

# CONCLUSION

## 1. On the condition of Lake Baikal according to indicators observed in 2016.

Lake level. Low-water conditions, continuing in 2016, preconditioned the adoption of the decree of the Government of the Russian Federation dated 1<sup>st</sup> July, 2016 No. 626 “On the maximum and minimum water level values in Lake Baikal in 2016-2017”, stipulating the level limits depending on actual water content as follows:

- maximum and minimum water level values in Lake Baikal during the average-water period at 456 and 457 metres respectively (according to the Pacific system of heights);
- minimum water level value in Lake Baikal during the low-water period (low-flow period) at 455.54 metres (according to the Pacific system of heights);
- maximum water level value in Lake Baikal during the high-water period (high-flow period) at the level of 457.85 metres according to the Pacific system.

As of 01/01/2016, the average water level in Lake Baikal was around 455.99 metres according to the Pacific system, i.e. 0.16 metres lower than on the corresponding date in 2015 and 0.44 metres lower than the long-term annual average (456.43 m PO).

In 2016 the minimum water level in Lake Baikal was recorded during the period between 28<sup>th</sup> April and 5<sup>th</sup> May at around 455.71 metres according to the Pacific system, i.e. 29 cm below the limit values established by the Decree of the Government of the Russian Federation dated 26<sup>th</sup> March, 2001 No. 234 “On the limiting values of the water level in Lake Baikal in the implementation of economic and other activities” and was the lowest for the last 15 years. The filling of Lake Baikal began on 6<sup>th</sup> of May. Minimum limit level - 456.0 metres according to the Pacific system was recovered on 29<sup>th</sup> June, 2016.

The decline of the Lake Baikal water level began on 29<sup>th</sup> September, 2016 and at the end of the year the level has dropped to 456.16 metres.

The average annual useful inflow to Lake Baikal in 2016 amounted to 1,510 m<sup>3</sup>/s or 47.77 km<sup>3</sup> as compared to standard rate of 61.9 km<sup>3</sup>. In 2015 the useful inflow amounted to 36.4 km<sup>3</sup>.

The observations of the surface layer and water layer in 2016 were carried out by the Irkutsk Centre of Hydrometeorology and Environmental Monitoring of Roshydromet (Federal Service for Hydrometeorology and Environmental Monitoring of Russia) in June, March and September:

- In South Baikal - in the area of influence of Baykalsk town KOS (wastewater treatment facilities);
- in the areas of South Baikal ports (Bolshoye Goloustnoye settlement, Kultuk settlement, Baikal settlement and Vydrino settlement);
- at the Angara River source;
- in the area of the Selenga Shallow Waters;
- in the area of Barguzin Bay;
- in North Baikal – in the area of the Baikal–Amur Mainline route influence;
- at baseline deep-sea stations of benchmark section, running along Lake Baikal in its central part;

The environmental condition of Lake Baikal in 2016, according to hydro-chemical indicators taken in the baseline longitudinal section of the lake, remains stable with regard to suspended solids, water colour, COD (chemical oxygen demand), BOD<sub>5</sub> (5-day biochemical oxygen demand) and total mineral content.

Concentrations of non-sulphate sulphur increased compared to the baseline values from 0.1 mg/dm<sup>3</sup> to 0.6 mg/dm<sup>3</sup> in 2016 in the area of Lake Baikal adjacent to the location of the former BPPM (Baykalsk Pulp and Paper Mill). Within the 100-meter section of the deep discharge of municipal waste waters of Baykalsk town, violations were recorded only with regard to the content of volatile phenols (3 MPC (maximum permissible concentration) and suspended solids (1.3 MPC).

The lake water's chemical composition at the source of Angara River in 2016 was characterised by high content of sulphate ions, suspended solids, total phosphorus and ammonia nitrogen, as compared to the baseline values and previous year of observations.

An increase in the concentrations of biogenic and mineral compounds was observed in the area of South Baikal ports in 2016. High concentrations of volatile phenols were recorded in Baykalsk settlement - 2 MPC and in the area of B. Goloustnoye settlement - 4 MPC.

