

CONCLUSION

1. On the condition of Lake Baikal according to indicators observed in 2017.

Lake level. In 2017, generally unfavourable conditions developed for the regulation of the Lake Baikal water level by the useful inflow, and therefore the filling of the lake was extremely low. To provide domestic water supply in the downstream of the Irkutsk Hydroelectric Power Station in winter, an additional volume of water resources of Lake Baikal below the 456.0 m. PO mark was used (the drawdown is up to the 455.90 m. PO mark). The level limit values, determined in resolution No. 626 of the Government of the Russian Federation dated July 1, 2016 “On Maximum and Minimum Water Level of Lake Baikal in 2016-2017”, have not been reached.

As of 01/01/2017, the average water level in Lake Baikal was around 456.15 metres according to the Pacific system, i.e. 0.16 metres higher than on the corresponding date in 2016 and 0.28 metres lower than the long-term annual average (456.43 m PO).

The drawdown of Lake Baikal was completed by April 21, 2017 at around 455.90 m. PO.

Break-up of Lake Baikal from ice sheet occurred 2-8 days earlier than the standard schedule, in the period from April 28 to May 7. The clearing from ice in the southern and middle parts of the lake occurred 6-10 days earlier than the standard schedule, of the northern part - 2-7 days earlier than the standard schedule, from May 5 to May 25 and, as a result, an increase in the inflow into the lake occurred earlier than usual.

The filling of Lake Baikal began on April 22, 2017 and continued until September 8. The water level during the period of filling increased by 0.37 m to the mark of 456.27 m PO, which is 0.23 m lower than the maximum mark as of 2016 (456.50 m PO).

The drawdown of the Lake Baikal water level began on September 9, 2016 and at the end of the year the level dropped to 456.15 m PO.

The annual course of water level in Lake Baikal in 2017 was consistent with the extremely low water content conditions.

The observations of the surface layer and the water layer in 2017 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 waste waters of Baikalsk town KOS (wastewater treatment facilities);
- in the area ports of Southern Baikal (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 2017, according to hydrochemical indicators taken in the baseline longitudinal section of the lake, remains stable. The results of hydrochemical observations showed that in the southern, middle and northern parts of Lake Baikal the average content of oxygen dissolved in the water, as well as mineral substances, nitrite nitrogen, nitrate nitrogen and ammonia nitrogen, phosphates, non-volatile phenols, silicon, oil products, sulphates, chlorides, synthetic surface active substances, lead, manganese, nickel, cadmium, copper, zinc, cobalt, vanadium, molybdenum, silver, aluminium, beryllium, chromium and pH values were within the permissible limits. No organochlorine pesticides (p,p-DDT (dichlorodiphenyltrichloroethane), p,p-DDD (dichlorodiphenyldichloroethane), p,p-DDE (dichlorodiphenylethylene), α -HCH (alpha-hexachlorocyclohexane), γ -HCH (gamma-hexachlorocyclohexane) were detected in the water of Lake Baikal.

It was recorded that the MPC of phenols exceeded the maximum values by 2.0 times in the southern part of the lake and in the area of Maritui Station (in October), and it the maximum values by 3.0 times in the northern part: Davsha settlement, Cape Kotelnikovskiy (in June).

According to universal integrated water pollution index the water quality was characterised as class 1 - "conditionally clean" - at all monitoring stations of Baikal Lake. In comparison with the last year, the lake Baikal water quality remained at the same level.

In the area of Lake Baikal, adjacent to the territory of the former BPPM (Baikal Pulp and Paper Mill), the average concentration values of total and non-sulphate sulphur, nickel, chromium increased by 1.1 times, silver - by 1.2 times, mercury and colour index values - by 1.3 times, copper - by 1.4 times, zinc, cobalt - by 1.5 times, aluminium - by 2.3 times, manganese - by 2.5 times against baseline values. The average concentrations of pH value, organic carbon, mineral substances, oil products, silicon, sulphates, chlorides, lead, molybdenum and vanadium did not exceed baseline levels.

