOPHYTA
 BACILLARIOPHYTINA
      Epithemia spp.
      Gomphonema spp.
      Pinnularia sp.
      Surrirela sp.
CHLOROPHYTA
 EUCHLOROPHYTINA
      Bulbochaete sp. st.
      Cladophora glomerata
      Oedogonium sp. st.
      Stigeoclonium cf. tenue
      Ulothrix zonata
 ZYGNEMAPHYTINA
      Mougeotia sp. st.
      Spirogyra sp. st.
 CHAROPHYTINA
      Chara sp.

Z O O P L A N K T O N

CYCLOPOIDA
      Argulus foliaceus
      Cyclops strenuus
      Cyclops af. vicinus
      Cyclops sp.
      Mesocyclops sp.
CALANOIDA
      Eudiaptomus vulgaris
CLADOCERA
      Alona sp.
      Bosmina coregoni
      B. longirostris
      Bosminopsis sp.
      Ceriodaphnia sp.
      Chidorus sphaericus
      Daphnia cuculata
      Diaphanosoma sp.
      Nauplii
ROTATORIA
      Asplanchna priodonta
      Brachionus calyciflorus
      Synchaeta sp.

Z O O B E N T H O S

  OLIGOCHAETA
TUBIFICIDAE
      Limnodrilus udekemianus
      Limnodrilus sp.
      Naididae g. sp. various
      Tubifex tubifex

ZOOBENTHOS, contin'd

DIPTERA
CHIRONOMIDAE
Chironomus plumosus
Gryptochironomus defectus
Procladius horeus
Prodiamesa olivacea
CHAOBORIDAE
Chaoborus crystallinus
MOLLUSCA
Acroloxus lacustris
Planorbis planorbis
Unio pictorum

TAXONOMICAL GROUPS, Phase II

P L A N T A E

ALGAE - VODORASLI

See below the lists for phytoplankton and phytobenthos

LICHENOPHYTA - LISHEI

ASCOLICHENES

LECANORALES

Parmelia sp.

MAGNOLIOPHYTA

EQUISETACEAE

Equisetum palustre - blaten hvoscht

TYPHACEAE

Typha angustifolia - tesnolisten papur

T. latifolia - shirokolisten papur

POACEAE

Aegilops cylindrica - cilindrichen egilops

Agropyrum repens - palzjascht repei

Andropogon ischemum - belizma

Briza media - sredna salzitsa

Bromus arvensis - polska ovsiga

Br. erectus - izpravena ovsiga

Br. mollis - meka ovsiga

Br. sterilis - dalgoosilesta ovsiga

Chrysopogon gryllus - tcherna sadina

Cynosurus cristatus

Festuca pseudovina - lazhevlasatka

Hordeum murinum - mishi echemik

Lolium perenne - pasischten rajgrass

Melica ciliata - resnichesta biserka

Phragmites australis - trastika

Poa bulbosa - lukovitchna livadina

P. compressa - spleskana livaddina

P. pratensis - livadna livadina

Sessleria latifolia - gazhva

ARACEAE

Arum orientale - iztochen zmijarnik

JUNCACEAE

Juncus conglomeratus - sborna dzuka

LILIACEAE

Alium flavescens - zhaltenikav luk

A. sphaerocephalum - kragloglavest luk

Erythronium dens canis - samodivsko tsvete

Gagea pratensis - livaden pachi krak

Ornithogalum nanum - nisak garvanski luk

Scilla automnalis - essenen sinchets

Sc. bifolia - obiknoven sinchets

MAGNOLIOPHYTA, contin'd

AMARYLIDACEAE
Galanthus nivalis - kokiche
IRIDACEAE
Crocus aureus - zlatist minzuhar
Iris graminea - trevolistna perunika
I. variegata - pastra perunika
ORCHIDACEAE
Dactylorhiza maculata - petnist salep
Orchis ustulata - oparlen salep
SALICACEAE
P. nigra - tcherna topola
P. tremula - trepetlika
Salix alba -bjala varba
S. caprea - iva
S. cynerea - siva varba
BETULACEAE
C. betulus - obiknoven gabar
C. orientalis - iztotchen gabar
Corylus avellana - leska
FAGACEAE
Quercus cerris - tser
Q. daleschampii - gorun
Q. frainetto - blagun
URTICACEAE
Urtica dioica - obiknovena kopriva
POLYGONACEAE
Rumex acetosa - kisselets
CARYOPHYLLACEAE
Cerastium arvense - polski rozhets
Dianthus armeria - armeroviden karamfil
Minuartia caespitosa - tufesta mishovka
Saponaria officinalis - lechebno sapuntche
Stellaria graminea - trevna zvezditsa
AMARANTHACEAE
Amaranthus retroflexus - schtir
RANUNCULACEAE
Adonis vernalis - gorocvet
Anemone nemorosa- bjala sasenka
Clematis integrifolia - tcelolisten povet
Cl. vitalba - povet
Consolida regalis - ralitsa
Helleborus odorus - kukurjak
Nigella arvensis - polska tcheljabitka
Pulsatilla vernalis - proletno kotence
Ranunculus acris - obiknoveno ljutiche
R. polyanthemus - mnogocvetno ljutiche
R. repens - palzjachto ljutiche
Thalictrum minus - drebno obichnitche
BERBERIDACEAE
Berberis vulgaris - kissel tran
GUTTIFERAE
Hypericum perforatum - zhalt kantarion

MAGNOLIOPHYTA, contin'd

BRASSICACEAE
- Alyssum alyssnides - tchashkov iglovrah
- Arabis hirsuta - vlaknesta gasharka
- Brassica rapa - rapitsa
- Capsella bursa-pastoris - ovtcharska torbitchka

CRASSULACEAE
- Sedum acre - ljutiva tlastiga
- S. album - bjala tlastiga
- S. caespitosum - tufesta tlastiga

SAXIFRAGACEAE
- Saxifraga trydactylites - triprastna kamenolomka

ROSACEAE
- Agrimonia eupatoria - lecheben kamshik
- Crataegus monogyna - glog
- Filipendula hexapetala - livadno orehtche
- Geum urbanum - gradsko omainitche
- Fragaria vesca - jagoda
- Malus silvestris - kisselitsa
- Prunus cerasifera - dzhanka
- Pr. divaricata - dzhanka
- Pr. spinosa - tranka
- Rosa canina - shipka
- Rubus idaeus - kapina
- Sorbus torminalis - brekinja

FABACEAE
- Coronilla varia - pastra zaltchina
- Genista ovata - gorska zhaltuga
- Lathyrus cicera - nahutovo sekirtche
- Lotus corniculatus - zvezdan
- Medicago falcata - sarpovidna ljutcerna
- Vicia lutea - zhulta glushina
- Trifolium pratensis - livadna detelina

GERANIACEAE
- Erodium cicutarium - tchasovnitche
- Geranium pyrenaicum - pirineiski zdravets
- G. rotundifolium - kraglolisten zdravets
- G. sanguineum - tcherven zdravets

LINACEAE
- Linum hirsutum - vlaknest len

EUPHORBIACEAE
- Euphorbia amygdaloides - gorska mletchka
- E. cyparissias - mletchka

ACERACEAE
- Acer campestre - klen
- A. tataricum - mekish

COELASTRACEAE
- Evonimus verrucosus - bradavichest tchashkodrjan

VIOLACEAE
- Viola ambiqua - temenuga
- V. tricolor - tricvetna temenuga

HALORAGACEA
- Myriophyllum spicatum - chiljadolistnik

MAGNOLIOPHYTA, contin'd

CORNACEAE
- Cornus mas - drjan
- C. sanquinea - kucheshki grjan

APIACEAE
- Eryngium campestre - vetrogon

OLEACEAE
- Fraxinus ornus - mazhdrjan

CONVOLVULACEAE
- Convolvulus arvensis - polska povetitsa

BORAGINACEAE
- Myosotis callina - nezabravka

LAMIACEAE
- Melissa officinalis - matochina
- Mentha piperita - dzhodzhan
- Salvia sclarea - konski bossilek
- Stachys officinalis - ranilist
- Thymus marschallianus - machterka

SOLANACEAE
- Datura tramonium - tatul

SCROPHULARIACEAE
- Digitalis lanata - naprastnik
- Rhinanthus major - klopatchka
- Verbascum blattaria - lopen
- Veronica spicata - velikdenche

PLANTAGINACEAE
- Asperula cynanhica - lazarkinja
- Galium verum - enjovtche
- Plantago lanceolata - tesnolisten zhilovlek
- Pl.major -zhilovlek

CAPRIFOLIACEAE
- Sambucus ebulus - baz
- S. nigra

DIPSACACEAE
- Dipsacus lacinatus - lugatchka

ASTERACEAE
- Achillea millefolium - bjal ravnets
- Anthemis tinctoria - podrumitche
- Artemisia scoparia - pelin
- Carduus nutans - magareshki bodil
- Carlina acanthifolia - reshetka
- Leocanthemum vulgare - margarita
- Matricaria chamomilla - laikutchka
- Senecio jacobea - sporezh
- Tussilago farfara - podbel
- Xeranthemum annuum - bezsmartnitche

A N I M A L I A

INSECTA - NASEKOMI

ODONATA - VODNI KONTCHETA
LIBELLULIDAE
Ortethrum albistylum
AESHNIDAE
Ischnura imperator

HYMENOPTERA - TSIPOKRILI
APIDAE
Apis melifera - domashna ptchela
Bombus terrestris - zemna ptchela
FORMICIDAE - MRAVKOVI
Formica rufa - tchervena gorska mravka
Formica spp.