In the Middle part of Lake Baikal, namely in the area of Barguzin Bay, the lake water quality corresponded to baseline section values, with the exception of average concentration of phosphorus phosphate -  $0.004 \text{ mg/dm}^3$  compared to baseline values of  $0.002 \text{ mg/dm}^3$ . An increase of average concentrations of total phosphorus from  $0.005 \text{ mg/dm}^3$  to  $0.010 \text{ mg/dm}^3$  and ammonia nitrogen - from  $0.002 \text{ mg/dm}^3$  to  $0.008 \text{ mg/dm}^3$  was observed in the area of the Selenga Shallow Waters, compared with the values in 2015.

In the north of Lake Baikal (Baikal-Amur Mainline route) the anthropogenic load in comparison with the previous year of observations increased with the contribution of the following indicators: sulphate ions from  $5.8 \text{ mg/dm}^3$  to  $6.0 \text{ mg/dm}^3$  and ammonia nitrogen - from  $0.002 \text{ mg/dm}^3$  to  $0.005 \text{ mg/dm}^3$ . The average silicon content decreased from  $1.8 \text{ mg/dm}^3$  to  $0.6 \text{ mg/dm}^3$ , while nitrite nitrogen decreased from  $0.001 \text{ mg/dm}^3$  to zero.

**Bottom sediments.** The size of the pollution zone at the field in the vicinity of discharge of waste waters of Baykalsk town KOS (wastewater treatment facilities) at depths up to 370 metres, calculated according to the groundwater and bottom sediments monitoring data, amounted in 2016 to  $3.7 \text{ km}^2$  (in 2015 -  $4.5 \text{ km}^2$  and in 2014 -  $5.1 \text{ km}^2$ ). The content of total PAHs (polycyclic aromatic hydrocarbons) and carcinogenic arenes (aromatic hydrocarbons) decreased, which signified a certain decrease of anthropogenic impact on bottom sediments of the field.

With regard to hydro-chemical and geochemical indicators of groundwater and bottom sediments' quality, no environmental degradation on the Selenga River delta front has been detected in 2016. However, compared with 2015, the dissolved oxygen level decreased in the bottom layer of water in the area of the Selenga River delta front by 9.9 % - from  $9.1 \text{ mg/dm}^3$  to  $8.19 \text{ mg/dm}^3$ . The average content of carcinogenic aromatic hydrocarbons in the bottom sediments increased by 13.5% - from  $171 \text{ ng/g dry weight}$  to  $19.4 \text{ ng/g dry weight}$ , while total PAHs increased by 20.1% from  $36.9$  to  $44.3 \text{ ng/g dry weight}$  and the average content of benzo(a)pyrene corresponded to the baseline indicators.

Compared to 2015, a decrease from  $9.3 \text{ mg/dm}^3$  to  $8.3 \text{ mg/dm}^3$  was recorded in 2016 in the level of dissolved oxygen in the bottom water layer of North Baikal and in the area of influence of the Baikal-Amur Mainline route. An increase for all the studied geochemical indicators, except for indicators of easy hydrolysable carbohydrates and total organics in the content of bottom sediments was observed. A decrease of content of benzo(a)pyrene, total PAHs and carcinogenic aromatic hydrocarbons was observed within the examined field; however, an increase in the content of benzo(a)pyrene, total PAHs and carcinogenic aromatic hydrocarbons was observed in the area between Severobaikalsk and Nizhneangarsk.

**The fish fauna and population of Baikal seal (nerpa).** In 2016 the total number of spawning Baikal omul species coming into spawning streams amounted to 0.8 million species, i.e. five times lower than the long-term annual average (4.3 million species) level. In the Upper Angara River the spawning population (0.135 million species) was considerably lower than the average for the last five years - 1.41 million species. A minimum number of spawning omul species for all years was caught in the rivers of Posolsky Sor (Bolshaya Rechka and Kultuchnaya) for reproduction purposes - 0,009 million species.

