



Realization of the project “Pure Water” in Bugulma Municipal district, Republic of Tatarstan.

I. BACKGROUND

On the junction of the Ural Mountains and the Russian Valley is located the territory of the Republic of Tatarstan. At its southern- eastern part, known as Bugulminsko - Belebeyevskaya Hills, on the borders of woods and steppes is Bugulma region. The centre of the region is the city of Bugulma. This word is of the Tatar origin and means “winding” or “serpentine”. In fact the city stands on the river Bugulminca, not far from the place where it flows onto the river Zai.

The first mention of the village, which was founded near the busy trade way, joining the cities of Kazan and Orenburg, dates back to the 1736. This village was inhabited by the people of different nationalities: Tatars, Bashkirs, Mordvas etc. In the middle of the 18-th century Bugulminskaya Sloboda was founded in this place. On December 23, 1781 Russian Empress Ekaterina the Second issued and signed an edict (Ukaz) giving Bugulma the status of the regional city.

The Period of out-of-the-way place ended for Bugulma at the beginning of the 20-thy century, when in 1911 the city became a railway station on the newly opened Volgo-Bugulminskaya rail way.

The swift and wide scope development of the city began with the discovery of oil deposits in the region. Nowadays Bugulma is the multifunctional centre of the region. The advantageous geographical location of the city situated at the crossing of important transport routes (railways, highways, flying lines) has always been serving for the development of the city. According to the level of its social and economic development, Bugulma is included into the number of 5 best cities of the republic.

The population of the city today is about 90 529 people, 22134 people live in its suburbs.

The city has highly developed diversified industry. Tens of plants and factories of the city and its region produce output for oil and building industries, for agriculture and social needs. Among the largest factories are mechanical works , “TNG-Group”, dairy-products factory, meat –products factory, mechanical bakery, elevator, works of electrical pumps etc. In 2007 the volume of gross output of the city was 21.5 billion rubles (875 763 747.45 \$ US).

The authorities of the city carry out active social policy, that gives the opportunity to all the citizens (and first of all to those with moderate means) to get municipal service. New blocks of flats are being built in Bugulma. In 2007 about 245 dwelling houses with total living area of 41 200 square meters were put into operation in the city and its region.

One of the leading scientific centers of oil industry –Tatar Scientific Petroleum Research and Project Institute is located in Bugulma. Here also is the department of Russian Petroleum research Institute. Among the staff of these Institutes there are 3 academicians, 20 Doctors of science, 111 people have postgraduate education and title of the candidate of science.

In the city there are 3 departments of Universities, 5 special technical secondary schools and 3 special schools of elementary professional training.

Cultural traditions of the city are kept and developed by the Russian Drama Theatre named after actor Batalov, by the Tatar National center of Culture, the Palace of Youth, the House of Techniques, Local House of Culture, children’s Arts and Musical schools, wide system of libraries. The only Russian museum of Check writer Yaroslav Gashek, located in Bugulma, is in his former house. On the basis of this museum is now functioning the museum of irony. It is gaining more and more popularity among the citizens.

Bugulma has a well developed basis for going in for sports and physical training, for healthy life popularization. In the city there is an Ice Palace, a stadium,

59 gymnasiums, 4 swimming pools, 3 specialized sports schools for children, shooting-galleries, skiing centre, chess-club, sports centres “Dynamo” and “Unost”.

Industrial exploitation of oil deposits called “the Second Baku” began from Bugulma. Here the joint stock company “Tatneft” was formed. After the Second World War it gave the weak Soviet Union not only oil but great financial supply, which were very important for the re-birth of the country and its further development.

Our city is one of the first in the republic to be given awards. In 1982 Bugulma was awarded the order “Znak Pochyota” (the sign of Honor) for its achievements in the sphere of industrial, social and cultural development. In 2001 the city got Gold medal of UNESCO called “Palm Branch”.

In 2001-2002 our city was among the winners in All Russian contest “The most comfortable city of Russia”. In 2004 Bugulma got a special Diploma of recognition for the work carried out in the city to save and maintain architectural and historical heritage. The Diploma was given by the Ministry Cabinet of the Republic of Tatarstan.

In 2005 the Ministry Cabinet of the Republic of Tatarstan awarded Bugulma “The Diploma for effective work in perfection of architectural look of the city”. It’s the recognition of the work carried out by the authorities and the citizens of Bugulma in the sphere of preservation of historical and cultural monuments. Thus, the reconstruction of ancient buildings of the railway station, Drama Theatre and the House of Merchant Hakimov has been made recently. Hakimov’s House is now a visiting – card of the city.