During 2017, the test 100 metre section evidenced water quality violations according to average concentrations of phenols by 2.0 MPC in March, suspended substances by 1.5 MPC in June; average concentrations of mineral substances, sulphates, chlorides did not reach the MPC level. Violations of water quality were observed by maximum concentrations of phenols (2-3 MPC) and suspended substances (1.3 - 2.7 MPC).

As compared to 2016, in the area of influence of the Baikalsk town KOS (wastewater treatment facilities) wastewaters the average content of sulphates and aluminium increased by 1.4 times, while the average content of total sulphur, nickel and iron increased by 1.2 times, mercury concentration increased by 1.3 times, lead and cadmium concentration increased by 1.5 times, manganese average content increased by 1.7 times, copper average content increased by 1.8 times, cobalt average content increased by 2.0 times, chromium average content increased by 2.5 times and silver average content increased by 2.9 times in the water of Lake Baikal. Zinc concentrations decreased by 1.4 times, while silicon concentrations decreased by 1.7 times, and non-sulphate sulphur concentrations decreased by 3.2 times. The average content of the indicator value for colour, mineral and suspended substances, oil products, organic carbon, chlorides, vanadium, molybdenum and the average pH value did not change. The area of contamination by non-sulphate sulphur decreased by 3.0 times.

At the Angara River source, the average and maximum concentrations of mineral substances, nitrite nitrogen, nitrate nitrogen, ammonia nitrogen, phosphates, silicon, oil products, sulphates, and chlorides did not exceed MPC limits. In comparison with the previous observation in 2016, the average content of ammonia nitrogen increased by 1.3 times, and that of organic phosphorus increased by 3.5 times

In 2017, in the areas of the Southern Baikal ports the average concentrations of regulated substances did not exceed the MPC limits, the values of pH were within the permissible range. Maximum excessive concentrations compared to permissible values were recorded with regard to volatile phenols near the ports: Baikalsk, Kultuk, Vydrino - by 2.0 times (in May), Goloustnoe - by 3.0 times (in June).

In the north of Lake Baikal (the Baikal–Amur Mainline route), the anthropogenic load, in comparison with observations of the previous year, increased in total phosphorus concentration, the colour index value increased by 1.1–1.8 times, of organic phosphorus — by 2.2 times, of cobalt, chromium — by 2.5 times, of nickel - by 2.6 times, of nitrite nitrogen - from zero values to 0.001 mg/l. The average content of sulphates, ammonia nitrogen and nitrate nitrogen, suspended substances, organic carbon, chlorides, manganese, cadmium, copper, zinc, aluminium and oxygen dissolved in water decreased by 1.1-1.8 times, of iron – by 6.0 times.

Bottom sediments. In 2017, the average content of organic nitrogen, easy hydrolysable carbohydrates, manganese, nickel, and cadmium increased by 1.2-2.7 times in the bottom sediments near the discharge of municipal wastewater of Baikalsk. The average content of lead decreased by 7.8 times, and the average content of sulphide sulphur decreased by 2.0

times. As compared to 2016, the composition of groundwater experienced an increased average content of the following: ammonia nitrogen, phosphates, iron (III) by 1.2-2.0 times, iron (II) from 0.000 to 0.011 mg/dm³; the average content of nitrate nitrogen decreased by 4.1 times, nitrite nitrogen - by 3.0 times, and organic volatile acids - by 1.6 times. The area of the pollution zone, calculated according to the ratio of hardly hydrolyzable carbohydrates and lignin humic complex to the total organic matter remained at the same level, while the area of sulphide sulphur increased by 49 %.