The total biomass of omul decreased from 20.5-26.4 thousand tonnes (1982-2005) to 16.0-21.4 thousand tons in 2006-2014. In 2015 the minimum biomass of omul in recent years was recorded - 11.3 thousand tons, while in 2016 the biomass of omul was estimated at 13.6 thousand tonnes. The total allowable catch of omul in 2017 was approved in the amount of 500 tonnes (in 2016 - 1,100 tonnes).

The reserves of other wild-caught fish remain fairly stable. The total allowable catch of whitefish and grayling for 2012-2017 remained unchanged. The recommended catch of less valuable ordinary fish (common roach, common dace, perch and crucian carps) amounted to 1,265 tonnes in 2016 (in 2015 -1,340 tonnes) and has been approved in the amount of 1,295 tonnes for 2017.

The total population of Baikal seals in 2016 (131.5 thousand animals) compared to 2015 (128.7 thousand animals) increased. The quantity of potential annual allowable catch of Baikal seals amounts to 5-6 thousand species, and TAC (total allowable catch) for 2017, with consideration of commercial hunting prohibition, was approved in the amount of 3,000 animals.

**Rivers.** Hydro-chemical monitoring was carried out by the organisations of the Irkutsk and Zabaykalsky UGMS (Hydrometeorology and Environmental Monitoring Department) of Roshydromet (Federal Service for Hydrometeorology and Environmental Monitoring of Russia).

The average annual volume of streamflow for the rivers Selenga, Upper Angara, Barguzin and Turka in 2016 amounted to 36.22 km<sup>3</sup>.

In 2016 the annual volume of streamflow from Lake Baikal, similarly to 2015, was below the long-term average values and amounted to 40.9 km<sup>3</sup>. During the year the streamflow didn't change significantly and was in the range of 1,250-1,320 m<sup>3</sup>/s. The maximum flow was observed during the May-June period, while the lowest value was registered in November.

In 2016, compared to 2015, the water content of the Selenga River increased 1.7 times, while that of the Barguzin River - by 1.15 times. Compared to the 2015, a streamflow decrease was registered in the Turka River to 0.67 km<sup>3</sup> from 0.76 km<sup>3</sup>, the Upper Angara River - to 5.42 km<sup>3</sup> from 6.95 km<sup>3</sup> and the Tyva River - to 0.97 km<sup>3</sup> from 1.25 km<sup>3</sup>. The total streamflow of the listed rivers increased by 1.367 times from 26.5 km<sup>3</sup> in 2015 to 36.22 km<sup>3</sup> in 2016. In 2016 the Selenga River contributed 73.7 % of the water volume received into the lake with a streamflow of five rivers under surveillance.

In 2016, similarly to 2015, the excess of MPC in the waters of the rivers of Lake Baikal basin was registered for 12 ingredients of the chemical composition out of 17 examined. Compared to 2015, an increase in the content of organics resistant to oxidation, nitrogen nitrite, manganese, total iron, oil products, copper, zinc and fluoride was detected.

In 2016, compared with 2015, the total values of suspended solids, coming through the main-stream stations of main tributaries, increased by 24.55%, while organics resistant to oxidation increased by 42.4%, easily oxidable organic substances - by 20.46 % and the inflow of oil products increased by 45.91 %. In 2016 the total outflow of synthetic surface active substances through main-stream stations of 5 tributaries amounted to 0.22 thousand tonnes, of which the Selenga River contributed 72.1 %. The inflow of common forms of nitrogen increased two-fold and total phosphorus - by 35.7 % with the streamflow of the 5 rivers, of which the inflow with the Selenga River waters amounted to 75.1% of total nitrogen and 60.3% of total phosphorus.

In 2016 the outflow of volatile phenols with the streamflow of the Upper Angara River remained at the 2015 level, the inflow of volatile phenols from waters of the Selenga River increased by 54.7%, from the Barguzin River - by 43.16% and from the Upper Angara River - by 26.2%. The total inflow of copper compounds with the streamflow of 5 examined rivers in 2016 increased by 36.3 % compared to 2015, while the inflow of zinc compounds and total iron also increased by 43.1% and 53.8% respectively.