City dwellers are proud of many fellow-towns-men famous all over the country and abroad. Among them are the Heroes of the Soviet Union and the Heroes of Labour, outstanding scientists and State Prize Laureates, Olympic champion and Russia- Europe- and World- record holders in different kinds of sports, world famous singers and hundreds of thousands of hornets, wise citizens.

All the achievements of our multinational city are gained thanks to the unity of peoples of different nationalities. There were no cases of national conflicts. The respect to the traditions and customs, tolerance, the priority of values common to all mankind are the background for more than two- hundred-year- old history of the city.

II. DESCRIPTION OF THE INITIATIVE.

It is well-known that “nail in the shoe” is something which does not cause death, but it constantly interrupts you from walking and working. It spoils your life. Such a “nail in the shoe” for Bugulma was the quality of urban water supply. Water pipes were old too.

For Bugulma, located far from the water resources, water supply has always been an urgent problem. Before 1962, when the specialized enterprise was founded in the city, water had been delivered from artesian wells, scattered on the territory of the city. The volume of the water supplied was 8000 m³, while the whole debit of all the water sources was 11 170 m³ per 24 hours.

According to the data of the city’s epidemiological service every second sample of water doesn’t satisfy the norms in chemical and organoleptical indexes (In summer this figure rises up to 96 per cent).The presence of iron and chlor-organic combinations was too high in muddy water. It was too dangerous for people. All that affected the health of the citizens. The danger grew in geometrical progression from year to year. For the period of 5 years (from 1991 to 1996) the total number of people suffering from cancer grew in 33 per cent in Bugulma. The number of people with kidneys nephritis grew too. The level of sick rate in the city and its district grew in ¼. Statistic data and the results of water tests made by doctors and scientists indicated bad water as the main reason of that situation.

It was necessary to take some urgent and decisive measures and act according to Napoleon’s principle: the main thing is to get involved into the battle and then we’ll see...”And we got involved. We signed a contract with a well known Canadian company “Casmininternational” concerning the erection of the water cleaning works in Bugulma.

In 1996 under the leadership of the mayor of Bugulma Nail Magdeyev and with the support of the President of the Republic of Tatarstan Mintimer Shaimiyev the realization of the program “Pure Water” was started. It stipulated carrying out great amount of work connected with the reconstruction of old and construction of new water- taking installations.

To support this program a special non-budget account was opened in the local department of “Ak Bars Bank”. Local enterprises, private craftsmen and common citizens made donations of money to this account. Information about these people and enterprises was published in the local press weekly. The reports about the expenditure of the money were also given there. The carrying out of the campaign “Pure Water” was very transparent and it made an unexpected effect.

Scientists of the Tatar Oil Research and Project Institute (TatNIPHeft) offered their own solution to the problem. They advised the authorities of the city to refuse an expensive Canadian assistant and carry out the program “Pure Water” using underground deposits of water which are numerous and quite rich on the territory of the region. The idea offered by the scientists had all the necessary economic validity.

The first stage in the realization of the program was the erection and putting into exploitation of the water-supply system “Batyr – Bugulma” in December of 1999. There was a special order signed by the head of the authorities of Bugulma and its district. The estimate cost of this construction was 1235. 51 thousand rubles (45 759,63 \$US). 887.25 thousand (32 490,74 \$US) of this sum was spent on the constructing and installing jobs. The city began getting 6 thousand m³ of pure spring water daily.

In 2001 the erection of the water-line “Konogorovka – Bugulma” was finished. It was the last step in the program, joining all the water-lines of the pure spring water into one system. The estimate cost of this construction was 89.4 million rubles (2 966 157, 93 \$US). 2 pumping stations, energy substation, separate branches of the system were built. All the water-taking system uses the water of 5 natural springs and 8 artesian wells.

After this system of water-lines was put into operation the supply of the city with water grew in 16-18 thousand m³ every 24 hours.

III. MAIN PARTNERS

The President of the Republic of Tatarstan Mintimer Shaimiyev rendered to the citizens of Bugulma an unestimable moral and pecuniary aid. During one of his visits to Bugulma region, speaking about the realization of the program “Pure Water”, he said: “I thought pure water is simply an attempt of the young head of the local administration to make himself known and that the result of this project would simply be some kind of the initiative. Now I see a serious and very necessary work is being carried”. His words gave new energy and desire to the authorities of the city to finish the project at any cost.