In 2017, on the Selenga River delta front in bottom sediments the average content of organic carbon increased by 1.5 times, easy hydrolyzable carbohydrates - by 1.7 times, hardly hydrolyzable carbohydrates - by 2.6 times, lignin humic complex - by 1.8 times. The content of sulphide sulphur (in average values) decreased by 3 times. In groundwater, the average content of iron (II) increased by 4.5 times, phosphates - by 2.0 times, iron (III) - by 1.3 times; the average content of nitrogen nitrate decreased by 3.0 times. In terms of accumulated PAHs, the contamination level of bottom sediments of the Selenga delta front can be classified as "slightly polluted", the content of benzopyrene can be considered equal to the baseline one (5 ng/g dry weight).

In the area of Baikal-Amur Mainline route influence in the north of the lake the average content in the composition of bottom sediments increased: easy hydrolyzable carbohydrates - by 1.9 times, hardly hydrolyzable carbohydrates - by 1.2 times, lignin humic complex by 1.5 times, calculated according to the ratio of hardly hydrolyzable carbohydrates and lignin humic complex to total organic matter - by 1.6 times; the average content of organic nitrogen decreased by 1.1 times; the content of organic carbon did not change significantly. As compared to 2016, the average content of ammonia nitrogen in groundwater increased by 17 times, nitrite nitrogen - by 6 times, nitrogen nitrates and iron (II) - by 2.6 times increased in groundwater; the average content of iron (III) and volatile phenols decreased by 1.0-2.0 times.

Hydrobiological societies. Hydrobiological observations in the area of the Baikalsk KOS have shown that the data on the number of bacteria groups detected in surface waters and soils are comparable to the long-term ones. As compared to 2016, the average of heterotrophic organisms decreased by 2.0 times in March and by 3.0 times in August. In terms of phytoplankton development in June, similar to the previous three years, 2017 can be called a highly productive "sinedrov" year (with the phytoplankton biomass of more than 1 g/m³). In the dominant composition at all stations, the large pennate diatom alga *Synedra acus* Kütz var. *acus* was the leader in terms of abundance and biomass. The relative indicators of diatom were 29-85 % and 93-99 %, respectively. The filamentous green alga of genus *Spirogyra* Link was found in hydrobiological tests for the duration of the whole season. The frequency of spirogyra remained at the level of the previous year.

In the area of Northern Baikal, the average of heterotrophic organisms, as compared with the previous year, decreased: by 1.4 times in summer, by 5.9 times in autumn. The seasonal decrease in average values occurred from July to September by 1.2 times up to 345.08 c/ml. In June, green filamentous algae of genus *Spirogyra* Link was registered in half of the zooplankton samples. In most samples, which were taken from the mouth of the Talaya River along the entire west coast to the mouth of the Kichera River, spirogyra was encountered as separate threads. Its largest conjugations were found 0.5 km away from the mouth of the Upper Angara River. By September, the number of filamentous alga increased, spirogyra was registered in 15 out of 21 samples of zooplankton. *Spirogyra* Link. was encountered not only along the western coast - from Cape Tolstoy to the mouth of the Slyudyanka River, but also along the entire eastern shore and the northern extreme point - from the mouth of the Tompuda River to the mouth of the Kichera River, and at three (out of four) stations of the background longitudinal reference section. The average values of the zooplankton abundance and biomass were 13.1 thousand copies/m³ and 151.7 mg/m³, which is 1.4 times more than in 2016. 9 taxonomic groups of invertebrates are registered in the area of Baikal-Amur Mainline route influence. 25 species of amphipod belonging to 12 genera were found in the samples. As compared to a number of long-

term observations, a decrease in the quantitative and qualitative composition of crustaceans and shellfish was noted. The shellfish are registered at five stations, mostly in single quantity. In general, nematodes and oligochaetes were most frequent in the researched water area, with the former slightly dominating in shallow water (36.4 % of the relative abundance) and the latter dominating in the deep-water part (47.3 %). The third place was occupied by amphipods (up to 12.5 %). By relative biomass, oligochaetes took the leading place (up to 62.9 %), the second place was occupied by amphipods (up to 35.1 %). Moreover, chironomids (11.8 %) played a significant role in the biomass creation in the shallow waters.