According to the classification of water with regard to frequency of pollution occurrence and MPC excess fold, the pollution of waters of the Lake Baikal basin with copper and manganese is defined as a representative average; for the content of total iron and zinc - sustainable low level; for the content of resistant to oxidation and easily oxidable organic matters, aluminium, volatile phenols, fluorides - volatile low and medium levels; for the content of sulphates, nitrite nitrogen and oil products - occasional low level.

**Groundwater.** No significant changes in the underground hydrosphere of the Baikal Natural Territory were detected in 2016 as compared to 2015.

The position of average annual groundwater levels in the Republic of Buryatia was higher than in the previous year (by 0.01-0.47 metres), which consequently resulted in the increase of the long-term annual average values (by 0.28-0.38 m). In the areas with a high concentration of industrial facilities, the groundwater forms in disturbed conditions. Groundwater of unprotected aquifers experiencing a maximum anthropogenic load is contaminated with a large range of components; an increased content of manganese (up to 6.1 MPC), oil products (up to 2.8 MPC), lead (up to 0.6 MPC), nitrates (up to 1.68 MPC) and iron (up to 120 MPC) was observed in subsoil and ground waters of the underlying aquifers.

The hydrodynamic regime in all hydro-geological units of the main operating levels was characterized by the decrease of underground water level up to 0.5 metres in the Irkutsk region multi-year plan. The baseline condition of groundwater in 2016 was on the level corresponding to the previous years and was in its natural state. The pollution was observed only in local areas near non-channelled residential areas, within the territories of fuel filling stations, within the area of influence of the Baikal Pulp and Paper Mill facilities (industrial site, deposits of sludge lignin and ash-disposal areas of thermal power plant), where an excess of sulphate (2.7 MPC), manganese (up to 7 MPC), and iron (up to 38 MPC) has been registered.

Point pollution of groundwater in Zabaykalsky Krai is related to human activities. Within the boundaries of the Baikal Natural Territory (BNT) the oil product spills (up to 1.17 MPC) have been registered in the well located within the limits of Petrovsk-Zabaykalsky town.

**Endogenous geological processes.** The level of dangerous endogenous geological processes in the Baikal Region (Baikalia) in 2016 was low and the year was less eventful in comparison to the previous year.

In order to forecast potential earthquakes in the Baikal Region, seismic activity monitoring was carried out as well as monitoring of recent tectonic movements by means of GPS geodesy as well as monitoring of hydrogeodeformation (HGD), gashydrochemical (HGC) and geophysical (natural impulse electromagnetic field of Earth) fields. The existing monitoring system for dangerous endogenous processes requires improvement and development.

**Exogenous geological processes.** The most dangerous exogenous geological process within BNT is the mudflow process. Starting from 2014, instrumental observations over the process of mudflow formation have been carried out within the area located on the right slope of the Slyudyanka River, 6 km away from Slyudyanka town. In the course of two years the removal of debris was insignificant for the formation of mudflow. The most intensive accumulation of debris, potentially contributing to the formation of mudflow, occurs in neotectonic low-pressure areas, of which only one, namely the valley of Bezmyannaya River, was subjected to reconnaissance survey. In the future, it is necessary to examine other low-pressure areas, set up observation stations within their boundaries and continue with monitoring at the currently operating stationary site.

The processes of ravine formation proceed with varying degrees of intensity - in Irkutsk region the amplitude of this phenomenon in 2016 was characterized as average, while in the Republic of Buryatia the activity was low.

In general, the development of slope water erosion processes can cause significant damage to various economic infrastructure facilities. Thus, in the Republic of Buryatia long-lasting rain storms affected motor roads in 11 districts, resulting into potholes, wash-out of earth-work and pavement damages. The material damage amounted to 17.754 million Rubles.