COLEOPTERA
LUCANIDAE
Lucanus cervus

LEPIDOPTERA - PEPERUDI
PAPILIONIDAE
Papilio podalirius
PIERIDAE - BELJANKOVI
Pieris rapae - rapitchna beljanka
NYMPHALIDAE - NIMFALIDOVI
Argynnis lathonia - obiknovena sedefka
SATYRIDAE - KADIFJANKOVI
Epinefela jurtina - livadna ochanka
Erebia medusa - kadifjana medusa
Melanargia galathea - zebrova peperuda
LYCAENIDAE - SINEVKI
Lycaena argus - slantcheva sedefka

SALTATORIA - PRAVOKRILI
TETTIGONIIDAE
Tettigonia viridissima - obiknoven zelen skakalets
TETRIGIDAE
Tetrix depressa - obiknoven skakalets
GRYLLIDAE
Gryllus campestris - polski schturets

PISCES - RIBI

CYPRINIDAE - SHARANOVI
Alburnus alburnus - uklej
Carassius carassius - karakuda

AMPHIBIA - ZEMNOVODNI

DISCOGLOSSIDAE - BUMKOVI
* Bombina variegata - zhultokoremna bumka
RANIDAE - VODNI ZHABI
  Rana ridibunda - obiknovena vodna zhaba

REPTILIA - VLETCHUGI

LACERTIDAE - GUSCHTEROVI
  Lacerta muralis - stenen guschter
  L. viridis - zelen guschter

AVES - PTITSI

ARDEIDAE - TCHAPLOVI
* Ixobrychus minutus - malak voden bik
CICONIIDAE - SCHTURKELOVI
* Ciconia ciconia - bjal schturkel
ACCIPITRIDAE - JASTREBOVI
* Buteo buteo - obiknoven mischelov
** B. rufinus - beloopashat mishelov
FALCONIDAE - SOKOLOVI
* Falco tinunculus - obiknovena vetrushka
PHASIANIDAE - FAZANOVI
  Coturnix coturnix - padpadak
COLUMBIDAE - GALABOVI
  Columba palumbus - grivjak
  Streptopelia decaocto - gugutka
  Str. turtur - obiknovena gurgulitsa
CUCULIDAE - KUKUVITSOVI
* Cuculus canorus - obiknovena kukuvitsa
MEROPIDAE - PTCHELOJADOVI
* Merops apiaster - ptchelojad
UPUPIDAE - PAPUNJAKOVI
* Upupa epops - papunjak
PICIDAE - KALVATCHOVI
* Picoides syriacus - siriiski pastar kalvatch
* Picus canus - siv kalvatch
ALAUDIDAE - TCHUTCHULIGOVI
* Alauda arvensis - polska tchutchuliga
HIRUNDINIDAE - LJASTOVITCHOVI
* Delichon urbica - gradska ljastovitsa
* Hirundo rustica - selska ljastovitsa
* Riparia riparia - bregova ljastovitsa
MOTACILLIDAE - STARTCHIOPASHKOVI
* Motacilla alba - bjala startchiopashka
* M. flava - zhulta startchiopashka
LANIIDAE - SVRATCHKOVI
* Lanius collurio -tchervenoglava svratchka
* L. senator - svratshka

AVES, contin'd

MUSCICAPIDAE - MUHOLOVKI
* Acrocephalus arundinaceus - trastikovo shavartche
* Erithacus megarhynchos - juzhen slavei
* Oenanthe oenanthe - sivo kamenartche
* Turdus merula - kos
PARIDAE - SINIGEROVI
* Parus major - goljam siniger
EMBERIZIDAE - OVESARKOVI
* Emberiza calandra - siva ovesarka
* E. cia - sivoglava ovesarka
* E. cirlus - zelenogusha ovesarka
* E. hortulana - gradinska ovesarka
FRINGILLIDAE - TCHINKOVI
* Carduelis carduelis - shtiglets
PLOCEIDAE - TAKATCHOVI
Passer domesticus - domashno vrabtche
P. montanus - polsko vrabtche
CORVIDAE - VRANOVI
Coleus monedula - tchavka
* Corvus corax - garvan
C. corone - siva vrana
C. frugilegus - polska vrana
Garrulus glandarius - soika
Pica pica - svraka

MAMMALIA - BOZAINITSI

INSECTIVORA
TALPIDAE
Talpa europea
SCIURIDAE
Citellus citellus - laluger

CARNIVORA
CANIDAE - CHISHTNITSI
Vulpes vulpes - lisitsa

ECOLOGICAL GROUPS

P H Y T O P L A N K T O N

CYANOPHYTA
Gomphosphaeria aponina
Merismopedia glauca
Microcystis aeruginosa
Spirulina major
EUGLENOPHYTA
Euglena sp.

PHYTOPLANKTON, contin'd

CHRYSOPHYTA
 BACILLARIOPHYTINA
  CENTROPHYCEAE
      Aulacosira sp.
      Cyclotella sp.
  PENNATOPHYCEAE
      Diatoma spp.
      Fragillaria spp.
      Navicula spp.
      Pinnularia spp.
CHLOROPHYTA
 EUCHLOROPHYTINA
      Chlamydomonas spp.
  CHLOROCOCCALES
      Coelastrum microporum
      Monoraphidium arcuatum
      M. contortum
      Pediastrum boryanum
      Scenedesmus acutus
      Sc. communis
      Sc. pectinatus
      Sc. pleiomorphus
      Tetrastrum komarekii
 ZYGNEMAPHYTINA
  ZYGNEMALES
      Spirogyra sp.st.
  DESMIDIALES
      Cosmarium rectangulare
      C. venustum
      Cosmarium sp.
      Cosmoastrum spp.
      Euastrum spp.
      Staurastrum sp.
      Staurodesmus spp.

P H Y T O B E N T H O S

CYANOPHYTA
      Cylindrospermum sp. juv.
      Plectonema sp.
CHRYSOPHYTA
 BACILLARIOPHYTINA
      Epithemia spp.
      Gomphonema spp.
      Pinnularia sp.
      Surrirela sp.
 XANTHOPHYTINA
      Vaucheria sp. st.
CHLOROPHYTA
 EUCHLOROPHYTINA
      Stigeoclonium cf. tenue
 ZYGNEMAPHYTINA
      Spirogyra sp. st.

PHYTOBENTHOS, contin'd

CHAROPHYTINA
Chara cf. vulgaris.

Z O O P L A N K T O N

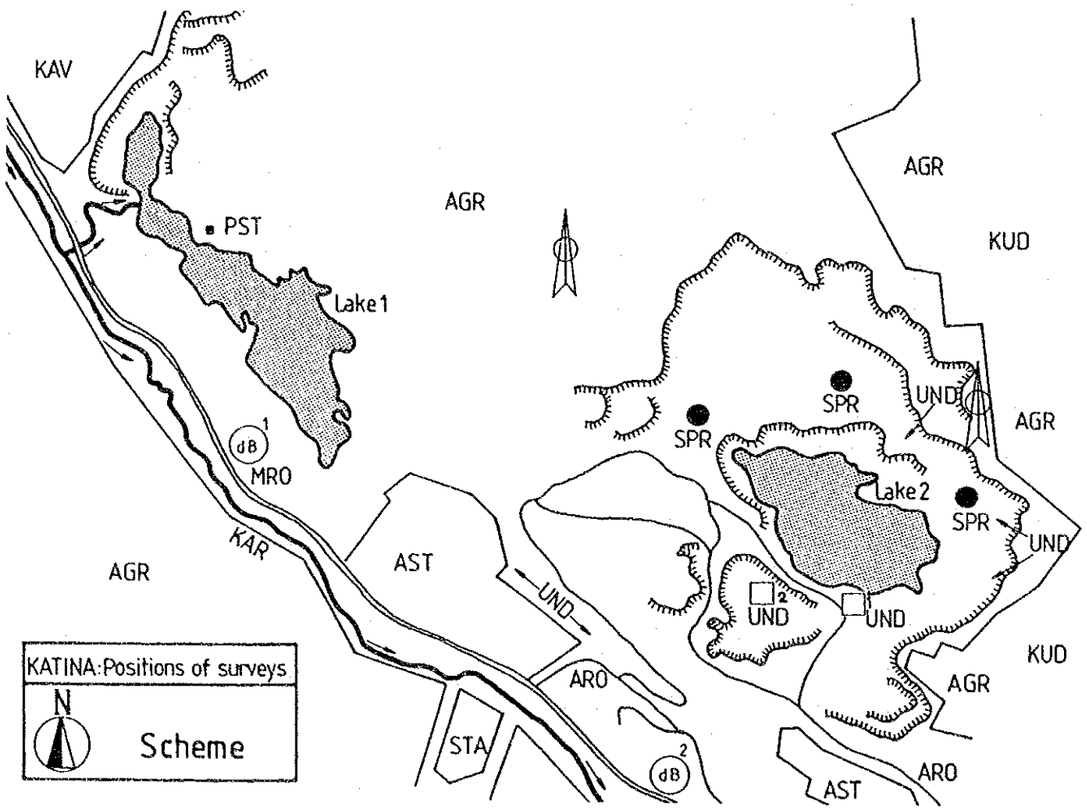
CYCLOPOIDA
Cyclops strenuus
Mesocyclops sp.
CALANOIDA
Eudiaptomus vulgaris
CLADOCERA
Alona sp.
Bosmina longirostris
Chidorus sphaericus
Daphnia cuculata
D. magna

Z O O B E N T H O S

DIPTERA
CHIRONOMIDAE
Chironomus plumosus
Gryptochironomus defectus
Eudochironomus tendens
Procladius horeus
Prodiamesa olivacea
Sindiamesa wirosa

Cartographic Documentation

Maps of Sampling Positions



LEGEND

Abbreviations :

ADS : Actual Dumping Site
AGR : Agricultural Area
ARO : Access Road
BFA : Brick Factory
BST : Biologial Station
COC : Concrete Collector
CHD : Chelopechene District
DMV : Dimitar Milenkov Village
EST : Explosives Store
EXA : Excavation Area
ISR : Iskar River
KAV : Katina Village
KMC : Kremikovtsi Mining Company
LER : Lesnovska River
NIV : Novi Iskar Village
MRO : Main Road
PKO : Peak Korunchut
PST : Pumping Station
RHP : Regional Heating Plant
RES : Reservoir
SBL : Stonebraking Level
SPC : Sediment Processing Company
SUV : Suhodol Village
UND : Uncontrolled Dumping

GENERAL

SMALL BUILDINGS

LARGE SETTLEMENT & INDUSTRY AREAS

DRAINAGE PIPES

TARMAC ROADS

GRADED ROADS

RAILROADS

NATURAL & ARTIFICIAL WATERFLOWS

TEMPORARY & PERMANENT POOLS & LAKES (NATURAL & ARTIFICIAL)