During the period of the realization of this program the citizens of Bugulma constantly made donations of money on the account of “Pure Water”. Financial realization of the program was realized with the money of local and Republican budgets, the Ministry of Ecology, «Tatenergo» and «Tatheft» companies.

The whole city took part in this program. A valuable contribution into it was made by the oil-pipe-line builders, who partly supplied the water-line with pipes, let the builders use their specialized machines in installation and assembling. Oil-industry workers from the company “Irkenneft” bought and delivered to the water-line construction place 3400 meters of perfect pipes, which were installed by the specialists from the mechanical factory. Building materials and equipment for the construction were delivered practically by all local enterprises. Some of them supplied the construction with the wire, some – with the bricks, others – with concrete or installing materials. In order to lengthen the period of exploitation of the pipes specialists from “ZNOK and PPD” enterprises treated their inner surface using special thermal treatment.

Each participant of this program is worth of the warmest words of gratitude whether he is a fitter, a planner or a specialist from water sewerage enterprise. They did their job perfectly: they laid the water line without cutting out trees on its way and breaking ecological balance.

IV. IMPACT

The realization of the program “Pure Water” gave the opportunity to raise the level of the life-style of the citizens of Bugulma and its district greatly. They began to get drinking water of high quality without any interruptions.

The transition in supplying the city with water from the Kama river into the one from the underground regional deposits made it possible to reduce the dose of chlorine used for disinfection of water. As the result of it the risk of origin of new onco-diseases was reduced. For the period of last year there has been a tendency to lowering the number of new cases of cancer.

There is also tendency to lowering the number of intestinal diseases (in the comparison with the year it is 27.3 per cent).

In 2004 in the compartment of water chlorination in the main building of the water pipe supplying system a dosage – pump (DME-12) was installed. This equipment made it possible to use solution of hypo-chlorite of sodium (**NaClO**) instead of chlorine (**Cl₂**) in the process of water disinfection. Besides, it provided ecological safety of working places and made it possible to refuse the transportation of dangerous load – compressed chlorine. In its turn the case of air pollution was also excluded.

Comparative analyses of the drinking water quality, with which the city was supplied in different periods of time, showed that the transition from the river water supply into the supply with water from the underground regional deposits considerably improved its quality in many indexes: turbidity, colour, sanitary-chemical, bacteriological. All this was proved by the certificate No 11/4324 from 29.03.2007 given by Rospotrebsouz of the Republic of Tatarstan after the comparative analyses of water from water resources in Bugulma region was made. For the period of 2007 and the first half of 2008 year we have been watching the lowering of the quantity of negative water analyses in sanitary-chemical, bacteriological indexes.

Thus the percentage of non standard water tests from the water-pipe-line system in 2006 was 21.4% when in 2007 it lowered to 16.4% (in sanitary-chemical

index), and in microbiological index it lowered twice: from 11.7% in 2006 to 6.8% in 2007.

In the first half of 2008 the dynamics to lowering non standard tests is being kept. From 273 tests of water only 34 (12.4%) don't meet the norms. Among them 17 (6.2%) don't correspond the norms in sanitary-chemical index and 19 (6.9%) in bacteriological index.

In 2007 we totally stopped buying the water from the Kama river. It gave the opportunity to cut off water cost (from 23 roubles (0,94 \$US) per m³ to 19.57 roubles (0,80 \$US) per m³).

V. SUSTAINABILITY

The stability of the realization of this program depends on involving financial resources and the possibility for providing people of all social groups with quality drinking water.

A more effective way to economize water from underground resources is to install water-meters in flats and private houses. By January, 1, 2007 in Bugulma and its district about 20014 water-meters was installed, while by October, 1, 2007 their number grown up to 25855.

The Order of the Ministry of Construction and Architecture and Municipal Service No 165/0 from 4.10.2007 limits the maximum increase of tariffs for the period of 2008 year. In water supply it is 112%, in sewerage -131%. According to the data of an independent examination made by the Republican engineering technical centre, the percentage of the maximum increase of tariffs in Bugulma is within the limits pointed out by the order of the Ministry.

According to the order No 147 of the Head of the executive committee of Bugulma Municipal district from 26.10.2007 the maximum increase of the tariffs in Bugulma for the period of 2008 is:

In water supply -4.9 (less than in the Republic in 7.1%);

in sewerage -18.6 %.(less than in the Republic in 12.4%);

The introduction of the invested project “Pure Water” gave the opportunity to supply the city and region with water from the local underground sources and also to lower the prime cost of 1 m³ of water. In 2006 it cost 20.48 rubles (0,78 \$US) (water bought from the Kama River system) while in 2007 the price was 14.48 rubles (0,59 \$US) per m³.