The expansion of landslide-talus processes is related to the operation of industrial facilities and has been registered along highways as well as on the sides of quarries. In 2016 an average degree of the talus phenomena was observed.

The intensity of Lake Baikal shores' abrasion process in 2016 was low.

The appearances of the processes of coastal erosion of the Selenga River are associated with snow-melt floods and summer floods. In 2016 the annual average activity of the process was 1.9 times higher than during the previous year.

In 2016 the low activity of aufeis formation was observed compared to 2015. However, the flood ice affected roads and bridges in 8 districts of the Republic of Buryatia; the cost of damage amounted to 574.3 thousand Rubles

**Mineral resources and subsoil use.** Overall, the scale of subsoil use in the Baikal Natural Territory in the reporting period compared to 2015 remained at the same level. Due to the entry into force of the Federal law dated 03/07/2016, No. 279-FZ “On entering amendments to the Russian Federation Law “On subsoil”, the fields (mineral deposits) of Akitskoye, Pryamoy II, Chestenskoe, Promezhutochnoye of the North Baikal district of Buryatia have been removed from the list of Subsoil plots of federal importance (SPFI) and have been registered in the State cadastre of deposits and occurrences of minerals as occurrences.

In 2016 no licenses were issued or terminated in any of the subjects of the Russian Federation, located within the Baikal Natural Territory. The volume of mining operations in the majority of deposits have decreased significantly compared to the previous year

**Lands.** In the course of 2015 some insignificant redistribution of land between categories took place within the Baikal Natural Territory. These changes affected all categories of land: settlements land (a reduction by 0.39 %), reserve lands (a reduction by 0.14 %), agricultural (a reduction by 0.06 %), industrial (an increase by 0.70 %), water reserve lands (a decrease by 0.009 %), forest reserve lands (an increase by 0.001 %) and specially protected areas (increase by 0.0006 %).

**Forests.** In 2016 the area covered with forest vegetation decreased in total by 614.2 hectares (2.4%) in the Baikal Natural Area and amounted to 24,537.0 thousand hectares. In the Irkutsk region the area decreased by 0.1 %, while in the Republic of Buryatia – by 5.1 %. In Zabaykalsky Krai this volume increased by 0.1 %.

In 2016 the calculated felling rate of mature and over-mature forest stands in BNT compared to 2015 has not changed and amounted to 15,815.5 thousand m<sup>3</sup>. In 2016 in BNT the felling volume for mature and over-mature forest stands amounted to 4,139.1 thousand m<sup>3</sup> and decreased by 1.4% in comparison with 2015. In the Republic of Buryatia, the felling volume decreased by 12.5%, while in ZabaykalskyKrai - by 11%. In Irkutsk region, the volume increased by 4.4%.

The improvement felling volume decreased in comparison with 2015 by 11.8% and amounted to 30.5 thousand hectares. In the Republic of Buryatia, the decrease amounted to 12.6%, while in ZabaykalskyKrai - to 66.7%. In Irkutsk region, the felling volume decreased by 24%.

In 2016 the sanitary and recreational activities were conducted on an area of 21.8 thousand hectares (in 2015 - 12.3 thousand hectares).

In 2016 the number of fires compared to 2015 decreased by 2.3 times and amounted to 1,149 fires. The total area affected by fires, decreased by 2.9 times compared to 2015 and amounted to 380.661 hectares.

**Climatic conditions.** In 2016 the average annual air temperature within BNT exceeded the multiyear values by 1-2°C due to the significant positive temperature anomalies observed for the majority of the year. The largest positive anomaly was observed in February-April (2-6°C) June-September (3-7°C) and December (3-7°C). In October and November a negative anomaly was observed, resulting into the average monthly temperature during these months being 2-7°C lower than the multiyear average. During the remaining period, the average monthly air temperature was close to average multiyear values.