CLIFFS & DOWNFALLS

POSITIONS AND LOCATIONS OF SURVEYS

1,2,3 ..... NUMBERING OF POSITIONS

ECOLOGICAL

○ IOS INDEX OF SAPROBIE

● SPR SPECIES RECORD

△—△ TRA TRANSECT

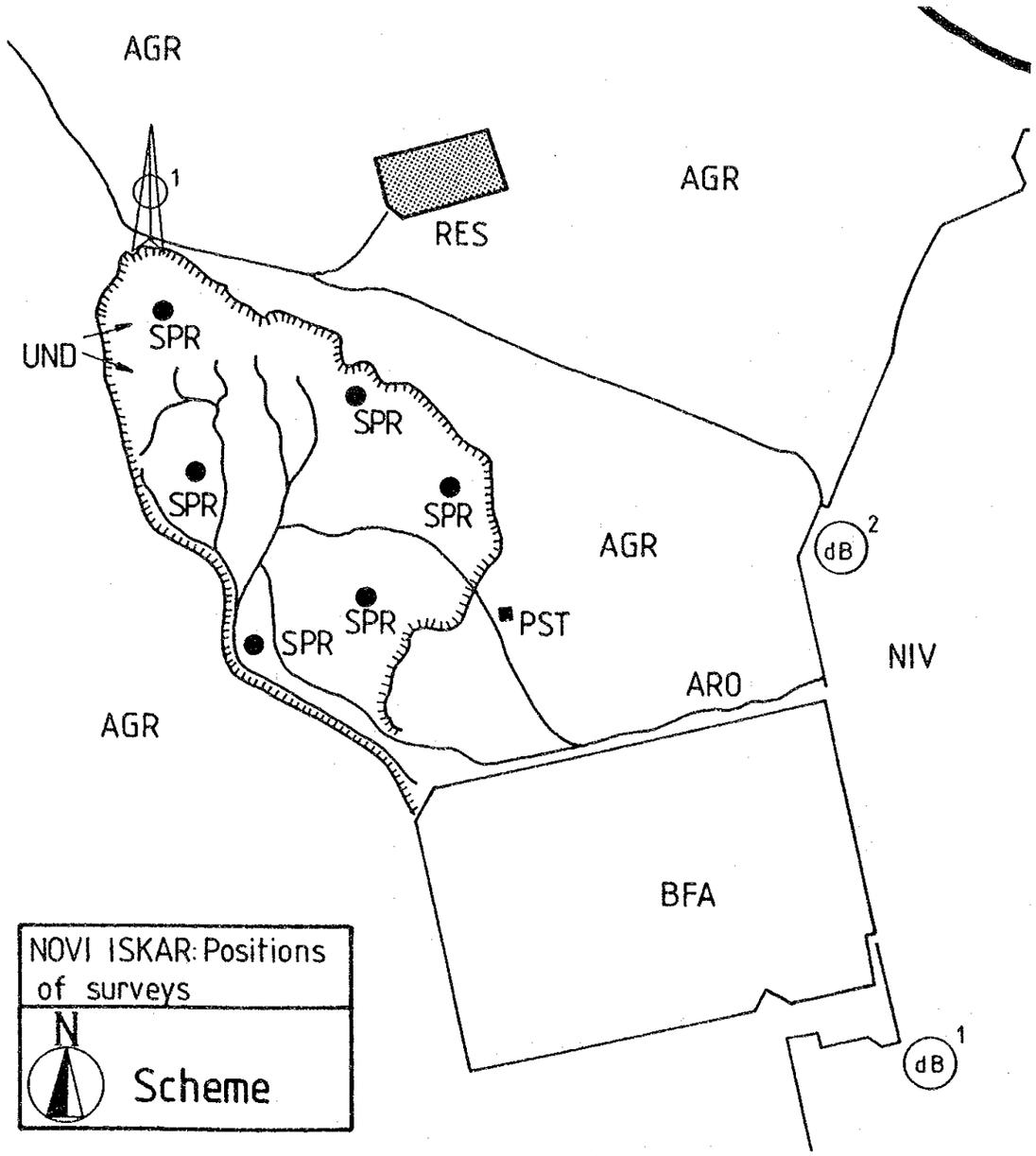
ENVIRONMENTAL

□ WATER ANALYSIS

■ SOIL-ATMOSPHERE GAS ANALYSIS

(dB) TRAFFIC-NOISE ANALYSIS

REFERENCE POSITION FOR WIND (SPEED & DIRECTION) CALCULATION



LEGEND

Abbreviations :

ADS : Actual Dumping Site	KMC : Kremikovtsi Mining Company
AGR : Agricultural Area	LBR : Lesnovska River
ARO : Access Road	NIV : Novi Iskar Village
BFA : Brick Factory	MRO : Main Road
BST : Biologial Station	PKO : Peak Korunchut
COC : Concrete Collector	PST : Pumping Station
CHD : Chelopechene District	RHP : Regional Heating Plant
DMV : Dimitar Milenkov Village	RES : Reservoir
EST : Explosives Store	SBL : Stonebraking Level
EXA : Excavation Area	SPC : Sediment Processing Company
ISR : Iskar River	SUV : Suhodol Village
KAV : Katina Village	UND : Uncontrolled Dumping

GENERAL

SMALL BUILDINGS

LARGE SETTLEMENT & INDUSTRY AREAS

DRAINAGE PIPES

TARMAC ROADS

GRADED ROADS

RAILROADS

NATURAL & ARTIFICIAL WATERFLOWS

TEMPORARY & PERMANENT POOLS & LAKES (NATURAL & ARTIFICIAL)

CLIFFS & DOWNFALLS

POSITIONS AND LOCATIONS OF SURVEYS

1,2,3 ..... NUMBERING OF POSITIONS

ECOLOGICAL

IOS INDEX OF SAPROBIE

SPR SPECIES RECORD

TRA TRANSECT

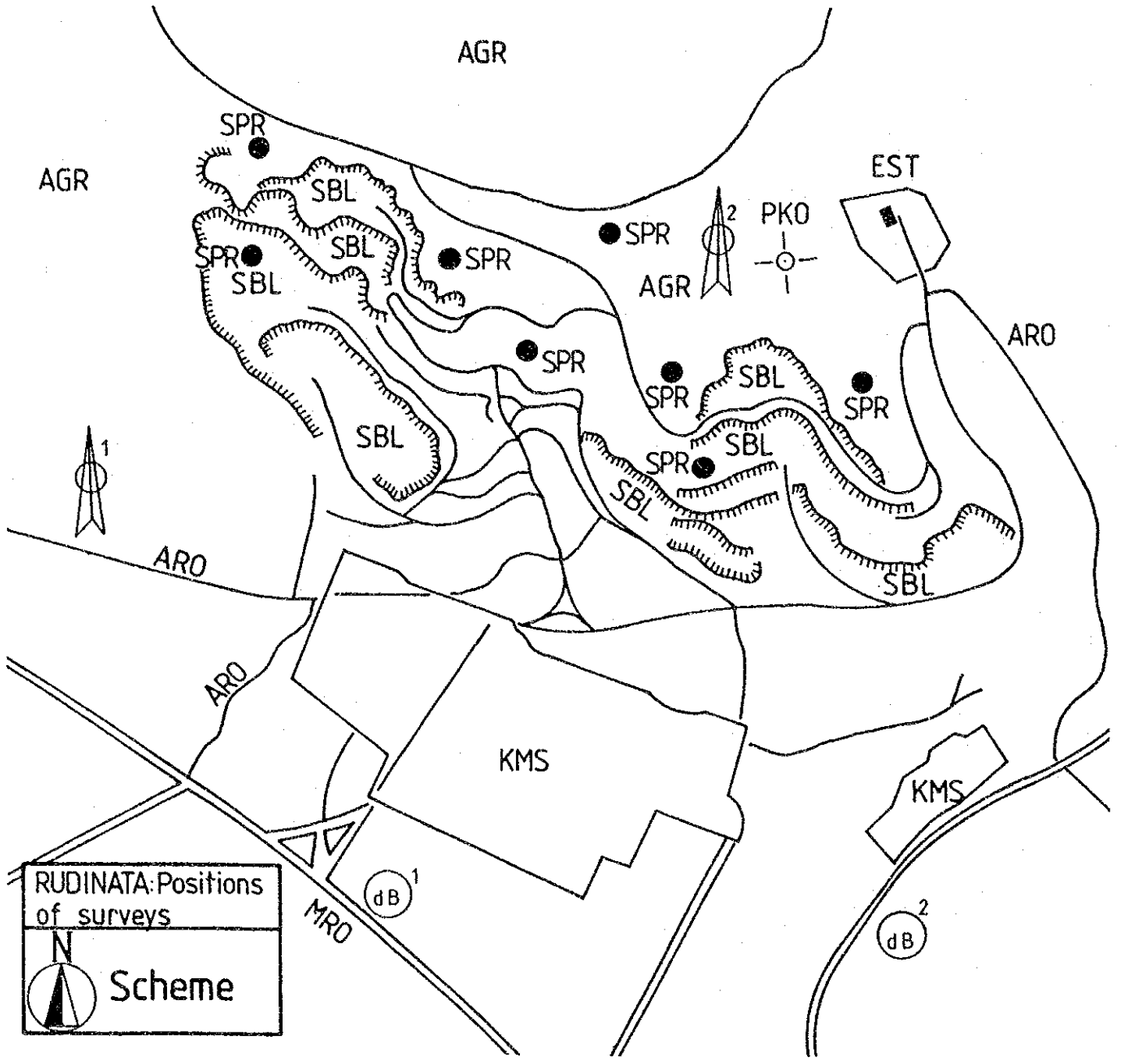
ENVIRONMENTAL

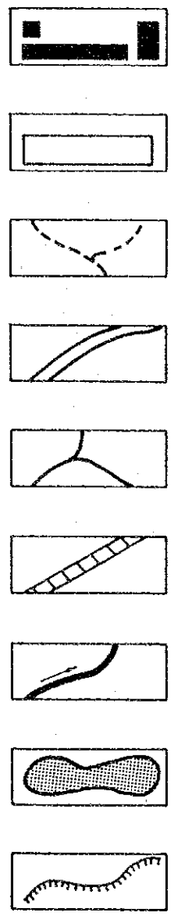
WATER ANALYSIS

SOIL-ATMOSPHERE GAS ANALYSIS

dB TRAFFIC-NOISE ANALYSIS

REFERENCE POSITION FOR WIND (SPEED & DIRECTION) CALCULATION





LEGEND

Abbreviations :

ADS	: Actual Dumping Site	KMC	: Kremikovtsi Mining Company
AGR	: Agricultural Area	LBR	: Lesnovska River
ARO	: Access Road	NIV	: Novi Iskar Village
BFA	: Brick Factory	MRO	: Main Road
BST	: Biologial Station	PKO	: Peak Korunchut
COC	: Concrete Collector	PST	: Pumping Station
CHD	: Chelopechene District	RHP	: Regional Heating Plant
DMV	: Dimitar Milenkov Village	RES	: Reservoir
EST	: Explosives Store	SBL	: Stonebraking Level
EXA	: Excavation Area	SPC	: Sediment Processing Company
ISR	: Iskar River	SUV	: Suhodol Village
KAV	: Katina Village	UND	: Uncontrolled Dumping