In the area of the the Selenga Shallow Waters, the quantity of heterotrophic bacteria in the surface water layer (0.5 m) varied from 41 to 1,200 c/ml. As in the previous year, the maximum indicator was registered in the southern part of the shallow waters, opposite the Promoy Channel, while the minimum indicator was registered at the drift from the Kolpinnaya Channel. The average abundance (207 c/ml) is 6.7 times lower than last year. Green filamentous algae of genus *Spirogyra* Link was registered in a half of the zooplankton samples (in 2016 - in all samples). The greatest amount was detected in the samples taken at the water area from the mouth of the Kharauz Channel to the drift from the Kolpinnaya Channel. The average values of the zooplankton abundance and biomass were 19.489 thousand copies/m³ and 246.33 mg/m³, which is 3.3 and 2.5 times respectively more than last year. As compared to 2016, the average abundance of zoobenthos decreased by 2.3 times to 10,827 copies/m², and biomass (15.07 g/m²) decreased by 2 times.

Fish fauna and population of Baikal seal (nerpa). In 2017 the total number of spawning Baikal omul species coming into spawning streams amounted to 1.3 million species, i.e. higher than the level in 2016 (0.8 million specimens), but significantly below the long-time annual average (4.3 million specimens). In the Angara River, the number of spawning population (0.55 million specimens) was 3.5 times lower than the long-time annual average. 0.014 million specimens of omul producers were caught in the rivers of the Posolsky Sor (the Big River and the Kultuchnaya River) for the purposes of reproduction.

The total biomass of omul decreased from 20.5-26.4 thousand tons (1982-2005) to 14.2-16.9 thousand tons in 2011-2014, in 2015-2016 - 11.3-13.6 thousand tons. In 2017, the omul biomass was estimated at 7.4 thousand tons. The total allowable catch of omul for 2018 was approved in the amount of 220 tons (in 2017 - 500 tons). In accordance with the order No. 450 of the Ministry of Agriculture of Russia dated August 29, 2017, amendments to the fishing rules for the Baikal fishery basin, providing for a ban on industrial catch of the Baikal omul and additional restrictions for traditional fishing of small indigenous peoples, have come into force since October 1, 2017.

The reserves of other wild-caught fish remain fairly stable. The total allowable catch of whitefish and grayling for 2017-2018 remained unchanged. The recommended catch of less valuable ordinary fish (common roach, common dace, perch and crucian carps) amounted to 1295 tonnes in 2017 (in 2016 - 1265 tonnes) and has been approved in the amount of 1200 tonnes for 2018.

In 2017, the total population of the Baikal seal remained at a high level - 128.1 thousand animal units. Some decrease, as compared to 2016, is due to a large statistical error (25 %) in calculating the number of animal yield in 2017.

The quantity of potential annual allowable catch of Baikal seals amounts to 5-6 thousand species, and TAC (total allowable catch) for 2018, with consideration of commercial hunting prohibition, was approved in the amount of 3000 animals.

Rivers flowing into Baikal. 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).

Observations in the Lake Baikal basin were carried out on 26 rivers in 43 dam sites. The excess of MPC in the waters of the rivers of Lake Baikal basin was registered for 11 (in 2016 - 12) ingredients of the chemical composition out of 17 recorded.

In comparison with 2016, there was an increase in the content of easily oxidized organic substances (BOD₅) - (1.4 MPC, the Selenga River - the village of Kabansk, 19.7 km above the village, 20/12); zinc (2.5 MPC, the Modonkul River - Zakamensk, 1.3 km below the city, 30/08); sulphates (7.1 MPC, the Modonkul River - Zakamensk, 1.3 km below the city, 24/12); oil products (2.4 MPC, the Selenga River - Ulan-Ude, 3.7 km below the Mostovoy passing place, 20/04).