**2. Anthropogenic impact** within the Baikal Natural Territory in 2016: The volumes of emissions from stationary sources, located within BNT, increased by 42.7% and amounted to 653.6 thousand tonnes (in 2015 - 457.9 thousand tonnes, in 2014 - 411.9 thousand tonnes, in 2013- 456.4

thousand tonnes and in 2012 - 483.7 thousand tonnes), due to the increase in the total consumption of fuel combusted for electricity generation at thermal power stations to cover regional and inter-regional loads.

The volume of wastewater discharge increased by 2.19% and amounted to 518.20 million m<sup>3</sup> (in 2015 - 507.10 million m<sup>3</sup>, in 2014 - 445.50 million m<sup>3</sup>, in 2013 - 510.60 million m<sup>3</sup> and in 2012 - 461.50 million m<sup>3</sup>).

The volume of waste generation decreased by 23.05% (in 2015 - 109.0 million tonnes, in 2014 - 104.3 million tonnes, in 2013 - 110.0 million tonnes and in 2012 - 83.5 million tonnes) due to the reduction in the volumes of overburden rocks and coal production at OAO Razrez Tugnuisky, located within the territory of two constituent entities of the Russian Federation, in the Mukhorshibirsky district of the Republic of Buryatia and Petrovsk-Zabaykalsky district of Zabaykalsky Krai.

In the Central ecological zone of BNT in 2016 in comparison with 2015: The volume of emissions increased by 3.91% (in 2015 - 4.6 thousand tonnes, in 2014 - 5.2 thousand tonnes, in 2013 - 10.2 thousand tonnes and in 2012 - 10.0 thousand tonnes).

The volume of wastewater discharge increased by 2.04 % (in 2015 - 4.9 million m<sup>3</sup>, in 2014 - 3.9 million m<sup>3</sup>, in 2013 - 22.5 million m<sup>3</sup> and in 2012 - 40.2 million m<sup>3</sup>).

The volume of waste generation increased by 32.6 % (in 2015 - 889.8 million tonnes, in 2014 - 1041.1 thousand tonnes, in 2013 - 829.4 thousand tonnes and in 2012 - 945.7 thousand tonnes).

The area of the Baikal Pulp and Paper Mill. In 2013 the Government of the Russian Federation adopted the resolution on the closure of OAO Baikal Pulp and Paper Mill. From 14<sup>th</sup> September, 2013 the main production activities associated with the production of sulphate viscose pulp discontinued. After the closure of the Baikal Pulp and Paper Mill the main remaining environmental problem is waste disposal, remediation of sludge deposit areas, rehabilitation of the industrial site and elimination of contaminated groundwater mount.

OAO Baikal Pulp and Paper Mill wasn't granted with any permits for emission of harmful (polluting) substances in atmospheric in 2016.

The treatment facilities of OAO Baikal Pulp and Paper Mill didn't discharge any wastewater into Lake Baikal in 2016. The discharge of domestic wastewater of OAO Baikal Pulp and Paper Mill, population, organisations and enterprises of Baykalsk town was carried out by the Municipal Unitary Enterprise Baykalsk town KOS (wastewater treatment facilities). Wastewater discharge decreased by 0.10 million m<sup>3</sup> (6.1%).

1.662 thousand tonnes of waste were generated at OAO Baikal Pulp and Paper Mill in 2016 (in 2015 - 4.363 thousand tonnes and in 2014 - 13.354 tonnes). The quantity of newly generated waste has by 62% decreased compared to the previous year.

Intensive contamination of underground waters continued in the area of influence of OAO Baikal PPM facilities. Water sampling showed high contents of sulphate - 2.71 MPC (in 2015 - 1.71 MPC), iron - 4.43-of 10.5 MPC (in 2015 - 9.2 MPC), dry weight of water - 1.71 - 2.44 g/l (in 2015 - 1.57 g/l).

In total, following the results of inspections carried out in 2016, 19 violations concerning OAO Baikal PPM have been detected, 14 orders to rectify violations of the Environmental Resources Management legislation have been issued.

Baikal-Amur Mainline route zone. In 2016 the emissions from stationary sources increased by 5.2 % (by 0.21 thousand tonnes).