GENERAL

SMALL BUILDINGS

LARGE SETTLEMENT & INDUSTRY AREAS

DRAINAGE PIPES

TARMAC ROADS

GRADED ROADS

RAILROADS

NATURAL & ARTIFICIAL WATERFLOWS

TEMPORARY & PERMANENT POOLS & LAKES (NATURAL & ARTIFICIAL)

CLIFFS & DOWNFALLS

POSITIONS AND LOCATIONS OF SURVEYS

1,2,3 ..... NUMBERING OF POSITIONS

ECOLOGICAL

○ IOS INDEX OF SAPROBIE

● SPR SPECIES RECORD

△—△ TRA TRANSECT

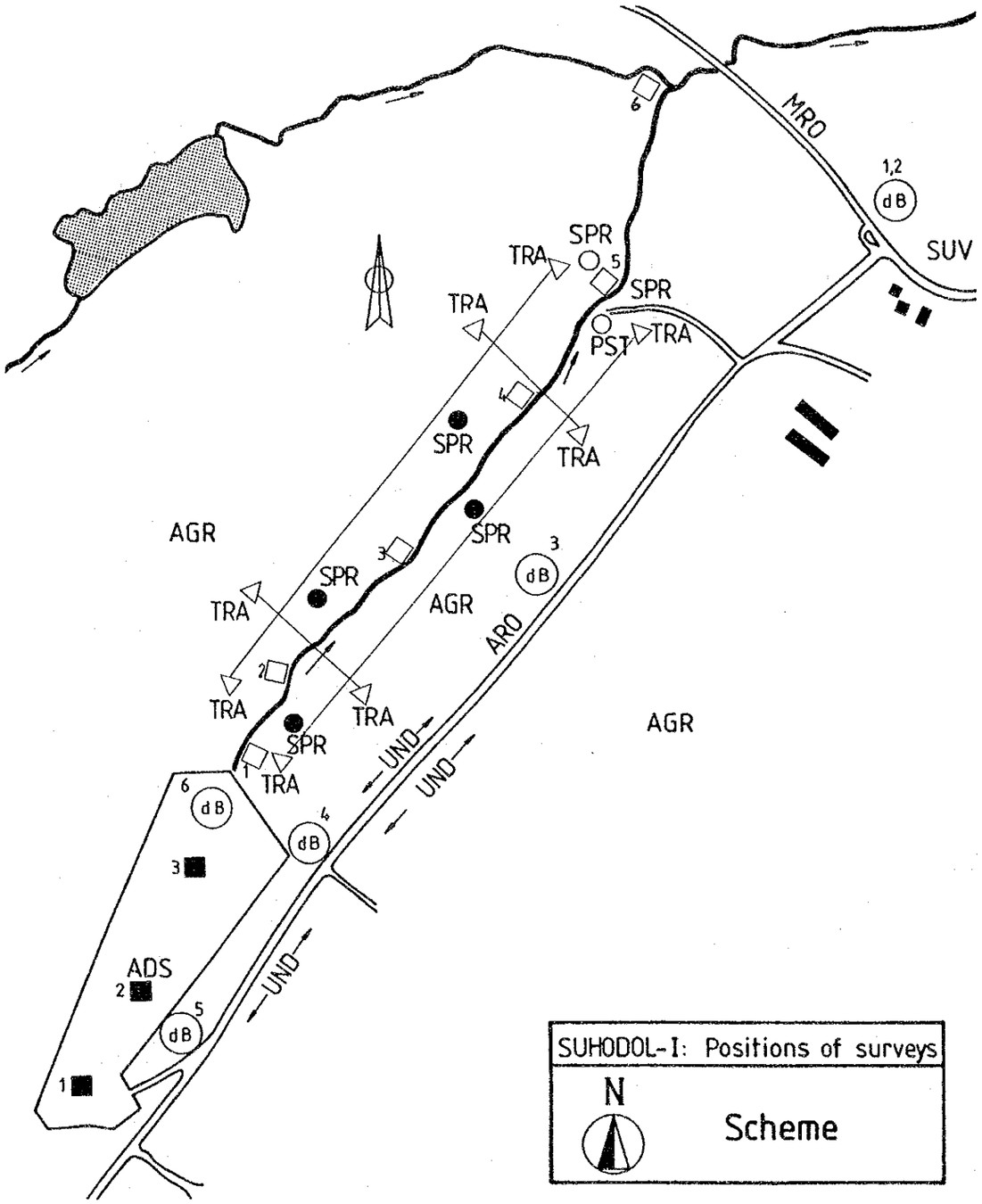
ENVIRONMENTAL

□ WATER ANALYSIS

■ SOIL-ATMOSPHERE GAS ANALYSIS

dB TRAFFIC-NOISE ANALYSIS

REFERENCE POSITION FOR WIND (SPEED & DIRECTION) CALCULATION



AGR

SUHODOL-I: Positions of surveys

N

Scheme

LEGEND

Abbreviations :

ADS : Actual Dumping Site	KMC : Kremikovtsi Mining Company
AGR : Agricultural Area	LER : Lesnovska River
ARO : Access Road	NIV : Novi Iskar Village
BFA : Brick Factory	MRO : Main Road
BST : Biologial Station	PKO : Peak Korunchut
COC : Concrete Collector	PST : Pumping Station
CHD : Chelopechene District	RHP : Regional Heating Plant
DMV : Dimitar Milenkov Village	RES : Reservoir
EST : Explosives Store	SBL : Stonebraking Level
EXA : Excavation Area	SPC : Sediment Processing Company
ISR : Iskar River	SUV : Suhodol Village
KAV : Katina Village	UND : Uncontrolled Dumping

GENERAL

SMALL BUILDINGS

LARGE SETTLEMENT & INDUSTRY AREAS

DRAINAGE PIPES

TARMAC ROADS

GRADED ROADS

RAILROADS

NATURAL & ARTIFICIAL WATERFLOWS

TEMPORARY & PERMANENT POOLS & LAKES (NATURAL & ARTIFICIAL)

CLIFFS & DOWNFALLS

POSITIONS AND LOCATIONS OF SURVEYS

1,2,3 ..... NUMBERING OF POSITIONS

ECOLOGICAL

● IOS INDEX OF SAPROBIE

○ SPR SPECIES RECORD

△—△ TRA TRANSECT

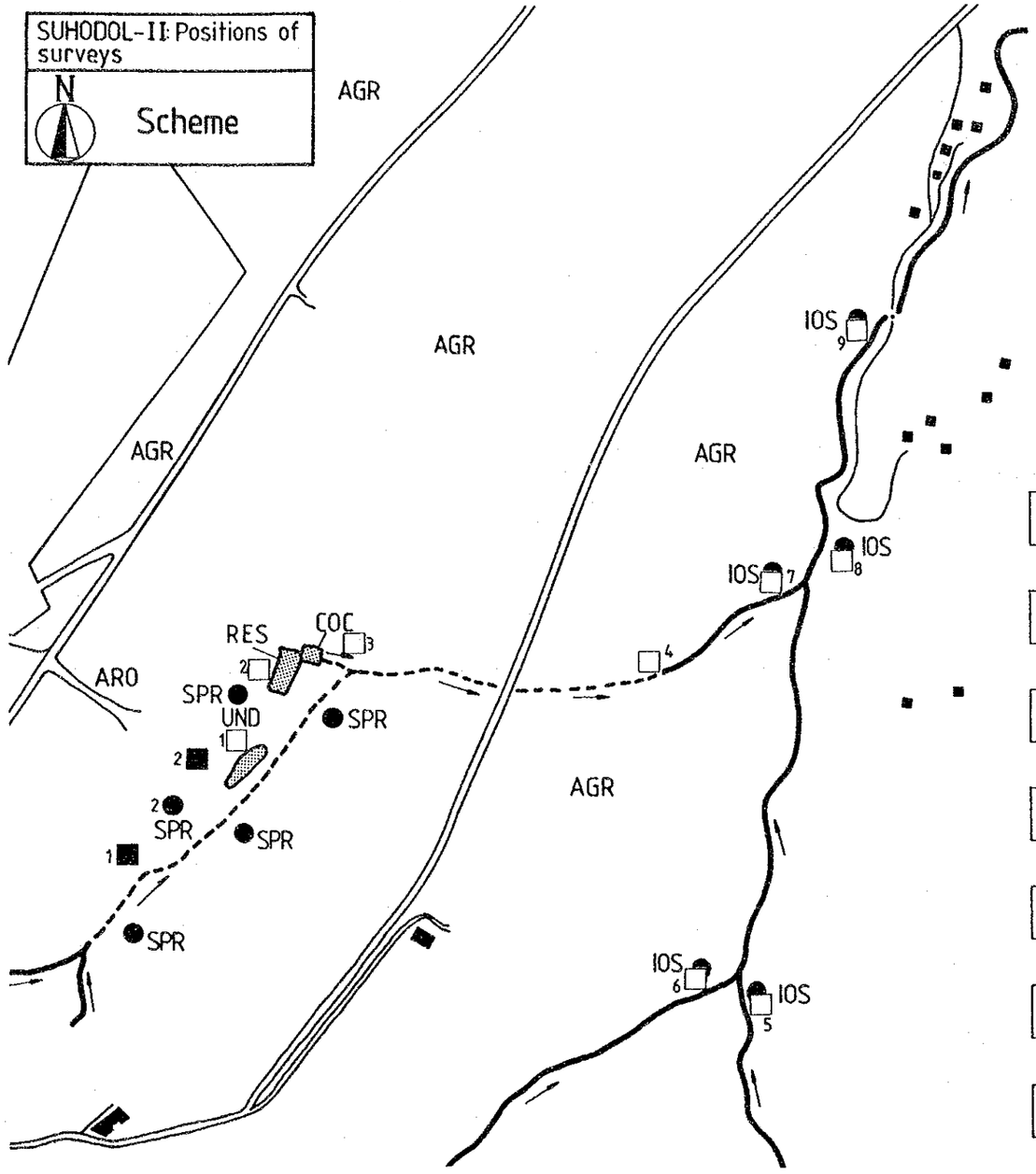
ENVIRONMENTAL

□ WATER ANALYSIS

■ SOIL-ATMOSPHERE GAS ANALYSIS

(dB) TRAFFIC-NOISE ANALYSIS

REFERENCE POSITION FOR WIND (SPEED & DIRECTION) CALCULATION



LEGEND

Abbreviations :