In comparison with 2016, there was a decrease in hardly oxidized organic substances (COD) - (3.8 MPC, the Ona River - the village of Nizhnyaya Maila, 09/08); nitrite nitrogen (2.8 MPC, the Modonkul River - Zakamensk, 1.3 km below the city, 24/12); total iron (6.4 MPC, the Maksimikha River - the village of Maksimikha, 22/05); copper (12 MPC, the Turka River - the village of Sobolikha, 22/02); volatile phenols (3 MPC, the Barguzin River - the settlement of Ust - Barguzin, 19/05).

According to the classification of water by frequency of contamination occurrences and MPC excess rate, the water contamination of the Lake Baikal basin by zinc, copper, manganese is established as characteristic of low and medium levels; unstable contamination by easily and hardly oxidizable organic substances (BOD₅, COD), total iron, volatile phenols and fluorides of low and medium levels; single contamination of low level by nitrite nitrogen, oil products and intermediate level sulphates.

In 2017, the quality of surface water by hydrochemical indicators in the Lake Baikal basin in general depended on hydrological and climatic conditions. The exception was the Modonkul River, where the contamination level forms as a result of anthropogenic impact.

Groundwater. No significant changes in the underground hydrosphere of the Baikal Natural Territory were detected in 2017 as compared to 2016-2015.

In 2017, as compared to 2016, there were no significant changes in the state of the underground hydrosphere in the Republic of Buryatia. The position of average annual groundwater levels was lower than in the previous year, which consequently resulted in the decrease of the long-term annual averages. Groundwater of unprotected aquifers experiencing a maximum anthropogenic load is contaminated with a large range of components; an increased content of manganese, oil products, lead, nitrates and aluminium was observed in subsoil and ground waters of the underlying aquifers.

In Irkutsk Region, the hydrodynamic state of groundwater during the reporting period reflects the low water content of previous years; the state of the average annual groundwater levels remained below the long-time annual average of 0.1-0.4 m. The baseline condition of groundwater in 2017 was at the level corresponding to the previous years and was in its natural state. The pollution was observed only in local 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 manganese and iron has been registered.

In Zabaykalsky Krai, according to the results of observations of 2017, the preservation of the basic patterns for formation of groundwater of the studied aquifers and complexes in natural conditions is noted.

Endogenous geological processes. Intensity of dangerous endogenous geological processes in the Baikal region in 2017 was low - as in 2016. 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 certain improvement and development.

Exogenous geological processes. In 2017, catastrophic manifestations of exogenous geological processes were not observed. The processes of ravine formation proceed with varying degrees of intensity - in Irkutsk region the amplitude of this phenomena in 2017 was characterized as average, while in the Republic of Buryatia the activity was low. The expansion of landslide-talus processes is related to the operation of industrial facilities and has been registered along highways. In 2017 an average degree of the talus phenomena was observed. The abrasion process of the Lake Baikal shores did not develop in the reporting year. In 2017, the manifestation of coastal erosion processes of the Selenga River was characterized by low activity. Activity of the aeolian accumulation process was low in 2017.

Mineral resources and subsoil use. Overall, the scale of subsoil use in the Baikal Natural Territory in the reporting period compared to 2016 remained at the same level. The volume of mining operations in the majority of deposits have decreased compared to the previous year.

Lands. In the course of 2017 some insignificant redistribution of land between categories took place within the Baikal Natural Territory. These changes affected all categories of land: settlements land (an increase by 1.04 %), reserve lands (a reduction by 0.29 percent), agricultural (a reduction by 0.04 %), industrial (an increase by 0.09 %), water reserve lands (a decrease by 0.0001 %), forest reserve lands (an increase by 0.00003 %) and specially protected areas (increase by 0.0005 %).

Forests. In 2017, the area covered with forest vegetation increased by 604.26 hectares (2.5%) across the Baikal Natural Territory and amounted to 25 141.26 thousand hectares. In Irkutsk Region the area decreased by 0.1 %. And in the Republic of Buryatia the area increased by 5.4 %. In Zabaykalsky Krai the area remained unchanged.