In 2016 the negative impact of wastewater from Severobaykalsk town on Lake Baikal waters was insignificant - 0.92 million m<sup>3</sup>.

The quantity of generated waste decreased by 24.6% compared to 2015 due to the reduction in the number of overburden and refuse rocks at the mining industry enterprises.

Other natural and anthropogenic facilities. The baseline state of underground waters within the boundaries of the Central Ecological Zone of the Baikal Natural Territory remained

stable in 2016. The groundwater pollution by nitrogen compounds in underground waters of the quaternary aquifer system near non-channelled residential areas was registered periodically.

No significant changes in the state of hydrosphere were detected in 2016 within the territories of Nizhneselenginsk and Gusinoozyorsk industrial hubs. In general across the territories, the position of average annual groundwater levels was higher than in the previous year, which consequently resulted in the increase of the long-term average annual values. High content of manganese, oil products and lead was registered in the subsoil and underground waters of underlying aquifers, while nitrate and aluminium was detected less frequently.

### **3. Measures aimed at the protection of Lake Baikal** taken in 2016 are as follows.

**Statutory regulation and coordination of Lake Baikal protection.** In the course of 2016 two sessions of the Interdepartmental Commission on Protection of Lake Baikal were held.

Following the Decree of the Government of the Russian Federation dated 01/07/2016 No. 626 “On the maximum and minimum water level values in Lake Baikal in 2016-2017” maximum and minimum values of the water level in Lake Baikal during different water content periods were established.

The Baikal Department of Rosprirodnadzor (Federal Service for Supervision of Natural Resource Management) has been established, responsible for state environmental control in the Central Ecological Zone of the Baikal Natural Territory

**Measures for protection of Lake Baikal.** In 2016 the implementation of the Federal Target Program “Protection of Lake Baikal and Socio-economic Development of the Baikal Natural Territory for 2012-2020” continued.

Protective activities for Lake Baikal were funded from the Federal budget in 2016 in the amount of 1,906.31 million Rubles (in 2015 - 3,002.83 million Rubles), of which 1,877.20 million Rubles (used - 1,801.61 million Rubles) were financed within the framework of the Federal Target Program “Protection of Lake Baikal and Socio-economic Development of the Baikal Natural Territory for 2012-2020” and 29.11 million Rubles - from other sources. The distribution of funds by type of expenditure was as follows: capital investments amounted to 1,481.52 million Rubles while R&D amounted to 35.41 million Rubles and 389.38 million Rubles were allocated for other purposes. The budgets of various constituent entities of the Russian Federation contributed 298.1 million Rubles (201.1 million Rubles - within the framework of FTP) towards the projects and activities aimed at the protection of Lake Baikal. Funds raised from extra-budgetary sources amounted to 251.4 million Rubles.

Environmental monitoring in 2016 was carried out by the organisations of Roshydromet (Federal Service for Hydrometeorology and Environmental Monitoring of Russia), Rosprirodnadzor (Russian Federal Service for Supervision of Natural Resource Management), Rosvodresursy (Russian Federal Water Resources Agency), Rosnedra (Russian Federal Subsoil Resources Management Agency), Rosrybolovstvo (Russian Federal Agency for Fishery), Rosreestr (Russian Federal Service for State Registration, Cadastre and Cartography) as well as by the competent authorities of federal constituent entities - the Republic of Buryatia, Irkutsk region and Zabaykalsky Krai. In addition, some accounting and control records acquired by Rostekhnadzor (Russian Federal Service for Ecological, Technological and Nuclear Supervision), Rospotrebnadzor (Russian Federal Service for Supervision of Consumer Rights Protection and Human Well-Being), Rostransnadzor (Russian Federal Service for Supervision of Transport), Rosstat (Russian Federal State Statistics Service) and the Russian Ministry of Emergency Situations were used for the purpose of BNT monitoring.