ADS	: Actual Dumping Site	KMC	: Kremikovtsi Mining Company
AGR	: Agricultural Area	LER	: Lesnovska River
ARO	: Access Road	NIV	: Novi Iskar Village
BFA	: Brick Factory	MRO	: Main Road
BST	: Biologial Station	PKO	: Peak Korunchut
COC	: Concrete Collector	PST	: Pumping Station
CHD	: Chelopechene District	RHP	: Regional Heating Plant
DMV	: Dimitar Milenkov Village	RES	: Reservoir
EST	: Explosives Store	SBL	: Stonebraking Level
EXA	: Excavation Area	SPC	: Sediment Processing Company
ISR	: Iskar River	SUV	: Suhodol Village
KAV	: Katina Village	UND	: Uncontrolled Dumping

GENERAL

SMALL BUILDINGS

LARGE SETTLEMENT & INDUSTRY AREAS

DRAINAGE PIPES

TARMAC ROADS

GRADED ROADS

RAILROADS

NATURAL & ARTIFICIAL WATERFLOWS

TEMPORARY & PERMANENT POOLS & LAKES (NATURAL & ARTIFICIAL)

CLIFFS & DOWNFALLS

POSITIONS AND LOCATIONS OF SURVEYS

1,2,3 ..... NUMBERING OF POSITIONS

ECOLOGICAL

○ IOS INDEX OF SAPROBIE

● SPR SPECIES RECORD

△—△ TRA TRANSECT

ENVIRONMENTAL

□ WATER ANALYSIS

■ SOIL-ATMOSPHERE GAS ANALYSIS

(dB) TRAFFIC-NOISE ANALYSIS

REFERENCE POSITION FOR WIND (SPEED & DIRECTION) CALCULATION

Maps of Wind Survey

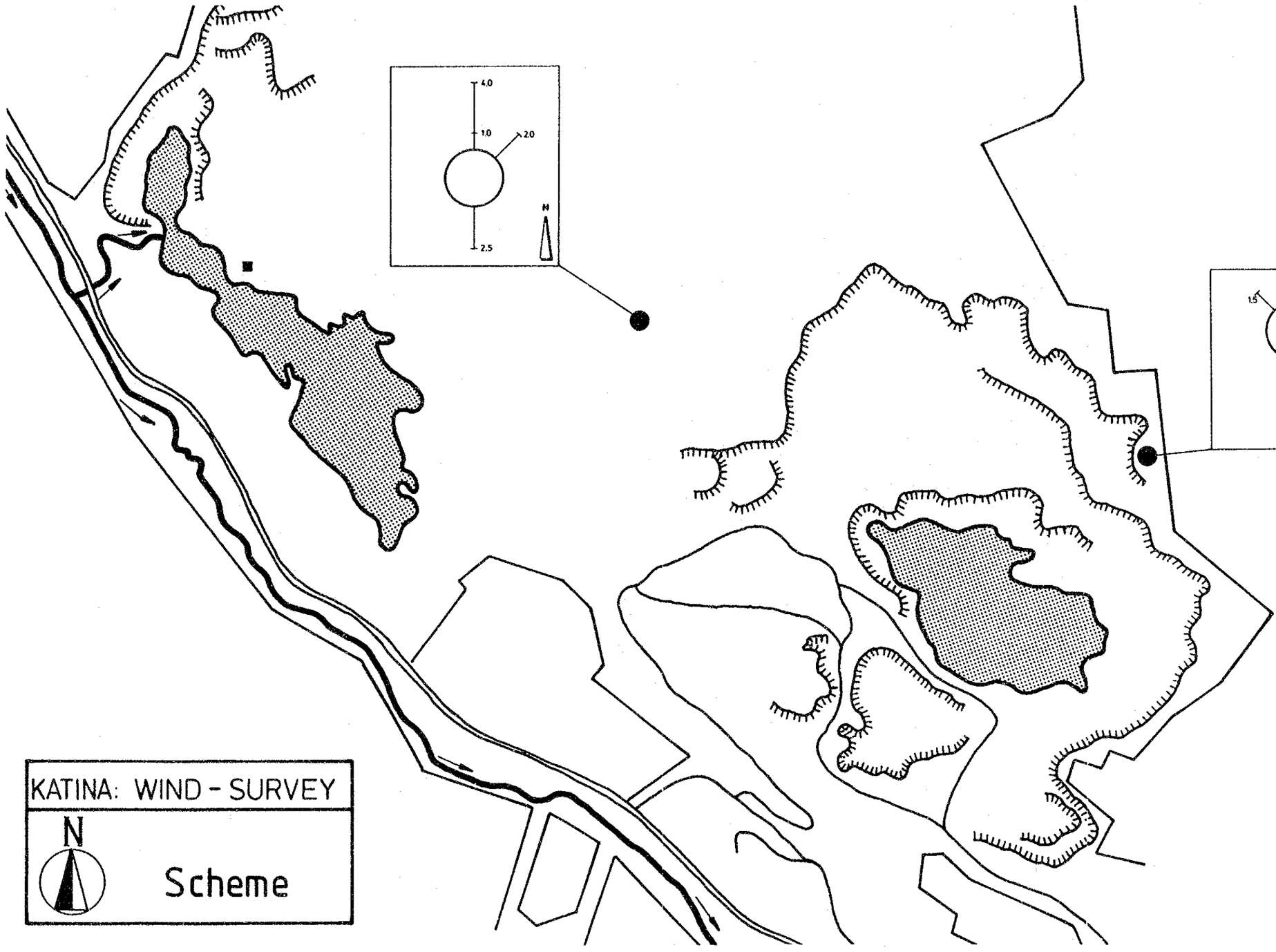
Wind - Survey, Table of Data

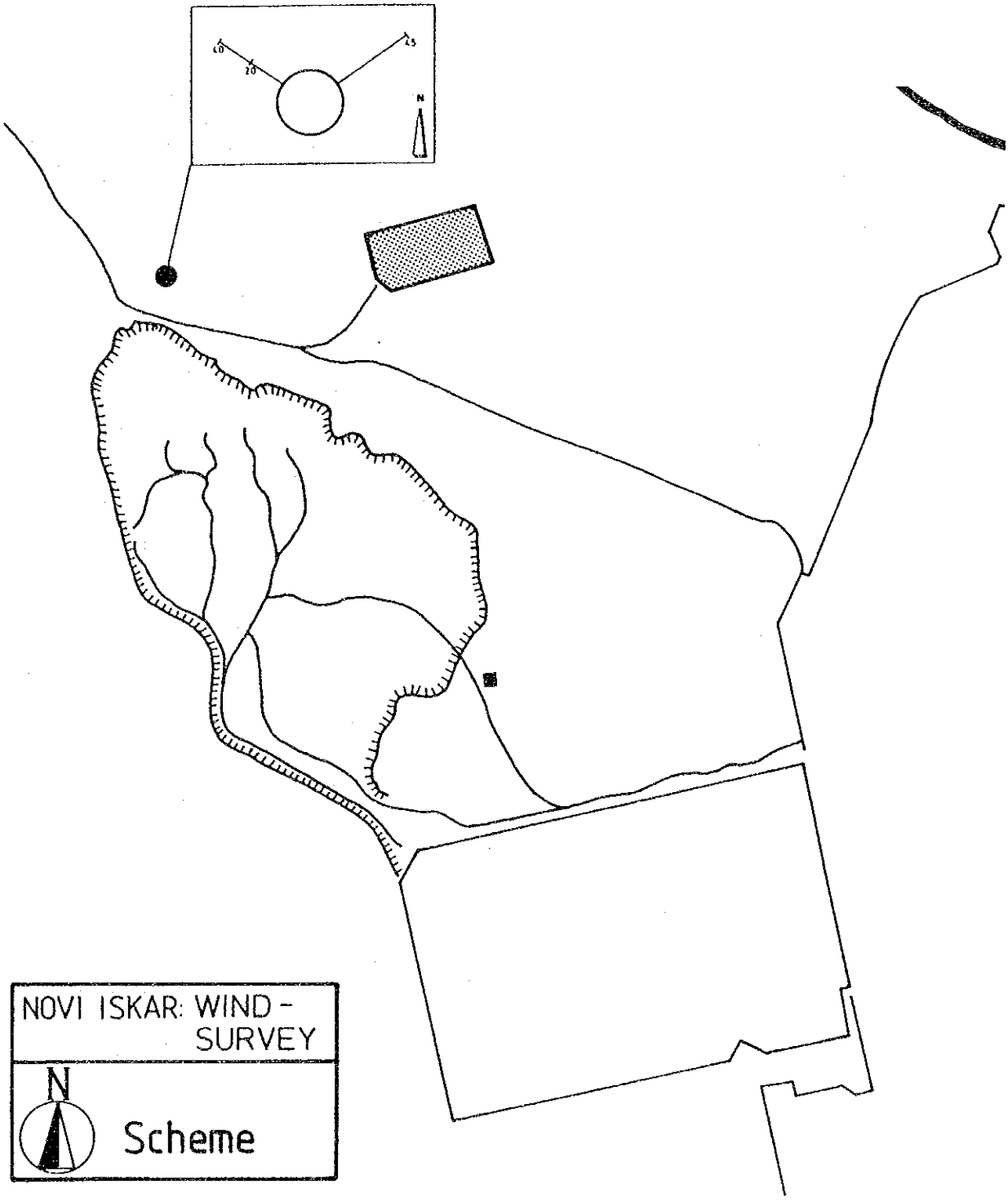
Specification :
Windvelocity - Winddirection Table no.: 01
Site : Suhodol I; Novi Iskar; Katina; Rudinata
Recording Date : July 1993
Parameter : Compass direction/velocity (m/sec)