Compared to 2016, the calculated felling rate of mature and over-mature forest stands in BNT increased by 0.9% and amounted to 15 965.0 thousand m³ (in 2016 - 15 815.5 thousand m³). In 2017 the felling volume for mature and over-mature forest stands in BNT increased by 0.4 % and amounted to 4 153.91 thousand m³ (in 2016 - 4,139.1 thousand m³). In Irkutsk region, the felling volume decreased by 9.1 %, while in Zabaykalsky Krai – by 3.2 %. In the Republic of Buryatia, felling volume increased by 36.2 %. In 2017, sanitary felling was carried out on an area of 15.713 thousand hectares (in 2016 - 23.498 thousand hectares).

In 2017, the number of fires increased by 13.5 times compared to 2016 and amounted to 1,273 fires (in 2016 - 1,122 fires). The total area affected by fires decreased by 48,6% compared to 2016 and amounted to 195.71 thousand hectares (in 2016 - 380,661 thousand hectares).

Climatic conditions. In 2017, the average annual air temperature within BNT exceeded the long-term values by 1.5-2.8 °C due to the significant positive temperature anomalies observed for the majority of the year. The largest positive anomalies were observed in January – March (2–6 °C), April (3–5 °C), June – August (3–4 °C), December (2–6 °C); in Ulan-Ude, the average daily temperatures in December were 7–16 °C above the climatic norm. In November, a negative anomaly was registered, the average monthly temperature was 1–2 °C below the long-time annual averages. During the remaining period, the average monthly air temperature was close to the long-time annual averages. During the warm season, the combination of high temperatures, dry air and strong winds created favourable conditions for the spread of forest fires. In summer, a state of emergency was in effect in a number of districts in Zabaykalsky Krai.

2. Anthropogenic impact within the Baikal Natural Territory in 2017:

The volumes of emissions from stationary sources, located within BNT, increased by 7.3% and amounted to 701.5 thousand tonnes (in 2016 - 653.6 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 12.4 % and amounted to 582.4 million m³ (in 2016 - 518.2 million m³).

The total mass of pollutants having entered Lake Baikal accounted for 447.60 tons (in 2015 - 360.91 tons, in 2016 - 362.47 tons). In 2017, such pollutants as BOD compl. - 23.71 tons (in 2016 - 14.24 tons), COD - 38.62 tons (in 2016 - 32.97 tons), oil products - 0.12 tons (in 2016 - 0.08 tons), sulphate anion - 134.69 tons (in 2016 - 97.89 tons), chlorides - 136.40 (in 2016 - 79.42 tons), suspended solids - 27.92 tons (in 2016 - 19.79 tons), nitrate anion - 74.43 tons (in 2016 - 85.15 tons), nitrite anion - 0.80 tons (in 2016 - 0.79 tons), phosphates - 9.56 tons (in 2016 - 5.0 tons), synthetic surfactants - 0.31 tons (in 2016 - 0.30 tons), ammonia nitrogen - 30.31 tons (in 2016 - 26, 49 tons), aluminium - 0.73 tons (in 2016 - 0.36 tons) entered the Lake Baikal basin along with the sewage.

The volume of waste generation decreased by 15.3 % and amounted to 71065,5 thousand tonnes (in 2016 - 83871,5 thousand 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 Mukhorshibirsky District of the Republic of Buryatia and Petrovsk-Zabaykalsky District of Zabaykalsky Krai.

In the central ecological zone of BNT in 2017: the emissions were 4.2 thousand tons; the discharges were 3.2 million m³.

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 September 14, 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 was not granted with any permits for emission of harmful (polluting) substances in the atmosphere in 2017.