The existing system of monitoring of the unique environmental system of Lake Baikal and Baikal Natural Territory is in need of the reconstruction of the monitoring network of Roshydromet (Federal Service for Hydrometeorology and Environmental Monitoring of Russia), restoration of the full scheme of hydro-chemical and hydro-biological monitoring, improvement and replenishment of laboratory facilities with up-to-date devices, rehabilitation of Lake Baikal research fleet, further development of aerospace monitoring, optimisation of statistical reporting and improvement of interaction of competent authorities in the sphere of state environmental monitoring.

Environmental supervision. In 2016 256 inspections for environmental legal compliance, initiated through the means of the state environmental supervision, were carried out within the boundaries of BNT. 296 violations were detected in 2016 as a result of these inspections. According to the inspection outcome, 246 orders were issued and 205 administrative penalties were imposed. The total sum of the imposed administrative penalties amounted to 11,171 thousand Rubles, of which 6,625 thousand Rubles were paid.

591 inspections (by supervision type) for environmental legal compliance, initiated through the means of the regional state environmental supervision, were conducted in 2016. 473 violations were detected in 2016 as a result of these inspections (794 violations in 2015) According to the inspection outcome, 178 orders were issued and 314 administrative penalties were imposed. The total sum of the imposed administrative penalties amounted to 8,151.5 thousand Rubles, of which 4,259 thousand Rubles were paid.

In 2016 the state control and supervision over inland water transport on Lake Baikal was carried out by the East-Siberian Directorate of the State River Supervision of Rostransnadzor (Russian Federal Service for Supervision of Transport). In the course of 2016 69 inspections concerning legal entities and individual entrepreneurs carrying out their business activities on Lake Baikal were conducted. The inspections revealed 272 violations of the mandatory legislative requirements in the field of inland water transport, therefore 56 orders to rectify the violations were issued. Following the consideration of cases concerning administrative offences 20 legal entities and 165 officials were held administratively liable for total amount of 978 thousand Rubles, while the activities of 2 legal entities were suspended through a prohibition to operate hydraulic engineering installations. In the framework of the supervisory and control activities 20 surveys of vessels were carried out and 51 protocol on violation of the inland water transport legislation were prepared.

Environmental violations. In 2016, the number of administrative offences and violations registered within BNT increased by 14.9 % (from 3,273 to 3,761) compared to 2015, while the number of crimes decreased by 22.7% (from 3,962 to 3,062).

International cooperation. The following events were considered the most significant in 2016.

From 10<sup>th</sup> July to 17<sup>th</sup> July 2016 the city of Istanbul (Turkey) hosted the 40<sup>th</sup> session of the World Heritage Committee of UNESCO. By the draft decision (40 COM 7B.97) the Committee expressed its approval with respect to the amendments to the Federal law “On Environmental Assessment” in terms of the requirement stipulating the conduct of Federal-level environmental assessment prior to the implementation of any construction and reconstruction projects within the Baikal Natural Territory and on the establishment (extension) of water protection and fishery conservation zones of Lake Baikal. The Committee appealed to the Russian Federation with a request to develop an environmental monitoring system for the entire facility to identify causes of such changes as algal bloom and cyanobacteria, and develop necessary responses in order to preserve the environmental integrity of Lake Baikal. The Committee appealed to the Russian Federation and Mongolia with a request concerning a joint development of strategic environmental assessment for any future hydropower and water management projects that could potentially affect the facility, taking into account any existing and planned projects within the territories of both countries.

Within the period from 14<sup>th</sup> to 16<sup>th</sup> June 2016 the city of Krasnoyarsk hosted a meeting of the joint working group on the fulfilment of the Agreement between the Government of the Russian Federation and the Government of Mongolia on the protection and use of transboundary waters, signed on 16<sup>th</sup> February 1995. In the final minutes of the meeting the Russian side expressed readiness to facilitate and support public consultations in the Russian Federation within the territory of the Republic of Buryatia and Irkutsk region, where draft technical assignments for the development of a regional environmental assessment and environmental influence and social impact assessment of projects “Shuranskaya HPP” and “Creation of a reservoir with the flow regulation on the Orkhon River” will be discussed.