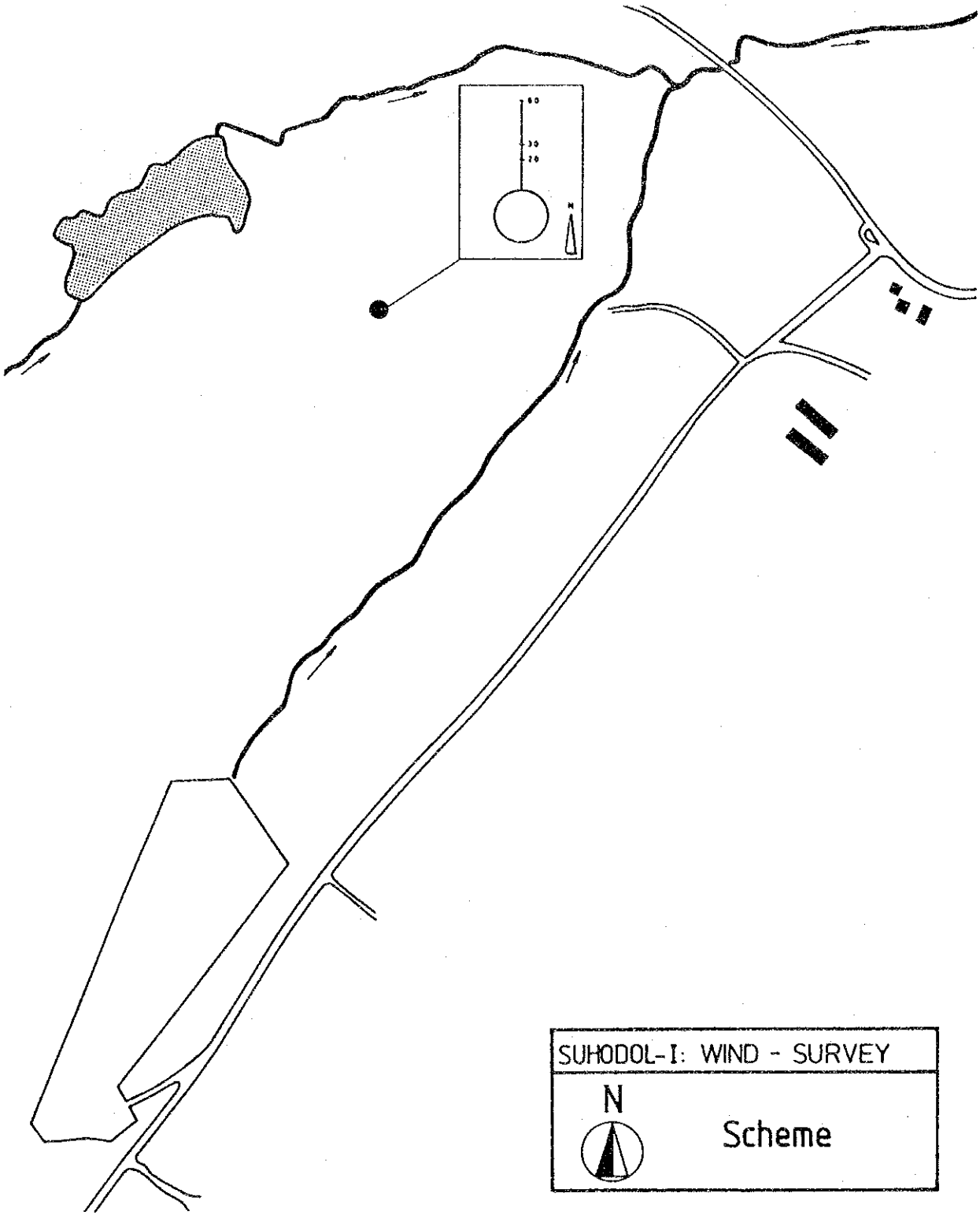
Day	Time	Pos. 1	Pos.2	Pos. 3	Pos. 4	Pos. 5	Pos. 6
12.7	9.15	-/-	NW/2.0	N/1.0	NW/1,5	-/-	-/-
12.7	14.15	-/-	NW/4.0	N/4.0	SE/6.0	-/-	-/-
13.7	9.15	N/6.0	-/-	-/-	-/-	-/-	-/-
13.7	19.15	-/-	NE/4.5	NE/2.0	SE/4.5	-/-	-/-
14.7	9.15	-/-	-/-	-/-	-/-	SE/4.0	W/4.0
14.7	14.15	N/3.0	-/-	-/-	-/-	-/-	-/-
15.7	14.15	-/-	-/-	-/-	-/-	W/2.5	W/3.0
15.7	19.15	-/-	-/-	-/-	-/-	NE/3	NE/8.0
16.7	9.15	-/-	NW/0.0	S/2.5	S/2.5	-/-	-/-
20.7	19.15	N/2.0	-/-	-/-	-/-	-/-	-/-

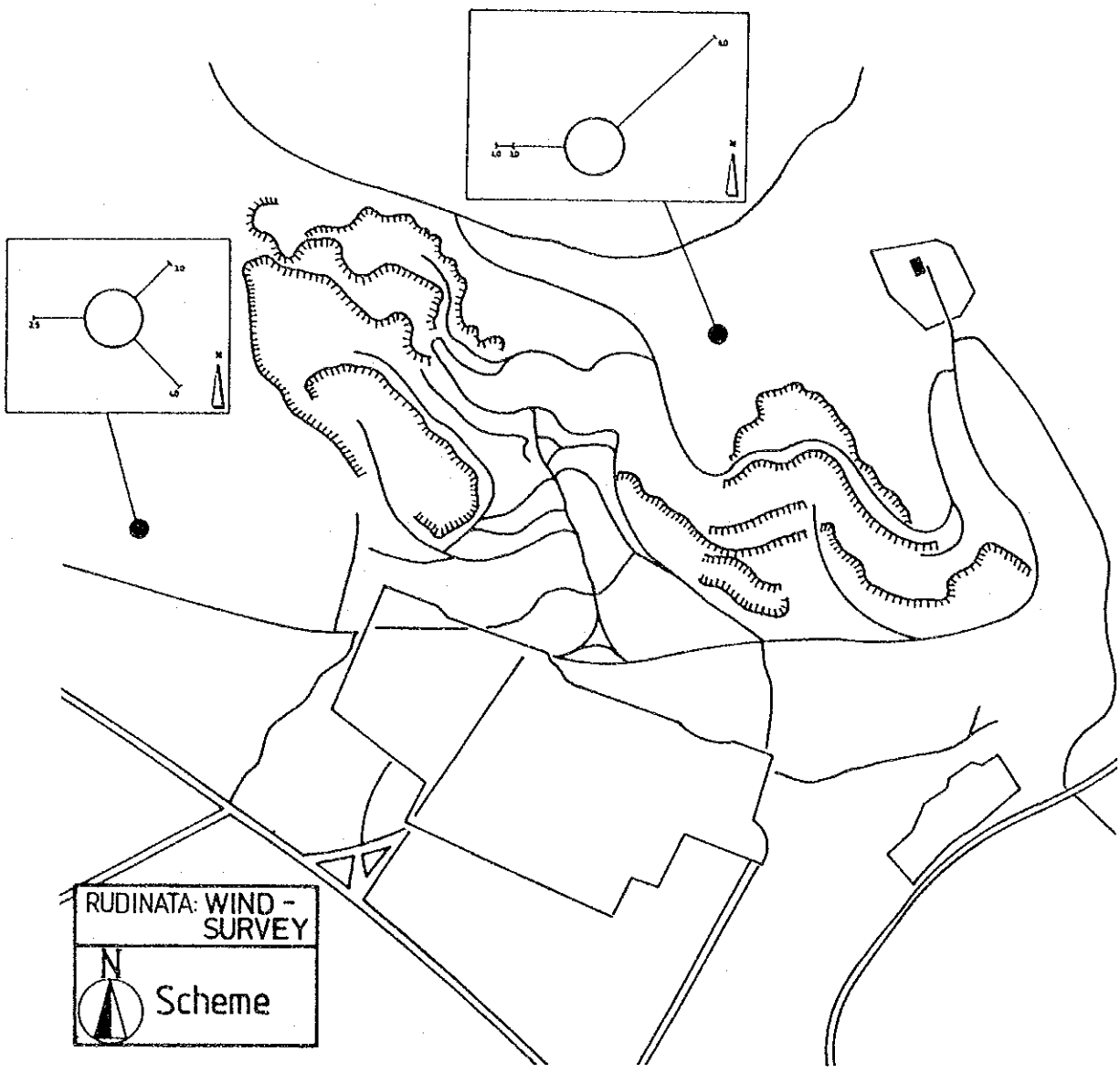
RECORDING POSITIONS :

Position 1 : Suhodol I
Position 2 : Novi Iskar
Position 3 : Katina 1
Position 4 : Katina 2
Position 5 : Rudinata 1
Position 6 : Rudinata 2