The volume of water use in the area of the Baikal Pulp and Paper Mill, as compared with the previous year, decreased: water withdrawal decreased by 0.26 million m³ (16.5 %); wastewater discharge decreased by 0.21 million m³ (13.5 %).

However, compared with 2016, there is an increase in the discharge amounts of some pollutants in 2017. At the same time, wastewater treatment is not provided to the level approved by the ADS for suspended substances, BOD_{compl.}, oil products, synthetic surfactants, chlorides, aluminium, COD, ammonia nitrogen and nitrite anion.

4.4 thousand tonnes of waste were generated at OAO Baikal Pulp and Paper Mill in 2017 (in 2016 - 8.963 thousand tonnes, in 2015 - 4.4 thousand tonnes, in 2014 - 13.4 thousand tonnes, in 2013 - 39.9 thousand tonnes, and in 2012 - 73.1 thousand tonnes).

Baikal-Amur Mainline Route Zone. In 2017, emissions of harmful substances into the air from stationary sources amounted to 2.6 thousand tons (in 2016 - 2.9 thousand tons). The main contribution to air pollution from stationary sources is made by overland transport enterprises and enterprises for the production, transfer and distribution of electricity, gas, steam and hot water.

According to Form No. 2-TP (water management), wastewater discharges in the Tyva River in Severobaikalsk amounted to 0.9 million m³ (in 2016 - 0.92 million m³) in 2017.

In 2017, according to Form No. 2-TP (waste), 9.6 thousand tons of waste were generated in Severobaikalsky District, including the city of Severobaikalsk (in 2016 - 253.7 thousand tons).

3. Measures aimed at the protection of Lake Baikal taken in 2017 were as follows.

Statutory regulation and coordination of Lake Baikal protection. In 2017, the 12th session of the Interdepartmental Commission on Protection of Lake Baikal was held.

Resolution No. 1667 of the Government of the Russian Federation of December 27, 2017 “On the maximum and minimum values of the Lake Baikal water level in 2018–2020” set the maximum and minimum values of the Lake Baikal water level during the period of average water content at 457 and 456 meters, respectively, the minimum value of the Lake Baikal water level during the period of low water content (low water period) at 455.54 meters, and the maximum value of the Lake Baikal water level during the period of high water content at 457.85 meters (in the Pacific System of Heights).

By Resolution No. 1366 of the Government of the Russian Federation dated November 11, 2017 “On Amending the Federal Target Program of “Protection of Lake Baikal and the Socio-Economic Development of the Baikal Natural Territory for 2012–2020”, changes were made to the target indicators and values of the Program, the amount of funding for the Program was changed, changes were made to Appendix No. 3 “List of Measures to Implement the Program”, also the measures for the integrated assessment of the ecological crisis in the Lake Baikal ecosystem and development of proposals for elimination of its causes, for monitoring the abundance of Baikal seals, for the construction of tourist and recreational infrastructure in specially protected natural areas located in the Baikal Natural Territory, for the construction of a scientific expeditionary vessel of increased seaworthiness and carrying capacity (PTS-150 type) equipped with a complex laboratory for monitoring habitats and state of aquatic biological resources, for the construction of shore protection facilities and engineering protection of state property of the constituent entities of the Russian Federation (municipal property), located on the territory of constituent entities of the Russian Federation, who are the members of the Baikal Natural Territory were included.

Order No. 450 of the Ministry of Agriculture of the Russian Federation dated August 29, 2017 “On Amendments to the Fishery Rules for the Baikal Fisheries Basin, approved by Order No. 435 of the Ministry of Agriculture of the Russian Federation dated November 7, 2014” prohibited catching (fishing) of the Baikal omul in Lake Baikal and rivers flowing into it (including their tributaries).

In order to strengthen supervision over compliance with the legislation on environmental protection in the Baikal-Angara basin, implementation of the Federal Law “On Protection of Lake Baikal” and the protection of the constitutional right of citizens to a favourable environment by order of the Prosecutor General of the Russian Federation, Yuri Chaika, the Baikal Interregional Environmental Prosecutor's Office was formed on December 1, 2017.