VI. TRANSFERABILITY AND UPSCALING

In order to provide the reliability of the sewage disposal functioning a whole complex of measures was taken. Thus, in 2002 special mechanic gratings (of the type PMT-35S-700/6 with prozors of 8-10 mm) were installed. It provided the growth of quality of waste materials removal and gave the opportunity to lower the quantity of mud carried away from the sewage disposal to 7 tons per year.

In 2001-2003 the reconstruction of aeration system took place at the sewage disposal system (OSK). It improved reestablishing processes and let lessen the quantity of BPK in cleared sewage up to 5 tons per year.

In 2003 some pipes of aeration system were replaced by the filter- supplied pipes made by the enterprise “Ecopolimer”. That provided preliminary enrichment of sewage with oxygen. The effect of the work of this system grew up to 65%).

In order to lower the loading on the clearing system in terms of productivity we started the process of widening of the 1st stage of the sewage system. Special project was worked out by the Institute “TatNIPINeft”. It will allow providing the growth of productivity in 25 thousand m³ per every 24 hours. We have such necessary documents as: positive conclusion of the State Examination No 53/36 from 18.10.1991, the certificate of the Managing Department of Examination and norms of nature exploitation of the Ministry of Ecology of the Republic of Tatarstan 126/06-э from 12.03.2003.

Within the framework of this project we built a building of transformer substation and put it into exploitation of silty grounds with total area 2.97 hectares,. Old garages were driven away from the construction area. The application for finishing this Program was included into the Federal program called “The

Development and Modernization of the enterprises of housing-municipal service in the period of 2005-2007 years”.

VII. INNOVATION

Thanks to thorough scientifically-based analysis of the situation and to finding a new way of usage of the underground water deposits of the region, the program “Pure Water” was effectively realized in Bugulma. In the course of the realization of this initiative we’ve gained a unique positive experience of implementation of best practices of careful attitude towards pure water.

Nowadays the Municipal Committee of the city hasn’t stopped the work and isn’t satisfied with the success achieved. They aim at the providing of the main right of the citizens – the right for pure water. The implementation of the Program “Pure Water” is going to be continued in the future.

The task of primary importance for the citizens of Bugulma and its region is careful and the most efficient use of pure underground water, harmonious and constant increase of people’s life style. Within this project a new project has been worked out. It concerns sanitary safety and protection of water gathering places in Bugulma region. The realization of this project will help to strengthen the control of water supplying sources and to prevent negative influence sanitary protection zones.

VIII. RECOGNITION OF THE INITIATIVE

The initiative of the authorities of Bugulma in realization of the “Pure Water” program got invaluable support of the citizens and the enterprises of the city. They regularly donated money to the special non - budget bank account. Local press constantly published the letters written in support of this Program by work veterans and clergymen, by medical workers and engineers, by teachers and social workers and by ordinary citizens, who approved of the project greatly.

More over, this Program gets recognition at different annual contests. Thus, in 2006 a successfully functioning enterprise “Bugulma - Vodocanal” (“Bugulma – Water Channel”, the main supplier of water in the city) received the Diploma of the

Winner of Moscow contest in the nomination “The Best Ecological Project of the Enterprise”. It also got the Diploma of All Russian contest “The Best Ecological Project of the Enterprise” for the best project in the nomination “The best organization of the ecological control at the enterprise”. In 2008 “Bugulma – Vodocanal” was a laureate of an annual Republican contest of enterprises called “ECO-leader” in the nomination “The work of nature protecting service”. The same year the chief of this enterprise Kashapov M. received a Letter of Gratitude from the President of the Republic of Tatarstan and the Diploma of Honor of the Ministry of Regional Development of Russian Federation for his fruitful work for the benefit of our republic.

SUPPLEMENT

- Video film about the realization of the program “Pure Water” in Bugulma Municipal district;
- Bulletin about the results of social and economic development of Bugulma Municipal district for the period of 2007 year;
- The direction of the head of the Executive Committee of Bugulma Municipal district No 146 from April, 11, 2008 “About sanitary protection zones of springs and underground drinking waters in Bugulma and its municipal district”;
- The decision of the Second Session of People’s Deputies of Bugulma city and district Council from 11.04.1991 “ About economic and drinking water supply of Bugulma and Bugulma district”;
- The resolution of the Ministry of Ecology about the results of the calculation of the deposits of fresh water in the water-taking places of Bugulma”;
- Historical information about the largest enterprises and institutions of the city;
- Reward materials.
- Photos.