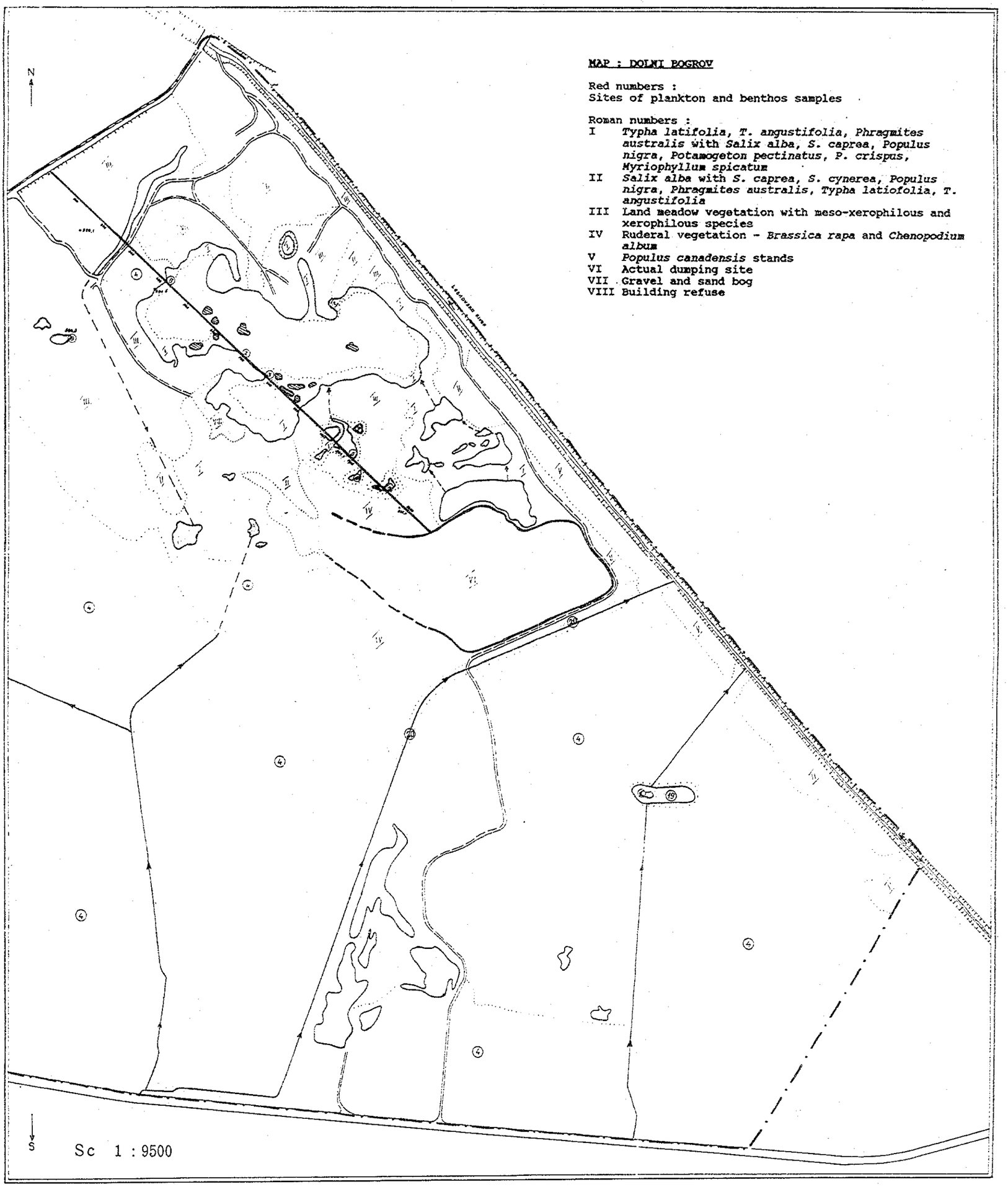

4.0
1.0
2.0
2.5
N
1.5
2.5
4.5
6.0
N
KATINA: WIND - SURVEY
N
Scheme


NOVI ISKAR: WIND - SURVEY
N
Scheme


SUHODOL-I: WIND - SURVEY
N
Scheme


RUDINATA: WIND - SURVEY
N
Scheme

Maps of Ecological Survey



MAP : DOLNI POGROV

Red numbers :
Sites of plankton and benthos samples

Roman numbers :

I *Typha latifolia, T. angustifolia, Phragmites australis* with *Salix alba, S. caprea, Populus nigra, Potamogeton pectinatus, P. crispus, Myriophyllum spicatum*

II *Salix alba* with *S. caprea, S. cynerea, Populus nigra, Phragmites australis, Typha latiofolia, T. angustifolia*

III Land meadow vegetation with meso-xerophilous and xerophilous species

IV Ruderal vegetation - *Brassica rapa* and *Chenopodium album*

V *Populus canadensis* stands

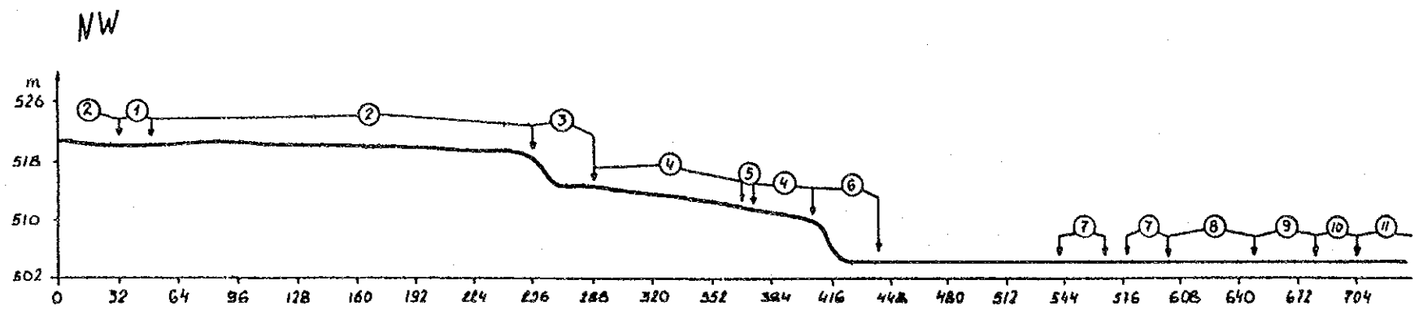
VI Actual dumping site

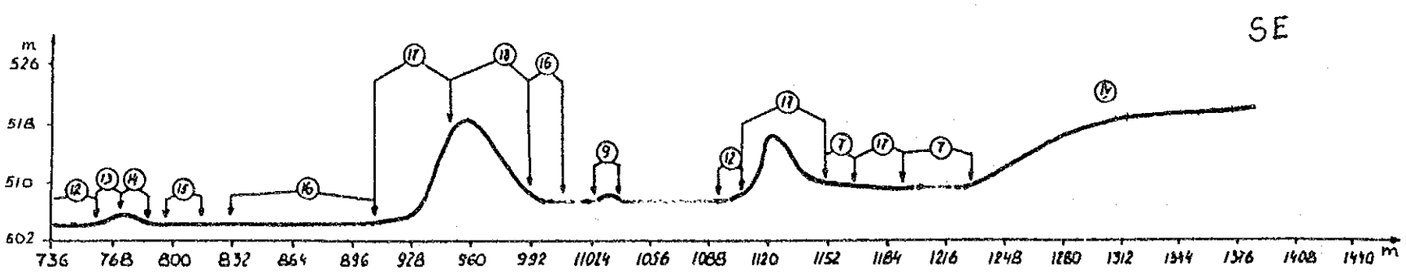
VII Gravel and sand bog

VIII Building refuse

DOLNI BOGROV

/PROFILE/





Vertical scale 1:800

Horizontal scale 1:3200

PROFILES : Symbols

Capital letters :

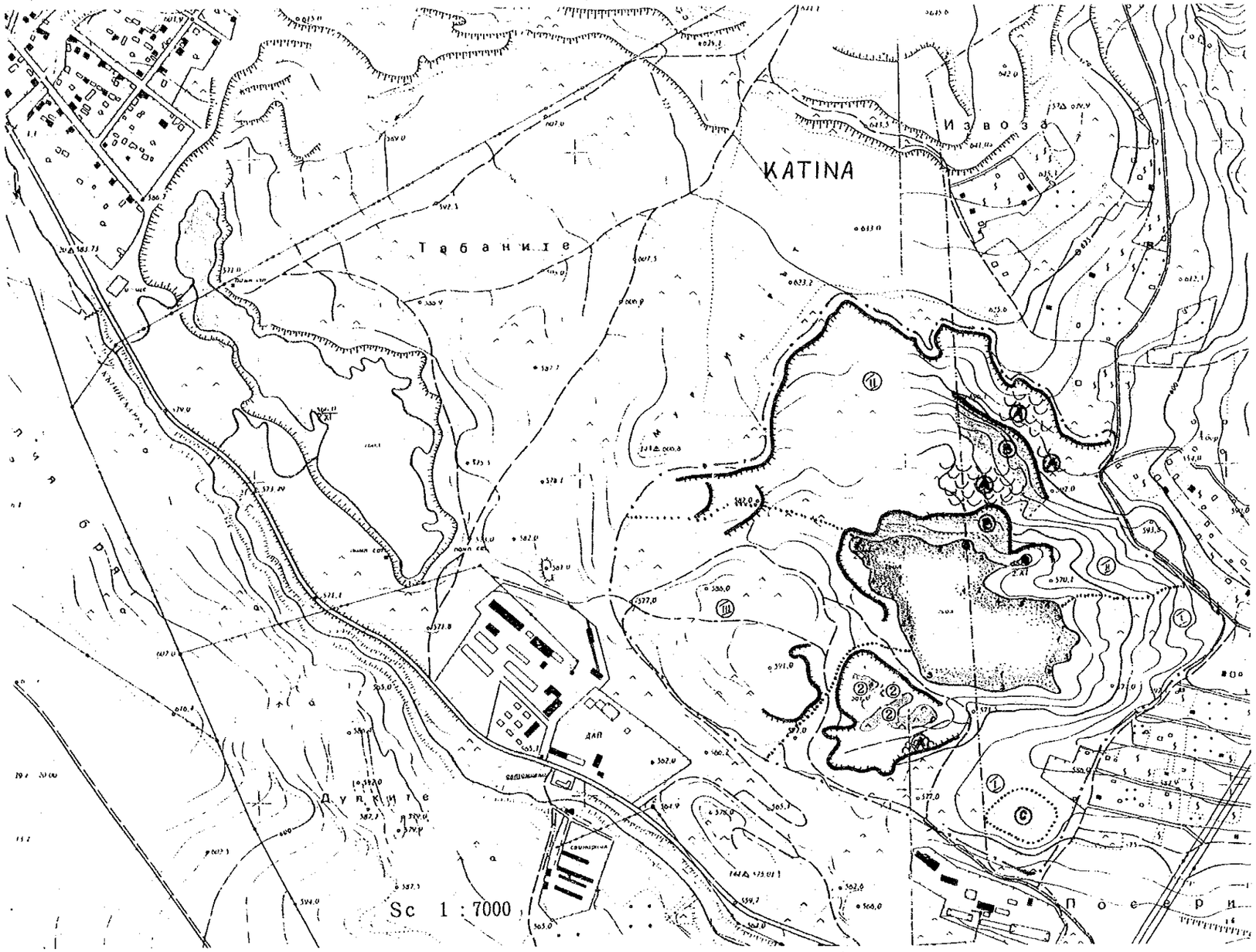
A Agricultural land
B Former agricultural lands, now overgrown with weeds
C Trees and bushes
D Hygrophyllous vegetation elements
E *Populetum tremulae* stands
F *Salicetum albae* stands
N Plant species and communities

Roman numbers :

I Meadow coenoses
II Meadow coenoses
III Meadow coenoses
IV Populus canadiensis stands
V *Viscaria atropurpurea* stands

Black numbers :