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 2017 in the amount of 2,192.84 million Rubles (in 2016 - 1,906.31 million Rubles), of which 2,160.64 million Rubles was allocated 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 32.2 million Rubles - from other sources. The distribution of funds by type of expenditure was as follows: the capital investments amounted to 1,532.24 million Rubles while R&D amounted to 31.30 million Rubles and 629.29 million Rubles were allocated for other purposes. The budgets of various constituent entities of the Russian Federation contributed 313.9 million Rubles towards the projects and activities aimed at the protection of Lake Baikal. (206.2 million Rubles within the framework of FTP). Funds raised from extra-budgetary sources amounted to 358.1 million Rubles.

The environmental monitoring in 2017 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 2017, 181 inspections were carried out on the territory of BNT as a result of the state environmental supervision, which is 29.3 % fewer than the number of inspections conducted in 2016 (256 inspections). The number of revealed violations increased by 90.9 % and amounted to 565 offenses (in 2016 - 296 offences). According to the inspection outcome, 176 orders were issued and 103 administrative penalties were imposed. The total sum of the imposed administrative penalties amounted to 11,039 thousand Rubles, of which 3,142 thousand Rubles was paid.

In 2017, according to the results of regional supervision in the Baikal Natural Territory, the number of inspections (by the type of supervision) increased by 56.9 % and amounted to 927 inspections (in 2016 - 591 inspections), of which 712 inspections were carried out in the Republic of Buryatia (in 2016 - 364 inspections). The number of revealed violations was 593, which is 25.4% more than in 2016 (473 violations), of which 377 violations were found on the territory of Irkutsk Region. According to the inspection outcome, 304 orders were issued and 433 administrative penalties were imposed. The total sum of the imposed administrative penalties amounted to 11 101,9 thousand Rubles (in 2016 - 8 151.5 thousand Rubles), of which 2 709.38 thousand Rubles was paid (in 2016 - 4 259 thousand Rubles)

In 2017, 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). During 2017, 54 inspections were conducted in relation to legal entities and individual entrepreneurs doing business on Lake Baikal, including that related to the operation of hydraulic structures (in 2016 - 69 inspections). The inspections revealed 341 violations of the mandatory legislative requirements in the field of inland water transport, therefore 40 orders to rectify the violations were issued. Based on the results of considering case of administrative violations, 15 legal entities and 4 officials were subject to administrative liability in the form of fines for a total amount of 299 thousand Rubles.

Environmental violations. In 2017, the number of administrative offences and violations registered within BNT decreased by 6,5 % (from 3,761 to 3,517) compared to 2016, while the number of crimes increased by 17.37 % (from 3,062 to 3,593).

International cooperation. The following events were considered the most significant in 2017.

From July 2 to July 12, 2017, the city of Krakow (Poland) hosted the 41st session of the World Heritage Committee of UNESCO. By its draft resolution (41 COM 7B.6) the Committee expressed a serious concern about an increase in the allowable fluctuation amplitude of the

maximum and minimum water levels in Lake Baikal for 2018-2020, as well as the report about a decrease in the water level in the area of the Lake Baikal water conservation zone.

From July 31 to August 1, 2017, the XIII Meeting of the Plenipotentiaries of the Government of the Russian Federation and the Government of Mongolia on implementation of the Agreement on Protection and Use of Transboundary Waters between the Government of the Russian Federation and the Government of Mongolia was held in Ulan-Ude.

From October 2 to October 4, 2017, the first meeting of the Russian-Mongolian Working Group was held in Ulaanbaatar, Mongolia, to comprehensively review issues related to the planned construction of hydraulic structures in the catchment area of the Selenga River in Mongolia, established in accordance with the resolution of the 20th meeting of the Intergovernmental Russian-Mongolian Commission on Trade, Economic, Scientific and Technical Cooperation.