1 *Typha latifolia, T. angustifolia, Juncus conglomeratus*
2 *Acer tataricum* stands
3 *Quercus cerris* stands
4 *Sorbus torminalis, Quercus cerris, Q. frainetto, Cornus mas, Prunus spinosa, Crataegus monogyna, Carpinus orientalis, Acer tataricum*
5 *Quercus cerris, Acer tataricum, Crataegus monogyna, Rosa canina*
6 *Clematis integrifolia*
7 *Malus domestica, Cornus mas, Crataegus monogyna*
8 *Populus tremula, Betula alba, Acer tataricum, Quercus frainetto*
9 *Quercus cerris, Rosa canina*
10 *Pyrus communis, Quercus cerris, Crataegus monogyna, Rosa canina*
11 *Typha latifolia, Salix alba, Equisetum palustre*
12 *Prunus domestica, Rosa canina*
13 *Phragmites australis, Typha angustifolia, Tusslago farfara, Festuca elatior, Urtica dioica*
14 *Sambucus ebulis* stands
15 Strongly polluted moist ungrassed area
16 *Prunus spinosa, Crataegus monogyna, Rosa canina*
17 *Pyrus communis* (with *Parmelia sp.*)
18 *Rosa canina* (single bush)
19 *Typha latifolia, Equisetum palustre, Juncus conglomeratus*
20 *Crataegus monogyna, Veratrum lobelianum*



MAP : KATINA

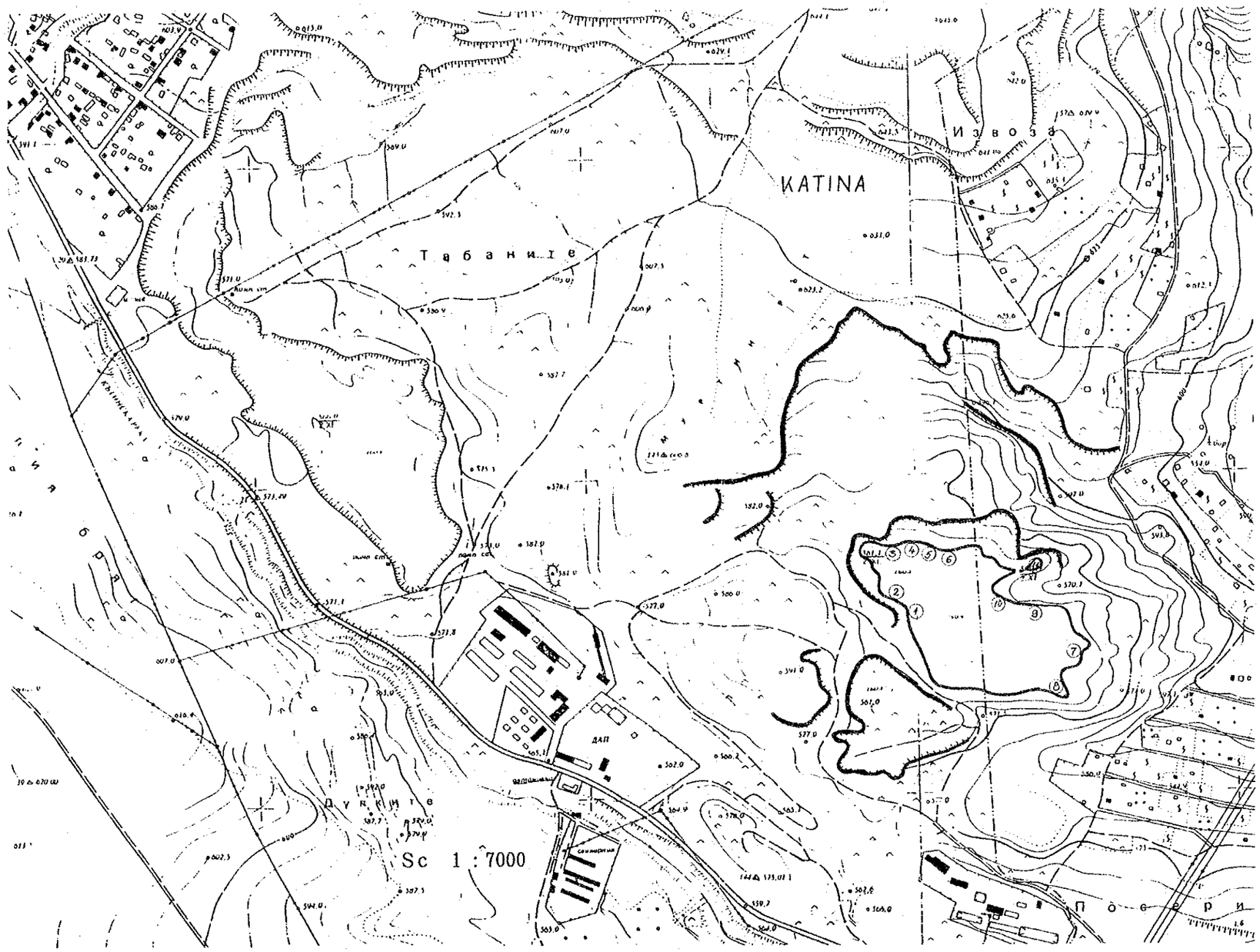
Capital letters
N Plant species or their communities

Balck numbers
1 *Myriophyllum spicatum*
2 *Typha latifolia, T. angustifolia*
3 *Phragmites australis*
4 *Typha latifolia*
5 *Typha angustifolia*
6 *Lemna minor*
7 *Polygonum hydropiper*

Roman numbers (shores of the lake) :
I *Festuca pseudovina* + *Tussilago farfara* community
II *Sambucus ebulis* + different grasses
III *Dactylis glomerata* + *Tussilago farfara*

Red letters :
A Actual dumping location
B Lignite coal ribbons
C Excavation area for fluvial materials

Red numbers :
Sites of plankton and benthos samples



MAP : KATINA

Capital letters
N Plant species or their communities

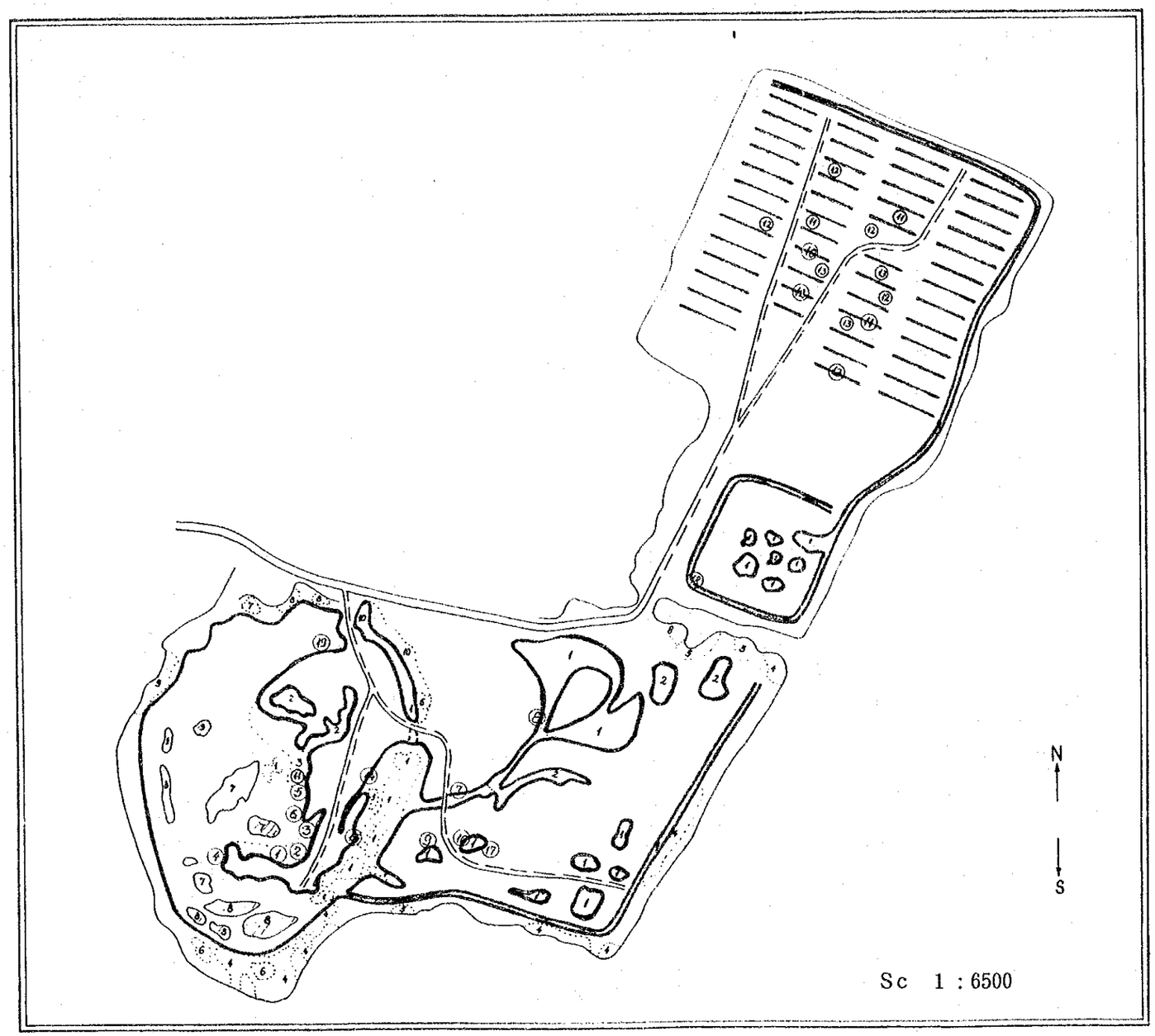
Balck numbers
1 *Myriophyllum spicatum*
2 *Typha latifolia, T. angustifolia*
3 *Phragmites australis*
4 *Typha latifolia*
5 *Typha angustifolia*
6 *Lemna minor*
7 *Polygonum hydropiper*

Roman numbers (shores of the lake) :
I *Festuca pseudovina* + *Tussilago farfara* community
II *Sambucus ebulis* + different grasses
III *Dactylis glomerata* + *Tussilago farfara*

Red letters :
A Actual dumping location
B Lignite coal ribbons
C Excavation area for fluvial materials

Red numbers :
Sites of plankton and benthos samples

KORIYATA



MAP : KORIYATA

Capital letters :
N Plant species or their communities

Black numbers :
1 *Typha latifolia, T. angustifolia, Juncus conglomeratus*
2 *Typha angustifolia*
3 *Myriophyllum spicatum*
4 *Salix alba, S. caprea, Populus tremula, P. nigra, Betula alba*
5 *Sambucus ebulis*
6 *Alnus glutinosa*
7 *Populus nigra, S. alba*
8 *Salix alba, S. caprea*
9 *Salix caprea, Populus nigra*
10 *Salix alba, Populus nigra*
11 *Polygonum hydropiper*
12 *Potamogeton pectinatus*
13 *Chara sp.*

Red numbers:
Sites of Plankton and Benthos samples